LIFELONG ADAPTABILITY:

A CULTURAL LITERACY PERSPECTIVE

(Revised Edition)

John Thayer Moyer

2011

LIFELONG ADAPTABILITY:

A CULTURAL LITERACY PERSPECTIVE

(Revised Edition)

A Dissertation

Presented to

The Graduate Faculty of The University of Akron

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

John Thayer Moyer

December, 1997

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Dissertation

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(Revised Edition)	(Revised Edition)
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(Revised Edition, 2011)

Date

ABSTRACT

This ex post facto study attempted to identify a lifelong adaptability curriculum from a cultural literacy (Hirsch, 1987) perspective. This research investigated students' lifelong adaptability ratings of 15 general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. This study also incorporated four survey respondent groups in seeking to achieve consensus on a lifelong adaptability curriculum.

In a middle-class suburban school district, usable Lifelong Adaptability Surveys were returned by 79 (91%) high school seniors of the 87 high school seniors (from a 455-member senior class) reporting to the school test-survey site; by 131 (30%) high school seniors' households (i.e., by 226 individual parents); by 85 (66%) secondary teachers; and by 6 (100%) secondary building administrators. After listwise deletion of respondents who had not rated all 15 general school subjects, there still remained 215 parents (28% of high school seniors' households), 80 teachers (63% of those surveyed), 78 total students (17% of the senior class), 51 culturally literate students (11% of the senior class), and 6 secondary building administrators (100% of those surveyed) with lifelong adaptability ratings of 15 general school subjects.

Of 87 high school seniors reporting for the now out-of-print *Cultural Literacy Test*, 79 (91%) provided valid *Cultural Literacy Test* data, 71 (82%) had 10th-grade *Differential Aptitude Tests (DAT)* student intelligence proxy scores, and 53 (61%) had parent-provided demographic data.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994). Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

Student intelligence significantly predicted student cultural literacy, and student cultural literacy did not significantly predict students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

There was not a significant additive effect of student cultural literacy and aggregate demography in predicting students' lifelong adaptability ratings of general school subjects.

There was, of five possible variables (family structure, parental age, parental educational level, student cultural literacy, and student gender), a significant main effect of student gender in predicting students' lifelong adaptability ratings of general school subjects in that the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

There were not any significant two-way interactive effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

There was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects in that parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects in that parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. All students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers. Administrators' (N = 6) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

There were similarities of underlying factors among parents' and students' lifelong adaptability ratings of general school subjects. One factor, the Practical Factor, appeared to be surfacing with varying degrees of strength in parents', all students', and culturally literate students' lifelong adaptability ratings of general school subjects. Generally, teachers' lifelong adaptability ratings of general school subjects appeared to distinguish teachers from parents and from students. The remaining respondent group (administrators) with a smaller N of only 6 was omitted from factor analyses involved in any of this study's hypotheses.

There was a common factor model partially shared by parents', teachers', and students' lifelong adaptability ratings of general school subjects. The Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. The Practical-Academic Factor Model consisted of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

Some of this study's hypotheses supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But one hypothesis revealed a common factor model, the Practical-Academic Factor Model, that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, the Practical-Academic Factor Model supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students rather than all students.

If intelligence manifests itself through cultural literacy and if cultural literacy enhances lifelong adaptability, then cultural literacy ought to be taught in the classroom. In fact, cultural literacy itself may be the lifelong adaptability curriculum. Moreover, perhaps educators need not battle potential demographic effects in encouraging students to value a lifelong adaptability curriculum. From the present study's perspective, a cultural literacy perspective, there exists a *partial* consensus whereby the debut of a lifelong adaptability curriculum might be politically expeditious with a minimum of resistance from any of the four respondent groups (parents, teachers, administrators, and students). It appears that such a curriculum would emphasize English, computer technology, foreign language, mathematics, science, and social studies within an Academic aspect of the curriculum along with driver education, health, home economics, and physical education within a Practical aspect of the curriculum.

Furthermore, if other research respondents are considering lifelong adaptability when they respond to their respective studies, then implementing a publicly acceptable lifelong adaptability curriculum from a cultural literacy perspective may be politically expeditious not only in Millcreek Township School District but also in other districts, for it bodes well that some of the present study's results apparently resemble major studies' results (Gallup, 1981; Survey Research Systems, 1990).

Suggestions for future research include a more narrow examination of the intelligence-cultural literacy relationship to address the possibility that standardized intelligence tests actually measure cultural knowledge rather than native intelligence. This possibility was suggested by Kosmoski, Gay, and Vockell (1990). Moreover, an alleged cultural bias of intelligence testing has been speculated by researchers (Brescia & Fortune, 1988; S. Graham & K. R. Harris, 1989; Nash, 1984; G. M. Pugh & Boer, 1991; Weinberg, Scarr, & Waldman, 1992).

ACKNOWLEDGMENTS

Many individuals assisted in the evolution of this research. Foremost were The University of Akron dissertation committee members: Dr. Larry G. Bradley, Professor of Education and Committee Chairman; Dr. Charles M. Dye, Professor of Education and Dean of Graduate Studies; Dr. Antonia M. Forster, Associate Professor of English; Dr. Harold M. Foster, Professor of Education; and Dr. Susan J. Olson, Associate Professor of Education. Dr. Bill J. Frye, then Associate Professor of Education, and Dr. Matthew J. McTaggart, then Assistant Professor of Education, also served as dissertation committee members while they were at The University of Akron. In addition, on many occasions, including those involving this revised edition, Dr. Stephen H. Aby offered his expertise or services as Bierce Library Educational Bibliographer at The University of Akron. Providing further statistical advice was Dr. Margaret Kerr, Assistant Professor of Psychology at Gannon University. For this revised edition, statistical expertise was provided by Dr. Isadore Newman, The University of Akron Distinguished Professor of Education Emeritus, and by Dr. Victoria B. Chiongbian, a statistical and dissertation consultant.

The Lifelong Adaptability Survey pilot study was accomplished with the permission and assistance of Dr. Douglas L. Allen, Fairview School District Director of Curriculum and Instruction. To maintain the present researcher's anonymity during the pilot study, Dr. Donald C. Beckman, Edinboro University of Pennsylvania Professor of Education and Director of School Administration/Supervision, agreed to act as proxy.

Approval for field research was granted by Millcreek Township School District

Superintendent Mr. Robert J. Agnew, Millcreek Education Association President Mr. Gary A. Rathbun, and the Millcreek School Board. In an attempt to maintain the present researcher's anonymity during this study's data collection phase, correspondence with potential subjects, logistical considerations, and Millcreek School Board approval were managed through Dr. R. Alan Zito, Millcreek Township School District Supervisor of Secondary Education, with the aid of his secretary, Mrs. Linda D. Sitter. Collection of data at McDowell Senior High School was conducted through McDowell Senior High School Principal Mr. Edward Grzelak, Jr. along with Guidance Department Chairman Dr. Richard J. Lewis and his associates. Collection of data at McDowell Intermediate High School was executed through McDowell Intermediate High School Principal Mr. Alan J. Karns. Mrs. Patricia K. Muir, a Millcreek Township School District librarian, assisted in securing several research articles through Millcreek Township School District's library services. For this revised edition, Mrs. Linda M. Houston, another Millcreek Township School District librarian, also assisted in securing several research articles through Millcreek Township School District's library services.

Of course, this educational research could not have been completed without the participation of parents, teachers, administrators, and students who provided the data upon which this study was based.

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CHAPTER I

THE PROBLEM

Introduction

On the threshold of the 21st century and third millennium, the world is rapidly changing. It seems that its metamorphosis is not linear but rather exponential, logarithmic, or chaotic. This impression of unpredictable change appears accurate in that human change is "neither unilinear nor unidirectional" (M. Thompson, Ellis, & Wildavsky, 1990, p. 83). To address this impression of unpredictable change, Toffler (1990) proposed a bombardment explanation:

> In describing today's accelerating changes, the media fire blips of unrelated information at us. Experts bury us under mountains of narrowly specialized monographs. Popular forecasters present lists of unrelated trends, without any model to show us their interconnections or the forces likely to reverse them. As a result, change itself comes to be seen as anarchic, even lunatic. (p. xvii)

Therefore, for education to avoid succumbing to apparently unpredictable change, the present researcher sought to identify trends of change which directly impact the preparation of today's students, who will confront that apparently unpredictable change. Despite global economic and geopolitical structures exhibiting daily an internationally newsworthy instability, overarching trends of change surface to offer temporary direction on the cusp of otherwise unpredictable change. These trends render subtle, unheeded warnings to the inattentive and powerful, welcome advice to the astute. Thus, Toffler (1990) in his studies of change:

> [worked] from the premise that today's high-speed changes are not as chaotic or random as we are conditioned to believe. . . . [and] that there are not only distinct

> patterns behind the headlines, but identifiable forces that shape them. Once we understand these patterns and forces, it becomes possible to cope with them strategically, rather than haphazardly on a one-by-one basis. (p. xvii)

It logically follows that educators must initially be trend observers, not to accommodate random change but to harness opportunities of change to benefit their students, society, and themselves. Aligned with this reasoning, education's role ought to be proactive, not reactive, to outside trends by instituting reforms intended to equip students for adaptability in an ill-defined future. Goodlad (1973) recognized that an unknown future demands a new educational perspective:

> Other generations believed that they had the luxury of preparing their children to live in a society similar to their own. Ours is the first generation to have achieved the Socratic wisdom of knowing that we do not know the world in which our children will live. (p. 217)

One trend addressing itself to educators was noted over twenty years ago by Toffler (1970), who wrote that "when *Fortune* magazine in the mid-1960's surveyed 1,003 young executives employed by major American corporations, it found that fully one out of three held a job that simply had not existed until he [*sic*] stepped into it" (p. 109). In conjunction with this genesis of unfamiliar jobs is the realization that "in the next decade, no job will be entirely secure, whether inside or outside of [*sic*] a large company" (Boyett & Conn, 1991, p. 3). This introduces the question of how to prepare students for future occupational change, especially for those jobs currently nonexistent. Regarding post-industrial unemployment and adult education's response, Pittas (1995) appropriately asked the fundamental question "Training for what?" (p. 162). Coining the term *Kaleidoscopic Paradigm Shift*, Lenaghan (1995) posed a similar question and suggested a possible answer:

> The Kaleidoscopic Paradigm Shift presents us with a dilemma: How do we prepare for information and technologies yet to be dreamed and invented? We do not know what new information *(know)* and techniques *(how)* will be created in the

> future. Since we cannot train or teach people on equipment, systems and routines not yet invented or produced, we must equip and train them to be able to handle, respond to and energize the new technologies and human configurations that emerge.
>
> The strategic solution for this dilemma is to prepare people in . . . knowledge, skills and attitudes that will equip workers to alter, adjust or adopt whatever is inspired, invented or inverted. (pp. 13-14)

Additionally, "more and more jobs will require mental energy, accessing and manipulating data bases and knowledge—the arena of knowletarians" (p. 10). Identifying the curricula which will provide these "knowletarians" with appropriate knowledge to adapt in an ill-defined future was the purpose of the current research.

Gerber, Wolff, Klores, and G. Brown (1989) reported a colorful situation portraying the late-20th-century difficulty in educating younger workers for *already* existing jobs in a sophisticated workplace. Their illustration portends even more extreme scenarios during the next century:

> Southern California Edison . . . has been trying to put engineer Thomas Kelly's talents into its computer. The 55-year-old Kelly's specialty is dealing with the idiosyncrasies of the huge Vermilion dam in the Sierra Nevada Mountains. Much of his work overseeing the condition of the dam is seat-of-the-pants analysis. . . . The company has spent three hundred thousand dollars on two experts in artificial intelligence who have tried to capture the essence of Kelly's thought process. But as one of the experts acknowledged, "Tom is very intuitive, and that is the toughest problem to deal with." (pp. 98-99)

The present researcher conjectured that engineer Thomas Kelly's "intuition" is not computer programmable because it is a general ability to assess and to adapt rapidly without clear instruction in how to do so. Consequently, such "intuition" per se cannot be specifically taught. Nonetheless, this illustration exemplifies the demand to equip, by some curricular means, outgoing students with the content underlying such "intuition," or adaptability, so that they will be adequately prepared as future incoming workers. As Boyett et al. (1991) noted, "in *Workplace 2000*, flexibility and creativity will be more important for success than endurance and loyalty" (p. 4).

Naisbitt (1984) noted a related trend, initially reported by the National Commission on Excellence in Education, in that "the generation graduating from high school today is the first generation in American history to graduate less skilled than its parents" (p. 25). The current researcher speculated that this phenomenon is due less to poor education than to accelerated change and that Naisbitt's (1984) "underskilled generation" is no more lacking than would be any prior generation placed in the present. Naisbitt (1984) also commented, "We are drowning in information but starved for knowledge" (p. 17).

That seems to be true because isolated information is specific, whereas contextual knowledge is general. Accordingly, "we are moving from the specialist who is soon obsolete to the generalist who can adapt" (Naisbitt, 1984, p. 32). Carnevale (1991a) stated that "as skill requirements become less job specific and more general, both skill and experience are becoming more transferable from one job to another" (p. 91) and that "the characteristic signature of the new economy is flexibility" (p. 90). Regarding flexible, adaptable employees, Naisbitt and Aburdene (1990) simply observed, "Nearly half—45 percent—the work force is college educated. . . . Well-educated people have more options" (p. 220). Learning seems to bestow adaptability.

Therefore, lifelong adaptability, comparable to Rampton's (1996) concept of futurability, would appear to incorporate lifelong learning deemed "essential if the individual is going to continue to cope with the rapidly changing world" (Hellawell, 1996, p. 73). Discussing the community college's involvement in creating "a more competent, more adaptable workforce" (p. 50), R. W. Smith (1995) concluded, "Teaching students how to learn will be a critical component of tomorrow's community college curriculum" (p. 52). Indeed, Richart (1996) estimated that "Information Age workers will need to spend at least 20 percent of their day engaged in learning" (p. 7).

Concerning employers' and employees' burden of ongoing education, Boyett et al. (1991) suggested the following:

> Continuous learning will become commonplace to create a more flexible work force, provide employees with the skills necessary to take advantage of rapidly changing technology, and prepare employees for new jobs inside or outside the company when their old jobs are replaced by technology or eliminated due to changes in customer demands. (p. 7)

Rinne (1991) labeled this process "unlearning, i.e. people should learn how to free themselves from out-of-date thought patterns, inappropriate knowledge or dying vocations, and be ready to face new challenges" (p. 13). Moreover, "the new American workplace will require the most educated work force of any economic system in history" (Boyett et al., 1991, p. 266). To assist employers, Carnevale, Gainer, and Meltzer (1990) detailed "Guidelines for Establishing an Effective Workplace Basics Program" (pp. 401-424) for employers to implement in the workplace. Carnevale (1991b) reported that "in the new economy, both jobs and the skills they require are becoming more alike" (p. 161). Just as Carnevale (1991b) considered it possible to identify "Sixteen Job Skills Crucial to Success" (pp. 165-182), the current researcher considered it possible to identify secondary curricula crucial to confronting change.

The current researcher assumed that a changing world's intrinsic message for educators is to provide curricula that promote lifelong adaptability. From this assumption, it followed that to be educated for tomorrow, students must not be narrowly trained as specialists for today's jobs. They must instead be liberally educated as generalists enabled to cross shattered occupational boundaries in order to pursue careers consisting of future jobs, which may not exist until decades from now. Lifelong adaptability accordingly is defined as the ability to adapt to change, especially within the workplace, over an entire lifetime.

It follows from J. J. McDermott (1984) that a component of students' adaptability within a society is an academic awareness of that which has preceded them in that society. Referring to collegiate undergraduates, J. J. McDermott (1984) remarked that "they exhibit a staggering ignorance of history and letters, and their symbolic resources for imaginative reconstruction seem bankrupt" (p. 39). In addition, "it is essential that we continue, generation by generation, to educate all of our children in the best of our warranted wisdom" (p. 41). He concluded that "if we render generation after generation *culturally* [italics added] deaf and dumb, the rising spires of high technology will be but a contemporary parallel to the Tower of Babel" (pp. 55-56). Regarding law students, Vance and Prichard (1992) reasoned, "If one important goal of legal educators is to produce students who will be life-long learners, we should want them to have a cultural basis that will make it easier for them to keep on acquiring knowledge, whether from teachers, books, or any other source" (p. 237). Expressing a more humanistic sentiment, A. Bloom (1987) wrote, "Culture founds the dignity of man. Culture as a form of community is the fabric of relations in which the self finds its diverse and elaborate expression" (p. 188). Paradoxically, it is logical to surmise that students need culture, which is outside themselves, to mature into self-actualizing adults within.

The necessity of enculturation for lifelong adaptability lies in culture's inextricable link with language. Hirsch (1987) asserted that "the need for a culture in building a nation is really just another dimension of the need for a language. A nation's language can be regarded as a part of its culture, or conversely, its culture can be regarded as the totality of its language" (p. 83). To strengthen his reasoning, Hirsch (1987) offered concrete historical, scientific, and literary examples:

> The American legend about Lincoln in his log cabin can be conceived either as part of our culture, or, with equal justification, as part of our shared language. Americans need to learn not just the grammar of their language but also their national vocabulary. They need to learn not just the associations of such words as *to run* but also the associations of such terms as *Teddy Roosevelt*, *DNA*, and *Hamlet*. (pp. 83-84)

Basically, Hirsch (1987) theorized a cultural approach to education:

> The anthropological view stresses the universal fact that a human group must have effective communications to function effectively, that effective communications require shared culture, and that shared culture requires transmission of specific information to children. Literacy, an essential aim of education in the modern world, is no autonomous, empty skill but depends upon literate culture. (p. xvii)

Therefore, due to the interrelatedness of culture, language, communication, and effective functioning within a modern society, a lifelong adaptability chain of components was proposed by the present researcher: Culture is a component of language, which is in turn a component of communication, which is ultimately a component of lifelong adaptability. Figure 1 illustrates this lifelong adaptability chain of components.

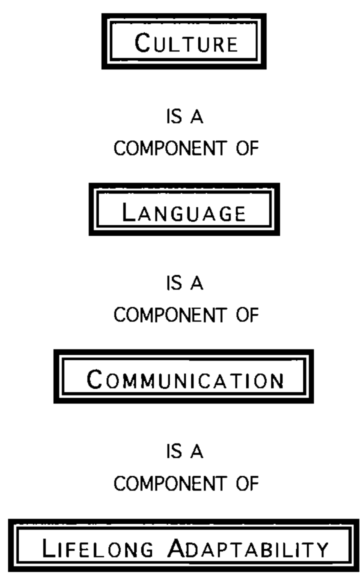

Figure 1. Lifelong adaptability chain of components.

More specifically, by collapsing the lifelong adaptability chain of components, it becomes clear that lifelong adaptability fundamentally requires an understanding of and fluency in one's own culture, which may include items from other cultures as well. This educational component is cultural literacy as popularized by Hirsch (1987). Defined by him, "to be culturally literate is to possess the basic information needed to thrive in the modern world" (p. xiii). In a more technological approach to cultural literacy, Lacis (1990) stated, "We need culturally literate people. Our markets are global and our networks in the year 2000 will demand people who can relate to the other people through a wide variety of media and languages" (p. 19). Within an emerging global network relying heavily on language, it is assumed that cultural illiteracy constitutes an economically and personally crippling deficit for students. Likewise, "our children's lack of intergenerational information is a serious problem for the nation" (Hirsch, 1987, p. 7). This caution aligns with an observation by Gerber et al. (1989): "In the photograph of a family gathering in 2015, there will be a lot of gray heads, with more people over 55 in the shot than children under 18" (p. 27). Intergenerational communication via cultural literacy will invariably become an increasingly important skill. It is not surprising that L. M. McNeil (1990) listed cultural literacy as one of three principal forces influencing curricular revision.

The current researcher deemed it reasonable to assume that student cultural literacy will translate to personal, intergenerational, economic, and national well-being during an otherwise ill-defined 21st century. This conclusion was derived by examining cultural literacy's inextricable link with language, which in turn is linked with communication, which ultimately is linked with lifelong adaptability (see Figure 1).

Purpose of the Study

Due to observed trends of accelerated future change, the intent of this study was to address a predictably unstable 21st century and to explore an appropriate educational response. A need for student adaptability, especially in the workplace, suggested identification of commonly acceptable curricular content for strengthening lifelong adaptability as ascertained by respondent lifelong adaptability ratings of general school subjects and as viewed from a cultural literacy perspective.

By reasoning from the proposed lifelong adaptability chain of components (see Figure 1), it was assumed that some students already possess greater lifelong adaptability than others due to possessing greater cultural literacy. Kosmoski (1989) discovered a significantly positive correlation between scholastic achievement (an assumed aspect of adaptability) and cultural literacy although Thibadoux, Ahmadi, and Helms (1993) found only a weak relationship between these two variables. Intelligence being a potentially differentiating factor in student cultural literacy (Kosmoski, Gay, & Vockell, 1990) and in lifelong adaptability (Church, Katigbak, & Almario-Velazco, 1985), especially in the workplace (J. E. Hunter, 1986), it was covaried with student cultural literacy in the present study of cultural literacy and demography in predicting students' lifelong adaptability ratings of general school subjects. Included as predictor variables were student cultural literacy (Hirsch, 1987) and four demographic variables to be investigated for their potential relationship to lifelong adaptability ratings of general school subjects.

Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman, E. Q. Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer & Gattringer, 1985; Stickney & Fitzpatrick, 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography.

Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone & McLanahan, 1991; Barbarin & Soler, 1993; Featherstone, Cundick, & L. C. Jensen, 1992; Gill, 1992; Kurdek & Sinclair, 1988; Mulkey & Morton, 1991) and relative nonsupport (Eagle, 1989; Grissmer, Kirby, Berends, & Williamson, 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson, Alexander, & Entwisle, 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare & Tzeng, 1989; Rose & I. F. Wallace, 1985) and relative nonsupport (Ensminger & Slusarcick, 1992; Kinard & Reinherz, 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell, Chavez, H. Lee, & Guzman, 1991; K. A. Moore & Snyder, 1991; Rogers & Webster, 1987; Sack, Beiser, G. Clarke, & Redshirt, 1987; S. Sinha, Trivedi, S. C. Gupta, & P. K. Sinha, 1988; H. L. Smith & Cheung, 1986; K. R. Wilson & W. R. Allen, 1987) and relative nonsupport (D. Adams, B. Astone, Nunez-Wormack, & Smodlaka, 1994; Crook & Lavin, 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson & D. P. Baker, 1987; Xie, Seefeldt, & Tam, 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool & Keith, 1991; J. V. Couch, Garber, & W. E. Turner, 1983; DeBaz, 1994; Duran & Weffer, 1992; Furr, 1992; Kinard et al., 1987; Lummis & H. W. Stevenson, 1990; Lynn, 1996; Lynn, Hampson, & Magee, 1983; Lynn & R. G. Wilson, 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim, Nordvik, Gustafsson, & A. M. Undheim, 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon & Jinks, 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert, D. C. May, & Brent, 1995; Manahan, 1984a; Norman, 1988; Stocking & D. Goldstein, 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

Furthermore, the research literature reports interaction effects involving these demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Bronstein, Clauson, Stoll, & Abrams, 1993; Ensminger et al., 1992; Feldman & Rafferty, 1993; Gringlas & Weinraub, 1995; Kaiser, 1994; Å. Murray & Sandqvist, 1990; Teachman, 1987; Zimiles & V. E. Lee, 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (Cherian, 1994; S. M. Dornbusch, P. L. Ritter, Leiderman, D. F. Roberts, & Fraleigh, 1987; S. M. Dornbusch, P. L. Ritter, & Steinberg, 1991; Ensminger et al., 1992; Entwisle & Alexander, 1995; J. D. Finn & Owings, 1994; Gringlas et al., 1995; J. D. House, 1996; J. D. House & Wohlt, 1989; T. E. Smith, 1992; Spencer, Cole, DuPree, Glymph, & Pierre, 1993). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus, S. Henderson, & M. E. Lamb, 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink & Sawatzky, 1989; Thomson, T. L. Hanson, & McLanahan, 1994) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Kundert et al., 1995; Lutzer, 1986; C. J. Patterson, Kupersmidt, & Vaden, 1990). Nevertheless, sound research practice dictated that interaction be considered in the present study in order to detect possible attenuation of main effects.

Besides prediction of students' lifelong adaptability ratings of general school subjects, of interest in the current research was identification of consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects. Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and *culturally literate* students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. If overall respondent agreement does not exist, then cogent direction for curricular revision from a cultural literacy perspective nonetheless may surface solely from culturally literate students' lifelong adaptability ratings of general school subjects.

Statement of the Problem

This research investigated students' lifelong adaptability ratings of general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. Besides prediction of students' lifelong adaptability ratings of general school subjects, of interest was identification of consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects. Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and *culturally literate* students' lifelong adaptability ratings of general school subjects in this study of lifelong adaptability from a cultural literacy perspective.

Assumptions

This study was predicated on 12 assumptions, 4 of which encompassed the concept of lifelong adaptability, 3 of which pertained to curricular revision, and 5 of which concerned research mechanics.

1. By reasoning that "well-educated people have more options" (Naisbitt et al., 1990, p. 220) and that, therefore, education furnishes adaptability, it was assumed that a changing world warrants an educational study in curricular revision to afford students greater lifelong adaptability, especially in the workplace.

2. Based upon the proposed lifelong adaptability chain of components (see Figure 1), a salient component of lifelong adaptability is cultural literacy.

3. The now out-of-print *Cultural Literacy Test* composite raw scores indicated students' degrees of cultural literacy.

4. A significant correlation ought to exist between student cultural literacy and students' lifelong adaptability ratings of general school subjects.

5. Curricular revision for enhancing lifelong adaptability is politically facilitated by agreement of respondents' (parents', teachers', administrators', and students') lifelong adaptability ratings of general school subjects because these four respondent groups' cooperation eliminates resistance to curricular revision. In other words, any one of these groups in disagreement with the other three can create potentially crippling resistance to revisions in curricula.

6. From a cultural literacy perspective, academically beneficial curricular revision is more likely if respondent consensus exists on lifelong adaptability ratings of

general school subjects.

7. In the absence of respondent consensus, valid insight for curricular revision can nonetheless be gained from culturally literate students' lifelong adaptability ratings of general school subjects. Based on the proposed lifelong adaptability chain of components (see Figure 1), these particular students' ratings afford curricularists some initial direction for curricular revision from a cultural literacy perspective by allowing them to address intelligently overall respondent disagreement, thereby politically mitigating such disagreement and encouraging eventual acceptance of prescribed curricular revision.

8. Subjects included in the nonrandom convenience, or volunteer, sample were representative of middle-class suburban public school district parents, teachers, administrators, and students. Although some of the subjects may have resided outside Millcreek Township School District geographically, all subjects were involved with Millcreek Township School District educationally. (Generalizability of results involving administrators, although, was severely limited by a population *N* of only 6 available secondary building administrators.)

9. Self-reported demography (family structure, parental age, and parental educational level) and district-reported demography (student gender) were accurate.

10. Self-reported lifelong adaptability ratings of general school subjects validly reflected respondents' curricular preferences to enhance lifelong adaptability. Nonetheless, it is necessary to caution that skewing of respondent ratings may have occurred due to political and personal conflicts between respondents and the Millcreek Education Center administrator who was the designated distributor of surveys and collector of all survey data (excluding pilot data) and whose name appeared on all surveys, cover letters, and return envelopes. This caution is especially applicable to

teachers' lifelong adaptability ratings of general school subjects.

11. Student *Differential Aptitude Tests (DAT)* Verbal Reasoning + Numerical Ability (VR + NA) composite raw scores were valid proxies for student intelligence.

12. It was lastly assumed that survey response percentages sufficed to represent without bias the respondent populations.

Research Questions

1. Is it possible to predict student cultural literacy from student intelligence?

2. Is it possible to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence?

3. Is it possible to predict students' lifelong adaptability ratings of general school subjects from the additive effect of student cultural literacy and demography?

4. Is it possible to predict students' lifelong adaptability ratings of general school subjects from main effects of or from two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender?

5. Is there consensus across, are there common underlying factors among, or is there a common factor model shared by parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects?

In partial accomplishment of these research questions, the researcher developed appropriate surveys; piloted them by proxy (Appendix 2); and ultimately employed the Lifelong Adaptability Survey (Parent) included in Appendix 5, the Lifelong Adaptability Survey (Teacher) included in Appendix 6, the Lifelong Adaptability Survey (Administrator) included in Appendix 7, and the Lifelong Adaptability Survey (Student) included in Appendix 8.

Delimitations

This study was conducted, with school district permission, in middle-class suburban Millcreek Township, adjacent to Erie, Pennsylvania (Appendix 11). The township is a political entity governed by three elected township supervisors. Millcreek Township School District coincides geographically with Millcreek Township but is independently managed by an elected nine-member school board. The board is endowed with authority to impose, increase, and collect school taxes in the form of millage assessments on property within the school district. Millcreek Township School District is located within Northwest Tri-County Intermediate Unit 5, a geographical state educational division.

The researcher's choice of a suburban community presented accompanying delimitations. The Pennsylvania State Data Center and Penn State (1990, Profile 16) reported that Millcreek Township's 18,402 households earned a median income of $33,090 and a mean income of $41,490. Households' mean income under $150,000 was $36,501, whereas households' mean income at or above $150,000 was $308,907. Of nonworking families, one-worker families, two-worker families, and three-or-more-worker families, the mode was two-worker families with a mean income of $53,244. Only 5.1% of Millcreek Township's population was reportedly below the poverty level (Profile 19). Of owner-occupied housing units, the median unit value was $71,600 while the mean unit value was $83,489 (Profile 24). The bottom 4.9% of those units was valued below $35,000, and the top 4.2% of those units was valued at or above $175,000 (Profile 24).

Data on highest educational attainment (Profile 10) indicated that, of 31,395 persons age 25 or older, 12,529 (39.9%) were high school graduates; 2,038 (6.5%) had associate's degrees; 4,744 (15.1%) held bachelor's degrees; 2,652 (8.4%) held graduate or professional degrees. These data revealed that 21,963 (70.0%) of

Millcreek Township adults had at least a high school diploma and that 9,434 (30.0%) held at least one college degree.

According to U.S. Bureau of the Census (1992) national data, two-earner households reported an average before-taxes 1990 income of $43,405 (p. 442), well below Millcreek Township's $53,244. Additionally, 1990 national data on educational attainment indicated that, of adults 25 years old or older, 30.0% were high school graduates, 6.2% had associate's degrees, 13.1% held bachelor's degrees, and 7.2% held advanced degrees (U.S. Bureau of the Census, 1993, p. 155). Millcreek Township's data on educational attainment revealed that Millcreek Township's adult educational attainment surpassed the educational attainment of adults nationally. Therefore, income and education data alone led the researcher to conclude that suburban Millcreek Township is a middle-class community.

All subjects were educationally involved with Millcreek Township School District. No private school students existed in the study. The presence of only six secondary building administrators greatly limited generalizability of results involving them.

The researcher-constructed Lifelong Adaptability Survey (Parent) contained Section 1 requesting demographic data. Items in Section 1 were limited to family structure, parental age, parental educational level, and parental gender (collected but unused in this study's research hypotheses). Items seeking less willingly reported, more sensitive information like socioeconomic status (SES) data (e.g., family income), ethnicity, race, creed, or marital status (e.g., divorced) were excluded from this study's researcher-developed survey component. Of course, exclusion of these more sensitive demography items resulted in the exclusion of SES, ethnicity, race, creed, and marital status from the current research. Student gender data were obtained through Millcreek

Township School District student *DAT* records or through other student records if *DAT* records were unavailable. For both practical and political reasons, cultural literacy testing was restricted to students. Teachers, administrators, and parents remained unassessed for cultural literacy but were surveyed for their lifelong adaptability ratings of general school subjects. Students completed both the *Cultural Literacy Test* and the Lifelong Adaptability Survey (Student) in a single session (initial or make-up) at the school test-survey site.

In a township of approximately 47,000 residents (Pennsylvania State Data Center et al., 1990, Profile 2), Lifelong Adaptability Survey respondents were limited to 79 (17% of the senior class) Millcreek Township School District mainstream (excluding remedial special education and foreign exchange) 12th-grade students who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site; 444-888 parents, the exact number being unknown at 1 or 2 parents per student, of all 455 high school seniors (who included 11 sets of twins, thereby reducing the number of high school seniors' households to 444); 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors (initially 129 solicited before 1 more teacher was also identified as a parent of a high school senior); and 6 secondary building administrators. Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households.

This respondent population initially warranted 665 to 1,109 (the range due to the unknown number of one or two parents per household) total survey solicitations (with 2 parent survey solicitations [i.e., to one household] returned as undeliverable by the United States Postal Service) and approximately 78 second survey solicitations (i.e., to 39 households) to nonrespondent parents of those students who had taken the *Cultural Literacy Test*. These second survey solicitations were made to this select parent subgroup in order to acquire necessary demographic data to bolster the power of General Hypothesis 3.

No respondent was permitted membership in more than one respondent group for collection of lifelong adaptability ratings of general school subjects. Teachers or administrators who were also parents of high school seniors were included in the parent group only. One exception was one administrator who was allowed to remain in the administrator group ($N = 6$) for collection of his lifelong adaptability ratings of general school subjects and who was also allowed to remain in the parent group for collection of student demographic data.

The 79-member student group was comprised of 38 (48%) females and 41 (52%) males. At the time of this study's *Cultural Literacy Test* and Lifelong Adaptability Survey (Student), 18 (22.78%) of the 79 students were 17 years old, 51 (64.56%) were 18 years old, and 10 (12.66%) were 19 years old with a mean age of 17.90 years ($SD = .59$).

Definitions and Operational Terms

Cultural literacy. Understanding of and fluency in one's culture which provide the "basic information needed to thrive in the modern world" (Hirsch, 1987, p. xiii) and, more concretely, defined as "the large body of specific information . . . that . . . literate people in the culture know" (Riverside Publishing Company, 1989, p. 3), operationally defined numerically by the now out-of-print *Cultural Literacy Test* composite raw score.

Culturally literate student. Operationally defined numerically by a composite national percentile rank exceeding the 50th percentile on the *Cultural Literacy Test*, thereby defining that student as possessing an above average degree of cultural literacy.

Family structure. Operationally defined numerically by Section 1 of the Lifelong Adaptability Survey (Parent).

General school subjects. Those which are overtly presented, included, taught, or tested in the classroom (including laboratory, gymnasium, playing field, theatre, or other learning facility) and operationally defined by the Lifelong Adaptability Survey utilizing 15 regionally common (Appendix 1) required or elected content areas (art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical).

Lifelong adaptability. Ability to adapt to change, especially within the workplace, over an entire lifetime.

Lifelong adaptability rating. Operationally defined numerically for each of 15 general school subjects by the Lifelong Adaptability Survey's analogue scale quantified by the Lifelong Adaptability Survey Rating Template (Appendix 12).

Parental age. Operationally defined numerically by Section 1 of the Lifelong Adaptability Survey (Parent) and calculated as a mean in a two-parent household or as a mean in a multiple-guardian group home from which were allowed a maximum of two survey respondents in greatest contact with the student; if only one parent in a two-parent household responded to the Lifelong Adaptability Survey (Parent), then that one parent's age was entered as the mean parental age.

Parental educational level. Operationally defined numerically by Section 1 of the Lifelong Adaptability Survey (Parent) and calculated as a mean in a two-parent household or as a mean in a multiple-guardian group home from which were allowed a maximum of two survey respondents in greatest contact with the student; if only one parent in a two-parent household responded to the Lifelong Adaptability Survey (Parent), then that one parent's educational level was entered as the mean parental educational level.

Parental gender. Operationally defined numerically by Section 1 of the Lifelong Adaptability Survey (Parent); collected but unused in the current study.

Student gender. Operationally defined numerically from *DAT* records or, if unavailable, from other student records in Millcreek Township School District.

Student intelligence. Operationally defined numerically by the *DAT* Verbal Reasoning + Numerical Ability (VR + NA) composite raw score; "the usefulness of the VR + NA composite score as an indicator of general ability is well-established" (Sander, 1985, p. 506).

Summary

A 21st century with unpredictable change can be wisely anticipated by extensive research on trends (Naisbitt, 1984; Naisbitt et al., 1990). One such predictable trend is the genesis of presently nonexistent jobs (Toffler, 1970) for which specific training cannot be developed precisely because those jobs do not yet exist (Lenaghan, 1995). Consequently, education's role today is to prepare students as generalists (Carnevale, 1991a; Naisbitt, 1984) empowered with lifelong adaptability in order that they may prosper in the ill-defined society and job market of the future.

Based upon the proposed lifelong adaptability chain of components (see Figure 1), an aspect of lifelong adaptability is an understanding of and fluency in one's own culture, which may include items from other cultures as well, what Hirsch (1987) referred to as *cultural literacy*. This study examined respondent lifelong adaptability ratings of general school subjects from a cultural literacy perspective. Demography (family structure, parental age, parental educational level, and student gender) was also considered. The current research evolved from a need to identify effective curricular revision to promote lifelong adaptability. Additionally, it was hoped that a commonly acceptable approach to successful curricular revision would emerge from respondent consensus on the Lifelong Adaptability Survey.

CHAPTER II

REVIEW OF THE LITERATURE

The Future

By definition, the future cannot be historically studied because it has yet to occur. Although "speculation into the future is always a risky business" (McInerney, 1987, p. 25), this has not prevented an organization such as the World Future Society from studying "alternative futures" (Marien, 1983, p. 46). Writing from a European perspective, Hellawell (1996) offered a warning against predicting the future:

> There is no way we can accurately predict what the future has in store for us. We can hazard intelligent guesses based on current trends, but we have to recognise that these are still only guesses which could easily be rendered valueless by, for example, some new technological development as yet unknown. It is salutary in this context to remember those prophets of urban doom at the end of the nineteenth century in London who argued that the rapid increase in horse-drawn traffic on the streets of the capital would soon lead to such an accumulation of horse manure as to make those streets unnavigable. The pace of technological innovation and dissemination is now such that it is estimated that two-thirds of the technology that Europe will have by the year 2000 has not yet been invented. The art of prophecy is, therefore, becoming ever more difficult. (p. 70)

Notwithstanding this difficulty, the future can be reasonably anticipated *by extensive research* on trends already evident in the present (Naisbitt, 1984; Naisbitt et al., 1990). As Weller (1983) wrote, "our rapidly paced society requires greater emphasis on early identification of long-term trends" (p. 51). This approach allows a degree of planning for an otherwise amorphous, ill-defined tomorrow.

Trends of Change

The future's unpredictability seems to be increased dynamically today by history's most unstable rate of change, whether it be geopolitical, economic, societal, or technological. Toffler (1970) foresaw this unbridled change and labeled its negative impact *future shock* for those unprepared for it. He indicated, "Change is essential to man. . . . Change is life itself. But change rampant, change unguided and unrestrained, accelerated change overwhelming not only man's physical defenses but his decisional processes—such change is the enemy of life" (p. 486). For today's students, change may become their most formidable future obstacle especially within their workplaces. Concerned about vocational education, C. R. Finch and Crunkilton (1985) queried, "What will the work environment of the future be like? No one knows. But we do know, almost for certain, that it will be characterized by rapid, continuous change" (p. 31).

Stump (1986) speculated that "a large percentage of the jobs people will be doing 25 years from now probably haven't even been thought of" (p. 348). Supplying more concrete statistics, C. A. Couch (1991) estimated that "70 percent of the jobs in the year 2000 have not been created yet" (p. 21) and expected that "by the year 2000, most workers will need to change their career direction at least five different times in their lives as older jobs become outdated" (p. 20). Specifically, "new jobs requiring new or different training will occur at the rate of two jobs per week" (p. 20). Boyett et al. (1991) wrote that future jobs will offer employment *insecurity* and that "the average American will most likely work in ten or more different types of jobs and at least five different companies before he or she retires" (p. 3). Gerber et al. (1989) supported this workplace trend with historical data:

> Ten different jobs in a person's working life is now the average, and it's typical to have gone through four of them by one's mid-twenties, according to economist Robert E. Hall. But the generation of 1946-1964 may revise this pattern. The rate of change in the workplace is accelerating, making employment increasingly less stable. Baby boomers could hold a substantial percentage of their total positions after the age of 45. And the nature of those jobs could change so rapidly that the very word *career* may lose much of its meaning. (p. 92)

If this heightened change besets baby boomers, then how much more intense will be the change afflicting baby boomers' children and grandchildren, the students of today. But for those following the baby boomers, the stress of change in the workplace may be amplified by lack of preparation for that workplace. According to Carnevale (1991a), "the cohorts that follow the baby boom are much smaller and belong disproportionately to groups in which our developmental investments have been grossly insufficient" (p. 82).

Moreover, not only will workers hold more jobs in their working lifetimes, but they may also have fewer new jobs from which to choose. Citing Fullerton (1989), Carnevale (1991a) explained the cause of this trend. "American job growth was 2.3 million jobs per year in the 1970s. It is expected to decline to 1.5 million jobs per year in the last decade of this century principally because of the slowdown in population growth in the wake of the baby boom" (p. 81). Accordingly, Hellawell (1996) observed that employees "will need to be flexible and adaptable not only in one job, but between one job and the next" (p. 75). Writing on development of the whole person, a reaction to change, D. T. Hall and Mirvis (1995) argued that "an issue for women and men in midlife is how to learn continuously and be adaptable, after establishing an initial life structure that 'works' and yields psychological success" (p. 276).

Mentifacturing

Of concern to educators is not only rate of change but the nature of that change. Presaging changes in the contemporary workplace as it evolves into what they named *Workplace 2000*, Boyett et al. (1991) presented this depiction:

> Picture a 130 employee Kansas plant where worker output has increased 80 percent in just six years. Absenteeism is a mere 2 percent. Employee turnover is one percent.
>
> There are no time clocks. No supervisors. No job classifications. No definite work assignments.

> If something has to be moved with a fork-lift truck, no one yells to the fork-lift truck driver—because there isn't such a driver. Instead, anyone at hand hops onto the truck and gets the job done.
>
> There are no hourly workers. Everyone is salaried. In six years, the plant work force has grown by only 12 percent. Yet the workers produce as much as a plant with 33 percent more people.
>
> Everyone is involved in major decisions affecting the plant.
>
> The workers also participate in such matters as production scheduling, solving quality problems, evaluating performance and recommending new equipment. They undertake disciplinary actions. They even hire and train other workers.
>
> In fact, the plant's entire operation, top to bottom, is in the hands of "worker teams." What there is of old-style management, in the form of a general manager and his staff, now exists merely in a support role. They are there to assist the workers who, quite literally, run the plant.
>
> *Productivity*, September 1982

That description of a Kansas plant was written in 1982. It is a reality—a description of TRW's Oil Well Division at Lawrence, Kansas. It could be a description of the typical American workplace in the not too distant future. (pp. 1-2)

Toffler (1990) also remarked that "power is shifting in the workplace, and things will never be the same" (p. 205). "In part, the downsizing that occurred in the 1980s was made possible by a new generation of technology that is less expensive, more flexible, and enables employees at the lowest level of an organization to make critical decisions" (Boyett et al., 1991, p. 2). Enlisting examples from General Electric, Ford Australia, Chrysler-Mitsubishi Diamond-Star, and Mazda Motor Manufacturing, Toffler (1990) reported that "these increasingly commonplace accounts underscore the historic shift currently taking place from 'manufacture' to 'mentifacture'—the progressive replacement of muscle by mind in the wealth creation process" (p. 206).

Education's importance in the workplace of the future received extreme emphasis from Boyett et al. (1991):

> In the traditional American workplace, education was valued, but the illiterate could still find a place. The uneducated or undereducated could find a job. It might not be a good job, but at least it would be one. That will not be true in *Workplace 2000*. There will be no place for the functionally illiterate. In fact, there may be no place for anyone without at least some level of college education. (p. 276)

Comprehensive Adult Student Assessment System (1995) also acknowledged the need for workers "to perform at higher literacy levels" (p. xviii). Carnevale (1991a) argued that education has already altered the workplace and its rewards:

> Wage increases in the new economy are rationed with an increasingly uneven hand, resulting in a growing maldistribution of income in the United States. More now than ever, learning is the rationing hand that distributes earnings in the American economy. People with the most education and access to learning on the job are doing best; those with the least education and least access to learning on the job are doing worst. (p. 87)

Technology

It appears that educators must consider two questions in preparing students for an ever-changing future workplace: What will future jobs be like? What is the trend presenting itself today? An overarching trend across occupations can be identified in one word: technology. Focusing on a specific technological advancement, R. W. Smith (1995) forecast that "many—if not all—jobs in the future will require some knowledge of computers" (p. 45). Lenaghan (1995) added that "computers combined with communications technology are the major tools shaping and supporting the Information and Service Industries" (p. 6).

Like the jobs within which it operates, technology is also experiencing dizzying change. Interested in microcomputer competencies, Willis and Mayo (1988) voiced a concern related to this phenomenon of change in the workplace. They stated, "The technology of the workplace is changing so rapidly and diversely that it is difficult to assess changes that should be made in vocational curricula in a timely manner" (p. 215). Rapid and diverse technological innovation has tempted some futurists to adopt extreme perspectives probably because those perspectives offer stable, predictable visions of an unstable, unpredictable, anxiety-provoking future. Naisbitt (1984) cautioned against such extremism with "The gee-whiz futurists are always wrong because they believe technological innovation travels in a straight line. It doesn't. It weaves and bobs and lurches and sputters" (p. 37). This caution applies equally to extreme views of educational futurists who propose projects like the Minnesota Experimental City (MXC) as reported by Glines (1991):

> The MXC was planned for a community of 250,000 people, with waterless toilets, centralized/decentralized living, geodesic dome, electronic technology, people movers, and no cars. But most important, it was designed with no schools; schooling and education were replaced by learning—by new systems. Everyone was a teacher; everyone was a student. The city was to be the living learning laboratory. Learning was finally to become a life-long process. (pp. 2-3)

A less extreme, more realistic educational proposal for an unknown high-tech future can be constructed by carefully examining the dynamics of present-day technology.

Realistically, technology spawns specialization ultimately limited by technology. Toffler (1970) explained this paradox by stating that "specialization increases the number of different occupations. At the same time, technological innovation reduces the life expectancy of any given occupation" (p. 108). Toffler's (1970) explanation paralleled Hirsch's (1987) observation on change and specialized vocational education:

> The flaw in utilitarianism is its lack of utility for the modern world. Narrow vocational education, adjusted to the needs of the moment, is made ever more obsolete by changing technology. Vocations have multiplied beyond the abilities of the schools to accommodate them. What is required is education for change, not for static job competencies. (p. 126)

Additionally, Carnevale (1991a) rendered an insight concerning workers displaced by technology and other forces of change transforming the workplace:

> New technologies, the globalization of economic activity, and organizational changes will create good jobs for the majority, result in bad jobs for some, and take away jobs from a few. Moreover, the jobs created by technology, trade, and competitive changes almost never go to the people who have lost their jobs because of these forces. (p. 82)

Inevitably, a society with proliferating technology seems to possess the fuel for that technology. Coal ran the Industrial Age; information runs the Technological Age. In their discussion of office systems technology, T. Keller and Larosa (1983) expressed it well by stating "The utilization of microcomputer technology is pervasive in the American society. We, as a nation, have substantially changed the way we 'do work.' In two short decades we have evolved from an industrial society to an information society" (p. 16). Carnevale (1991b) confirmed this information-based trend in the workplace:

> Central to the new economy are flexible and information-based technologies. In fact, today's most important technology is our friend the computer. In its various disguises, this information-based technology raises our potential for higher productivity and quality. It provides sufficient flexibility to tailor goods and services to smaller markets and even to individual customers. (p. 2)

and

> Increasingly, information is becoming the basic raw material of economic processes and the end product of economic activity. This shift to information networks is evident in the large hierarchies of big business and the structures of the service and small-business sectors. (p. 3)

Highlighting the type of technology that will prove most valuable, Thurow (1992) indicated, "In the future sustainable competitive advantage will depend more on new process technologies and less on new product technologies" (p. 16). Furthermore, "new industries of the future such as biotechnology depend upon brainpower" (p. 16). "Brainpower," of course, is part of the developing information society, which can be documented directly by demonstrating an abrupt increase in information-fueled jobs as mentifacturing positions increase. But a more convincing case for the Information Age is established by simultaneously examining a precipitous decline in traditional industrial jobs as manufacturing positions decrease.

The Information Age

Stump (1986) observed that "the heavy industries—steel, coal, autos, textiles, and other goods manufacturers—are no longer the backbone of our economy.

They employed nearly four out of ten workers in the 1950s but only one out of four today" (p. 346). Citing Personick (1989), Carnevale (1991a) provided this explanation:

> The most noticeable trend in the kinds of jobs typical of the new economy will be a continuation in the shift toward service work. In the last decade of the century, manufacturing employment will decline by an estimated 300,000 jobs, and extractive jobs in agriculture and mining will decline by a similar number. In contrast, service jobs are expected to increase by almost 17 million. (p. 84)

This concurrent decline in agriculture and manufacturing jobs with an increase in service jobs was cleverly expressed by Naisbitt in 1984 with "Farmer, laborer, clerk: That's a brief history of the United States" (p. 5).

Toffler (1990) explicitly defined the manufacturing jobs situation:

> Moreover, the handwriting is clear: Because American population and the labor force are both likely to expand, and because many American manufacturers automated and reorganized in the 1980s, the shrinkage of factory employment relative to the total must continue. While the United States, according to some estimates, is likely to generate 10,000 new jobs a day for the next decade, few if any will be in the manufacturing sector. A similar process has been transforming the European and Japanese economies as well. (p. 70)

On an international level, referring to 1) the Soviet collapse, 2) the disunion of less developed countries, and 3) European and Japanese competition with the United States, Toffler (1990) contended that "all three of these epochal power shifts are closely linked to the decline of industrialism and the rise of the new knowledge-driven economy" (p. 392). Appropriately, he labeled "knowledge . . . [as] the 'K-Factor' in global power struggles" (p. 393). This characterization dovetails with Boyett et al.'s (1991) statement that "the most valuable commodity will be knowledge and the pulsating flow of ideas exchanging, interacting, and expanding" (p. 278).

Whether considering Toffler's (1990) "K-Factor" or other worldly elements, in a global economy the international marketplace inevitably impacts the national marketplace. Referring to the 1980s, Boyett et al. (1991) argued that "faced with accelerated global competition, it became evident that, with a few exceptions such as Nucor Steel, Lincoln Electric, and Wal-Mart for example, America wasn't good enough" (p. 8). Expressing America's need for change in a new future, Thurow (1992) argued, "In the next century the United States will be just one of a number of equal players playing a game where the rules increasingly will be written by others. Among the capitalist economies it will have to make the largest changes" (p. 17). R. W. Smith (1995) provided some specific career examples of America's need for change to compete in the international marketplace:

> As the result of a global economy, there are jobs needed internationally—jobs such as biotechnologists, lawyers, economists and software developers. They make up about one-fifth of the nation's workforce. Meanwhile, technological advances such as robots and automated teller machines are reducing the demand for low-skilled workers for assembly lines, bank tellering and other jobs and helping to keep down their wages. There is a growing demand at the same time for highly educated workers. (p. 51)

Moreover, potential contributors to a loss of American jobs in the international marketplace are two famous commerce agreements mentioned by Morici (1994):

> American trade policy is at sea. The Clinton administration has just fought a bruising battle on behalf of the North American Free Trade Agreement [NAFTA], and continues to pursue progress in the Uruguay Round of world trade negotiations. Meanwhile, it seeks a new relationship with Japan, and *the NAFTA experience portends a tough succession of battles with Congress over opening American markets to foreign competition and keeping them open* [italics added].
>
> As we embark on the post-cold war era, a less doctrinaire, more eclectic approach to trade at the White House and a more assertive Congress are understandable. Developments in three areas—the security challenges posed by the transition after the cold war, the nature of competition in technology-intensive industries, and *the seeming inability of the General Agreement on Tariffs and Trade (GATT), sponsor of the world trade talks, to manage the world trading system it did so much to create* [italics added]—require a fundamental rethinking of the goals and means of United States trade policy. (p. 14)

Conversely, K. Kelly (1994) acknowledged GATT's positive effect on many American businesses:

> The biggest victors are a broad range of industries where tariffs will plummet to near zero. For big manufacturers like Deere & Co. and medical device makers like Medtronic, Inc., tariffs in the industrial world, where 75 percent of world trade is concentrated, will disappear. Tariffs will also vanish in the construction equipment, furniture, whiskey, pharmaceutical, paper, and steel industries. The resulting upsurge in demand for U.S. products, says the Clinton administration, will produce 1.2 million new jobs by the year 2000. (p. 6)

It is noteworthy that some of the forecast trade increases, aligning with R. W. Smith's (1995) assessment of the international marketplace, are in higher-technology businesses, for instance, medical device makers and pharmaceutical companies.

In addition to GATT's positive influence, K. Kelly (1994) also considered the negative impact of GATT on American businesses:

> But not everyone is overjoyed. The U.S. movie industry wanted GATT to ban European quotas on U.S. programming. That didn't happen. . . . Drug companies failed to gain protection for their intellectual property rights in the third world for another ten years, which heightens worries that new products might be hijacked. And U.S. textile manufacturers worry that cheap imports could wipe out over 1 million jobs once tariffs are removed ten years hence. (p. 6)

Thurow (1992) considered the GATT-Bretton Woods system an obsolescence:

> Today's rules for the international economic game, the GATT (General Agreement on Tariffs and Trade)-Bretton Woods system, were written after World War II and built on the realities that then existed. . . . [But] the system that governed the world economy in the last half of the twentieth century will not be the system governing the world economy in the first half of the twenty-first century. A new system of quasi trading blocks employing managed trade will emerge. (pp. 15-16)

America's manufacturing future was best explained by Toffler (1990) in quoting his wife as she had elucidated the situation to the Reagan White House. In response to Chief of Staff Donald Regan's question "Aren't we going to be a great manufacturing power anymore?," Heidi Toffler had replied, "The United States will continue to be a great manufacturing power. There just won't be as high a percentage of people working in factories" (p. 69). This phenomenon was detailed by Carnevale (1991a):

> Indeed, manufacturing output continues to grow. The loss of jobs in basic industries can be understood, at least in part, as a result of competitive restructuring of jobs. Production workers are being displaced by a smaller number of technicians, who use more technology to produce vastly greater levels of output per worker. Meanwhile, manufacturing jobs in management and other service-oriented functions are growing. (p. 83)

It was concluded by the current researcher that due to the confluence of three trends—a decreasing percentage of traditional industrial jobs, possibly negative influences of NAFTA and GATT on American businesses, and occupational changes inherent in the Information Age—existing, present jobs will be eliminated or, more likely, altered as currently nonexistent, future jobs will be created. If education seeks to prepare today's students for such an ill-defined future, then especially of concern in this lifelong adaptability study was the researcher's assumption that, with the decline of traditional industrial jobs, unprepared or underprepared workers will find themselves thrust into an unforgiving workplace of the Information Age where already "the rate at which new information renders previous information and technical skills obsolete is increasing all the time" (Hellawell, 1996, p. 72).

Stump (1986) indicated that "the biggest service will be in information—the collection, storage, analysis, and sharing of information" (p. 346). Quoting Birch, Naisbitt (1984) wrote of this industry-information interrelationship:

> MIT's David Birch has demonstrated that of the 19 million new jobs created in the United States during the 1970s—more than ever before in our history—only 5 percent were in manufacturing and only 11 percent in the goods-producing sector as a whole. Almost 90 percent, then—17 million new jobs—were not in the goods-producing sector. As Birch says, "We are working ourselves out of the manufacturing business and into the thinking business." (p. 8)

Pragmatic Intellectualism

It is reasonable to predict that the "thinking business" will require a quite different education from that of the "manufacturing business." The "manufacturing business" required more practical skills analogous to those investigated by Amato and Ochiltree (1986), who employed a sample of Australian students in research on life skills such as using a saw, washing dishes, babysitting, making a bed, hammering a nail, mowing a lawn, and using a telephone:

> The hypothesized association between life-skills competence and academic achievement was not supported: [life-skills] scores were not significantly associated with either children's reading scores or ratings of children's classroom standing. . . . It seems likely that a degree of intellectual ability is a necessary but not a sufficient condition for practical skills acquisition. (pp. 66-67)

Similarly, a different academic achievement level was necessitated by the practical skills of the "manufacturing business" than will be necessitated by the intellectual skills of the "thinking business." In contrast with the "manufacturing business," the "thinking business" by its very name will arguably be more intellectual and academic.

If so, the "thinking business" will require a more scholastically demanding education, and such an education will apparently become lifelong due to the rapid rate of change in America's "thinking" workplace:

> Dealing with the information explosion is another important challenge for the educator of the future. For many, particularly those in technical fields, a great deal of the information they have at graduation will be obsolete within a few years. The average college graduate will change jobs seven times and make three major career changes in a lifetime. "Lifelong learning," to update information and acquire new skills, will become the norm. (Burton, Garcia, Shofner, S. Cross, Alfers, S. Jones, Verrett, Shaw, & Hurt, 1982, p. 22)

The workplace equivalent of "lifelong learning," in other words, "learning on the job," and its requisite intellectualism gained support from J. E. Hunter (1986), who "reviewed the evidence of hundreds of studies showing that general cognitive ability has high validity predicting performance ratings and training success in all jobs" (p. 359) and demonstrated "that the main reason that general cognitive ability predicts job performance is because it predicts job knowledge. That is, general cognitive ability predicts the learning of the job" (p. 359). Additionally, "it would appear that most jobs do not build on specific aptitudes but rather build on general knowledge" (p. 360).

Referring to workers' technical skills, Illinois University Department of Vocational and Technical Education (1989) concluded that "there seems to be little doubt that being able to learn and adapt to change are essential skills for the workforce of the future" (p. 38). Again, Toffler (1970) preempted others with a similar opinion when he wrote that "for education the lesson is clear: its prime objective must be to increase the individual's 'cope-ability'—the speed and economy with which he [*sic*] can adapt to continual change" (p. 403).

The challenge for educators is to revise curricula in order to promote students' lifelong adaptability, especially in the workplace. An inherent difficulty of this challenge is the fact that today's students must be prepared for future jobs, many of which do not yet exist. The resulting educational question is simply this: How does education prepare today's students for unknown future occupations? The answer has been provided by employers themselves.

The Generalist

Referencing research on employee skills desired by employers, Boyett et al. (1991) offered this comment:

> Researchers assumed that most employers would list primarily technical skills, such as computer literacy. They were wrong. What employers wanted and said they needed most desperately were workers with a solid basic education plus relationship skills and skills in self-management. (p. 278)

Carnevale, Gainer, and Meltzer (1988) provided this perspective:

> Knowing how to learn is the most basic of all skills because it is the key that unlocks future success. Equipped with this skill, an individual can achieve competency in all other basic workplace skills from reading through leadership. Without this skill, learning is not as rapid nor as efficient and comprehensive. (pp. 8-9)

Furthermore, "learning is now a fact of life in the workplace" (p. 9). Later, Carnevale (1991a) updated that perspective:

> Learning skills are required in order to respond flexibly and quickly to technical and organizational change; make continuous improvements in quality, efficiency, and speed; and develop new applications for existing technologies, products, and services. (p. 111)

As Hellawell (1996) noted, "what is of crucial lasting value . . . is the ability to learn how to learn" (p. 73).

The National Commission on Excellence in Education (1982) observed, "*Employers' expectations* for those entering the white collar [i.e., 'thinking'] workforce from postsecondary education reflect a desire for *generalists, not specialists*" (p. 3). This finding was echoed by a statement from Naisbitt (1984), who agreed, "We are moving from the specialist who is soon obsolete to the generalist who can adapt" (p. 32). Boyett et al. (1991) surmised that "breadth of knowledge concerning business operations and customer needs is likely to be more highly valued than depth of knowledge in a narrowly defined specialty" (p. 4). Carnevale (1991a) recognized this generalist trend:

> The content of skill requirements is shifting from job-specific to more general capabilities, from "harder" concrete skills to "softer" more abstract skills, and from objective capabilities to more personal skills. Finally, skill requirements are beginning to converge as they become less job specific and are utilized in more fluid contexts. More and more of us spend our time at work doing the same sorts of things. (p. 101)

Likewise, Burton et al. (1982) hinted at this generalist inclination when they stated, "Balancing the need for increased specialization of knowledge and skills with the need for a holistic perspective of global issues and concerns is the greatest challenge for the college student of the future" (p. 21). In addition, "designing a curriculum that is relevant to our student's [*sic*] needs yet still distinguishable as 'general education' is more difficult today" (p. 20). Outlining M. J. Adler's *The Paideia Proposal: An Educational Manifesto*, Delattre (1984) enumerated some of its "central claims and prescriptions" including these three:

> 1. Schooling must prepare all young people for continuation of learning in adult life, during their working years and beyond.
> 2. It must therefore impart to them skills of learning and give to them the stimulation that will motivate them to keep their minds actively engaged in learning.
> 3. To impart these skills, education for all (grades one through twelve) must be general and liberal, not specialized or occupational. (p. 144)

Others who study the American workplace have also supplied the educational direction for achieving such a "general and liberal" education to equip today's students for an ill-defined future in the emerging Communication Age.

The Emerging Communication Age

"Basic workplace skills" for "the new economy" were catalogued by Carnevale (1991a):

> The Academic Basics: Reading, Writing, and Computation
> Learning to Learn
> Communication: Speaking and Listening
> Adaptability: Problem Solving and Creative Thinking
> Developmental Skills: Self Esteem, Goal Setting, Motivation, and Personal and Career Development
> Group Effectiveness: Interpersonal Skills, Negotiation, and Teamwork
> Influencing Skills: Organizational Effectiveness and Leadership Skills (Table of Contents)

Illinois University Department of Vocational and Technical Education (1989) stated, "The ability to communicate effectively was, and still is, essential for productive employment" (p. 35). Stump (1986) included a "List of Intellectual/Aptitudinal Skills" published by The Center for Vocational Education (Sjogren, 1977) which listed, among other job skills, "communicating," "an ability to relate common knowledge or transfer experiences," and "understanding others" as "occupationally transferable skills and characteristics" (p. 351). Among other specific skills under "Communications," appeared "[derive] meaning from context," "interpret oral communication," and "speak fluently" (p. 360). These lists were qualified by "Much of information referred to . . . was collected before the current explosion in the use of microcomputers and robots in many of our workplaces. This accounts for the absence of references to them in these reports" (Stump, 1986, p. 350). Such a qualification indicated that even before widespread computerization and its attendant reliance on language, the significance of communication had been recognized.

Carnevale (1991b) remarked, "As work becomes more abstract, higher-order conceptual skills become more important, as do communication skills for making the abstract more concrete" (p. 158). Indeed, during an interview by Betts (1994), David Thornburg identified an overarching trend in which "the Information Age is now over, you know. It was nice while it lasted. We're entering a new Communication Age" (p. 20). A reliance on communication introduces the importance of language in the generalist's education.

Based on an observable trend already presenting itself, Naisbitt et al. (1990) supplied ample evidence of *the* future global language:

> English is becoming the world's first truly universal language. It is the native language of some 400 million people in twelve countries. . . . Another 400 million speak English as a second language. And several hundred million more have some knowledge of English, which has official or semiofficial status in some sixty countries. . . . And its usage is growing at an extraordinary pace.
>
> Today there are about 1 billion English speakers in the world. By the year 2000 that figure is likely to exceed 1.5 billion. (p. 139)

These statistics do not limit English to purely interpersonal communication. It has already become the dominant language of high technology. "More than 80 percent of all information stored in the more than 100 million computers around the world is in English" (Naisbitt et al., 1990, p. 141). In other words, both people and computers of the future will almost certainly talk to each other in English. This global proliferation of English seems likely to accelerate due to the advent of the Worldwide Web, or Internet, and its singularly international influence. Fluency in English appears to be one of the wisest recommendations for promoting the generalist's lifelong adaptability in the international workplace of the future.

A solely mechanical knowledge of English, although, appears inadequate for lifelong adaptability within a multicultural global society relying heavily on the English language. For instance, in a study of collegiate intercultural communication curricula, S. A. Beebe and Biggers (1984) asked respondents "to rate the amount of coverage given to various topics in their course. . . . Cultural differences and their effect on communication was most important" (p. 14). Samovar, Porter, and Jain (1981) noted that "language and culture are inseparable" (p. 141). Flewelling (1985) indicated, "Culture cannot be separated from language itself" (p. 18).

Concerning foreign language instruction, Omaggio and Boylan (1984) listed culture as a content area. Specifically pertaining to French as a second language, Alberta Department of Education (1986) included the component of culture. Regarding the printed language, Scholes (1985) considered cultural codes to be one of two codes involved in reading. Moreover, the statement "Language itself is the basis of all cultural coding" (p. 27) expressed the interrelationship of language and culture. An interesting study by D. Adams et al. (1994), which involved Puerto Rican and Mexican-American students, yielded a perplexing finding in that "for the Mexican-American students . . . , better English proficiency meant lower academic performance" (p. 11). The authors continued, "That proficiency in English should have a negative effect is inexplicable, except if the language variable is actually a mask for some other factor which would explain this finding more logically" (p. 11). The present researcher speculated that, due to their heritage, the Mexican-American students' enigma may have been an artifact of those students' possessing a solely mechanical knowledge of English without the benefit of the cultural aspects of English, thereby limiting their adaptability in an academic setting.

It would appear that the generalist must understand not only a society's language but also its culture inherent in that language, "the frequency on which culture is transmitted" (Naisbitt et al., 1990, p. 139). This aligns with a finding by Magnusson (1989), who reported that parents' language dialect was the major predictor of children's cultural identity. Perhaps this cultural component is what Goodlad (1973) intended to encompass with his definition of a highly nontraditional "school" of the future when he wrote, "It will be the place where human beings come together not for the formalities of learning subject matter but for the higher literacy going far beyond reading, writing, and arithmetic" (p. 220). In discussing preparation for the future, Mackett and Steele (1982) presented a "Rubik's cube analogy" (p. 4) in which "society, culture, and education are unfailingly linked, the meat and glue of human life" (p. 5).

For successful adaptation in a future American society, especially within the workplace, it seems that the generalist must become fluent in the cultural nuances and allusions of the English language. An informal version of cultural fluency is currently offered to speakers of American English as a second language:

> Foreign diplomats in Washington, D.C., can take a course in colloquial American English at the Smithsonian Resident Associate Program. Where else would they learn 'Let's do lunch,' 'networking,' and 'knee-jerk' among the 1,000 Americanisms taught? (Naisbitt et al., 1990, p. 144)

A formal version of such cultural fluency, capable of being taught through America's educational system, was popularized by Hirsch (1987) as *cultural literacy*. C. E. Finn and Ravitch (1988) indicated that "although social status, wealth, business acumen, public office—or whatever other gauge of success one chooses—may not follow automatically from being 'culturally literate,' one's prospects of success are certainly enhanced by it" (p. 563).

Cultural Literacy

By the late 1980s, the literacy movement had surfaced in contemporary education. It included geographic literacy (Grosvenor, 1987); technological literacy (Pucel, 1992); office literacy (Kallaus, 1987); scientific literacy (J. R. Cannon et al., 1992); visual literacy, political literacy, statistical literacy, computer literacy, social literacy, historical literacy, scientific literacy (Kintgen, 1988); international literacy (Raby, 1995); ethical literacy, social-political literacy (Arizona State Department of Education, 1989); legal literacy (Bolton, 1989); workplace literacy (Forlizzi, 1989); chronological literacy (Friedrichs, 1989); demographic literacy, geological literacy (Brayfield, M. A. Adler, & Zablotsky, 1990); musical literacy (Levinson, 1990); technological literacy, economic literacy, and mathematical literacy (Tanner, 1990). Tanner (1990) considered the literacy movement harmful because "in the multitude of literacies the curriculum becomes further fragmented as each literacy fights for its rightful priority in the curriculum" (p. 196). Due to its multidisciplinary nature, there exists one literacy which could perhaps integrate, rather than fragment, the curriculum. That literacy is cultural literacy.

History

Western tradition. Historically, the transmission of a society's adult culture to its young involved various disciplines including religion, philosophy, mathematics, and science. According to Hirsch (1987), "effective communications require shared culture, and . . . shared culture requires transmission of specific information to children" (p. xvii).

Societies have done this for centuries. For instance, American education's Western tradition exemplifies Western society's deliberate transmission of adult culture to its young. That tradition began in ancient Greece and Rome with students sitting at the feet of the masters, continued through European ecclesiastical education with the Roman Catholic Church responsible for schooling Europe's young, and surfaced eventually in colonial America with the founding of Harvard College and the establishment of local school districts so that parents could exercise control over the transmission of adult culture to their children. For centuries, this Western educational tradition was transmitting what is today termed *cultural literacy* although the term itself would not be coined until the second half of the 20th century. Nonetheless, research on this yet unnamed cultural literacy was being conducted by the early 1900s.

Carleton Washburne. Hepburn (1988) recounted, "When I first read about Hirsch's book, I certainly had a feeling of deja vu. . . . I have become particularly interested in the writings of Carleton Washburne, Superintendent of Schools of Winnetka, Illinois in the 1920s" (p. 3).

Washburne (1923) reported an extensive project in which 266 periodicals were searched for historical allusions; 1,447 ranked items were compiled; and historians were consulted to illustrate items like *Caesar.* This comprehensive effort was intended to create "a fact course to make children intelligent concerning commonly known persons, places, and events" (p. 101). Moreover, it was considered "a serious attempt to apply the essentials of scientific curriculum-building to the making of a basic fact course in history and geography" (p. 110).

Hepburn (1988) detailed Washburne's method of collecting culturally representative terms for use in the classroom:

> The content of the social studies curriculum would be based on the results of tabulations of the most frequently mentioned persons, places, and events in newspapers, news magazines, popular and literary periodicals, and major literary works. Committees of teachers and supervisors in his school district arduously examined the literature in 1905 - 1922 publications and tabulated 81,434 allusions. Requiring that the final list include only facts alluded to for at least six periodical years, the list was reduced to 61,616 facts—more than 13 times the size of Hirsch's list. (p. 4)

Additionally, "the way his teachers drew up the list estimated the probability that students would need that knowledge. . . . Washburne prepared a rationale for and developed a means of organizing the factual information into social studies curriculum materials" (p. 5).

Thus, historically, from its scholarly transmission to youth of ancient Greece through its empirical definition by Carleton Washburne in the 1920s, *cultural literacy* had not yet been coined to name what Westerners had for centuries been incorporating into their educational tradition.

H. B. Wilson. According to Paulsen and H. B. Wilson (1973), "the term 'cultural literacy' was coined by Dr. Wilson and used originally in an article he wrote for *Childhood Education*, published by The Association for Childhood Education International, in October, 1965" (p. 2).

H. B. Wilson (1965) had explained that "it is with these goals in mind, the development of cross-cultural understanding and cultural literacy, that the University of Arizona-Sonora Project in Education was initiated" (p. 89). With that article, he coined the term *cultural literacy* and offered the following definition:

> Cultural literacy requires:
> • an insight into one's culture which includes some understanding of one's own frustration and tolerance levels
> • the ability to work effectively with people culturally different and to understand the skills this requires. (p. 89)

Later, Paulsen et al. (1973) expanded H. B. Wilson's (1965) original definition by adding "Cultural literacy is being aware of your ethnicity and utilizing crosscultural communication skills" (p. 1). Still later, H. B. Wilson (1974) described his Cultural Literacy Laboratory "developed as part of the activities of the Multicultural Education Center in the College of Education at the University of Arizona" (p. 87):

> The Cultural Literacy Laboratory (a systematic series of individualized tests, learning experiences, source materials, communication methodologies and field tasks) is designed to combine the theoretical aspects of crosscultural communication and field work with practical application. The goal of the laboratory is to assist a person in a "helping profession" acquire skills and techniques for more effective crosscultural communication. The laboratory has been field tested and used with a variety of ethnic, national and racial groups in the United States southwest. (p. 86)

Within six years subsequent to H. B. Wilson's (1974) article describing the Cultural Literacy Laboratory, articles authored by E. D. Hirsch, Jr. began appearing and would eventually lead to his 1987 national best seller, *Cultural Literacy: What Every American Needs to Know.*

E. D. Hirsch, Jr. Hirsch (1980) reported experiments on good versus bad writing conducted at the University of Virginia in which a cultural literacy component had been revealed. From a composition perspective, he provided this conclusion:

> One is led to the conclusion that advancement in cultural literacy is a firm pre-requisite for advancement in the skill of writing. This implies, of course, that there can be no quick fix to our students' shortcomings in writing. No amount of training in the skills of composition, in the writing process, and in the basics will by themselves convey the additional cultural information that underlies advancement in general literacy. (p. 43)

At the Annual Meeting of the Modern Language Association of America, Hirsch (1981) explained a surprising revelation of his reading and writing research:

> We found, paradoxically, that our readers were not measuring the stylistic quality of our texts, but rather that our texts were measuring the cultural information of our readers. What had started out as a test of writing quality ended up as a test of cultural literacy. (p. 3)

Using the example more than once over the years, Hirsch (1984) described an experiment involving community college students in Richmond, Virginia in which students were asked to read "a comparison of the characters of Ulysses S. Grant and Robert E. Lee" (p. 1). Surprisingly, "our results showed that Grant and Lee were simply not familiar names to these young adults in the capital of the Confederacy" (p. 2). Consequently, "illiteracy then, is not merely a deficiency in reading and writing skills. It is also a deficiency in cultural information" (Hirsch, 1981, p. 10). Conversely, cultural literacy was assigned the following meaning:

> Let me suggest a purely structural definition: cultural literacy is that knowledge which enables a writer or reader to know what other writers and readers know within the literate culture. Thus, it is not only a knowledge of convention and vocabularies, it is also a knowledge *that* this information is widely shared by others. (p. 8)

Critical to his theory of cultural literacy was Hirsch's concept that culture and literacy are inextricably interrelated. Hirsch (1985a) argued that "no modern society can think of becoming a classless society except on the basis of universal literacy" (p. 8) and that culture is inseparable from literacy:

> When the national languages were fixed in the eighteenth century, some of the cultural baggage that went with each language also became fixed. The two elements, language and cultural baggage, cannot be disentangled. If one believes in literacy, one must also believe in *cultural* literacy. (p. 13)

Hirsch (1985a) went so far as to state that the verbal *Scholastic Aptitude Test (SAT)* "is chiefly a vocabulary test, which, except for its omission of proper names and other concrete information, constitutes a test of cultural literacy" (p. 11). Pentony (1992) argued that "Hirsch's correlation of .82 [of the *Cultural Literacy Test*] with Verbal SAT is a potential problem—if the relation is this high, maybe Hirsch is just measuring verbal aptitude in a different way" (p. 968). Or as Hirsch (1985a) would suggest, perhaps the reverse is true and the verbal *SAT* is actually a test of cultural literacy.

To add some historical depth and perhaps historical credibility to cultural literacy, Hirsch (1984) cited Dr. Samuel Johnson in defense of his theory:

> Back in the 18th century, when mass literacy was beginning to be a reality in Great Britain, Dr. Johnson invoked a personage whom he called "the common reader" as the possessor of the background knowledge that a writer can tacitly assume readers in the larger culture to have. Similarly, in present day America, the common reader needs to have what I am calling "cultural literacy," in order to read general materials with understanding. (p. 2)

"The common reader's" necessary background knowledge "is neither detailed nor expert information, though it is accurate in its outlines" (Hirsch, 1984, p. 6), and "readers need to share a cloudy but, on the whole, true sense of the *realities* that are being referred to in a piece of writing" (p. 6). Empirically stated, Hirsch (1983) explained that "what we discovered was that good writing makes very little difference when the subject is unfamiliar" (p. 163). His insistence on the existence of a "common reader" possessing common background knowledge inherent in a national language was bolstered by the work of reading researchers who "showed that to read a text with understanding one needs to have the background knowledge that the author has tacitly assumed the reader to have" (Hirsch, 1985a, p. 10). Hirsch (1986) stated more explicitly, "All knowledgeable reading researchers agree that a higher level of national literacy will come only through a higher level of nationally shared information" (p. 2).

By 1983, Hirsch had developed a thoughtful, empirically based concept of cultural literacy. The prickly question remained regarding identification of the specific information which culturally literate individuals share. It seemed that Hirsch (1983) was reluctant to provide a list of cultural literacy items when he explained, "Although I have argued that a literate society depends upon shared information, I have said little about what that information should be. That is chiefly a political question" (p. 167). Furthermore, Hirsch (1981) was of the opinion that "we cannot teach linguistic literacy well until we take explicit, political account of the concept of cultural literacy, and make it an explicit goal of our teaching" (p. 9), but "that is a politically difficult move, of course—and a dangerous move because it smacks of a ministry of culture" (p. 9). Later, Hirsch (1984) appeared more willing to engage in an effort to define cultural literacy items because their imposition on readers occurs nonetheless in a literate society:

> So, although we Americans object to pronouncements from on high about what we should know, writers and other people in influential positions necessarily assume that there is a body of information which literate people do know. And this creates a kind of *silent* dictating from on high about the things adults should know in order to be truly literate. (p. 5)

Ultimately, Hirsch (1987) did provide a controversial list of roughly 5,000 cultural literacy items. The list was somewhat revised between the 1987 hardcover edition and the Hirsch (1987) paperback edition of 1988, containing the 1987 text and a 1988 preface, with a consequent gain of 343 list items and a consequent loss of about 25 list items (Hirsch, 1987). Therefore, comments by advocates and critics may be the result of their reading either edition or both editions of the list. Cultural literacy, although, is not as demanding or intimidating as such a 5000-item list may suggest. Hirsch (1985b) offered rather lenient parameters for cultural literacy:

> Even if you don't know who George Washington was but know most of things that literate Americans know, you would still qualify as being a highly literate person. You would still understand others and could make yourself understood on almost any subject. But not to know *half* of the things that other literate people generally know would constitute a serious deficiency in high school graduates' background knowledge. . . . They could not participate fully in the nation's cultural and political life. (p. 47)

Moreover, Hirsch (1985b) added, "I do wish to divulge a well-kept secret: the background information of literate people is usually sketchy and vague. Our students should know this, and not be disheartened by the sheer numbers of things literate people know" (p. 48).

Notwithstanding Hirsch's (1985b) rather lenient parameters for cultural literacy, Stallings and Monaco (1994), in a cultural literacy study at "a large, urban, publically [*sic*] supported university, located in a major southeastern city" (p. 1), concluded that "insofar as this sample is representative, the data suggest that the cultural literacy of professors of education is below the level Hirsch expects of high school graduates" (p. 2). In a study of 144 Wake Forest University School of Law incoming first-year students, Vance et al. (1992) wrote, "These findings tell us—and this is Hirsch's main point—that our students come to law school without having learned enough factual information about our culture. Probably they still do not know enough when they graduate [from law school]" (p. 238).

Regarding the educational question of how one is to become culturally literate, Hirsch (1985b) cautioned that "in literature we cannot possibly teach in a core curriculum all the literary works that literate people know about and vaguely refer to" (p. 48). More directly, Hirsch (1986) insisted, "The common background knowledge required for literacy does not depend on specific texts" (p. 1) and "to be culturally literate, one does not need to know any specific literary texts, though one does need to know a few facts about some of them" (p. 1). Simply stated, "the needed information in cultural literacy can be conveyed in many different ways by many different texts" (p. 2).

Even his early writing on cultural literacy exhibited a less than extreme cultural or educational conservatism as evidenced by Hirsch's (1980) remark that "cultural literacy implies, does it not, teaching shared knowledge about ourselves, our history and our world, our laws, our political, economic, and social arrangements, our classical texts from a great many domains including TV, the movies, and literature" (p. 45). Hirsch (1985b) unequivocally delineated his personal, educationally moderate approach to cultural literacy:

> For my own part . . ., I would be content to trash *Silas Marner* and abandon the required reading of Burns and Chaucer to graduate students. I have no interest in encouraging every ninth grader to read the same literary works as every other ninth grader. That will bore everyone. (p. 49)

His educational approach to cultural literacy focusing on the early grades, he suggested that "much of the background information that literate people share could probably be best learned before high school, when students are eager to accumulate superficial information, and can easily absorb it forever" (p. 49). More precisely, Hirsch (1988f) specified that "to change the cycle of illiteracy that debars disadvantaged children from high literacy, we need to impart enough literate information from preschool through third grade to ensure continued progress in literacy on the part of all our children" (p. 63). This educational focus on the early grades foreshadowed eventual publication of seven volumes, *The Core Knowledge Series (1991-96)*, edited by Hirsch and ranging from *What Your Kindergartner Needs to Know* through *What Your Sixth Grader Needs to Know* (Hirsch, 1996).

The cultural literacy gospel. In 1987, Hirsch's longstanding cultural literacy gospel found believers and nonbelievers with his publication of *Cultural Literacy: What Every American Needs to Know.* Basically, the book was an expanded compilation of his previous research and theorizing. In preface, Hirsch (1987) presented this perspective on cultural literacy:

> To be culturally literate is to possess the basic information needed to thrive in the modern world. The breadth of that information is great, extending over the major domains of human activity from sports to science. It is by no means confined to "culture" narrowly understood as an acquaintance with the arts. Nor is it confined to one social class. Quite the contrary. Cultural literacy constitutes the only sure avenue of opportunity for disadvantaged children, the only reliable way of combating the social determinism that now condemns them to remain in the same social and educational condition as their parents. (p. xiii)

Cultural illiteracy "has occurred not because our teachers are inept but chiefly because they are compelled to teach a fragmented curriculum based on faulty educational theories" (p. xiii). According to Hirsch (1987), although Plato, Rousseau, and Dewey were not members of a single educational school of thought, all three educators were regardless co-contributors to "faulty educational theories":

> Plato rightly believed that it is natural for children to learn an adult culture, but too confidently assumed that philosophy could devise the one best culture. (Nonetheless, we should concede to Plato that within our culture we have an obligation to choose and promote our best traditions.) On the other side, Rousseau and Dewey wrongly believed that adult culture is "unnatural" to young children. Rousseau, Dewey, and their present-day disciples have not shown an adequate appreciation of the need for transmission of specific cultural information. (p. xvi)

Hirsch (1987) described the "school curriculum as consisting of two complementary parts, which might be called the extensive curriculum and the intensive curriculum" (p. 127). He explained that "the content of the extensive curriculum is traditional literate knowledge, the information, attitudes, and assumptions that literate Americans share—cultural literacy" (p. 127), whereas "the intensive curriculum . . . ensures that individual students, teachers, and schools can work intensively with materials that are appropriate for their diverse temperaments and aims" (p. 128). Neither the extensive curriculum nor the intensive curriculum requires "imposing an arbitrary core curriculum" (p. 128). For example, "a common extensive curriculum would ensure that students have *some* information about *Romeo and Juliet*, but in their intensive curriculum they might study *The Tempest* or *Twelfth Night* in detail" (p. 128).

To illustrate the extensive curriculum's possible content, Hirsch (1987) appended a politically controversial list of approximately 5,000 cultural literacy items, which he had appeared reluctant to supply in the early days of his cultural literacy proposal (Hirsch, 1981). The list, entitled "What Literate Americans Know"

(Hirsch, 1987, pp. 152-215) included, but was not limited to, items such as "1066" (p. 152); "1861-1865" (p. 152); "aorta" (p. 154); "balance of power" (p. 156); "C'est la vie." (p. 161); "direct object" (p. 167); "Forgive them, for they know not what they do." (p. 172); "I Have a Dream (speech)" (p. 179); "John Doe" (p. 181); "Lancelot, Sir" (p. 183); "M*A*S*H (title)" (p. 186); "Pittsburgh, PA" (p. 196); "Renoir, Pierre Auguste" (p. 200); "Ruth, Babe" (p. 202); "strange bedfellows" (p. 206); "To be, or not to be: that is the question." (p. 209); "Vietnam War" (p. 212); "Watergate" (p. 213); "yuppies" (p. 215); and "Zurich" (p. 215).

As Hirsch (1987) noted, cultural literacy spans "the major domains of human activity from sports to science" (p. xiii). Therefore, it seemed appropriate that cultural literacy's extensive, wide-ranging knowledge base would suggest a cultural literacy reference source such as *The Dictionary of Cultural Literacy: What Every American Needs to Know* (Hirsch, Kett, & Trefil, 1991).

Reviewing the 1987 best seller and its companion 1991 dictionary, Hoffman (1991) endorsed both books:

> Hirsch has made a truly magnificent contribution to education by concretizing the theoretical and practical impetus toward national literacy and then producing a dictionary that reveals the types of information necessary to function at a literate level in today's America. (p. 36)

But cultural literacy was not viewed by its chief disciple as a panacea for educational ills. Kober (1991) quoted interviewee Hirsch, who explained, "I think cultural literacy is a very important issue, but I don't for a minute pretend it's the whole story. It's not a sufficient reform, but it's a necessary reform" (p. 16).

Advocates, critics, and pundits likewise volunteered their thoughts on cultural literacy or on related areas of research and theorizing. Some specifically directed their comments toward Hirsch's (1987) *Cultural Literacy: What Every American Needs to*

Know. There was no lack of opinion on cultural literacy because, as McLeod (1990) commented, "Hirsch is viewed by some as a dangerous man, by others as a curricular savior" (p. 270).

The Hirschian Cultural Literacy Camp

The Hirschian cultural literacy camp consisted of apparently disparate factions which, over the years, collectively contributed a favorable backdrop to Hirsch's (1987) cultural literacy concept. For example, Hirsch (1987) relied on reading research to support his cultural literacy argument.

Background knowledge. Steffensen, Joag-dev, and R. C. Anderson (1979) recounted an experiment in which "Indians (natives of India) and American subjects were asked to read and recall two letters, one that described an Indian wedding and one that described an American wedding" (p. 12). They concluded that "the schemata embodying *background knowledge* [italics added] about the content of a discourse exert a profound influence on how well the discourse will be comprehended, learned, and remembered" (p. 19). Citing Johnston's (1984) reading research on prior knowledge, Meyer (1988) reported, "As early as eighth grade, students' knowledge of discipline-specific vocabulary accounts for nine per cent of the variance in their reading comprehension, and general vocabulary knowledge accounts for an additional four per cent" (p. 7). In a study of gender differences relative to foreign language reading comprehension, Bügel and Buunk (1996) wrote that "the effect of prior knowledge was large enough to account for the sex-based differences on many texts" (p. 27).

Paralleling Johnston's (1984) research was Hilton's (1989) assumption that "if individual teachers make efforts to ensure field-specific cultural literacy, the result will be Hirsch's general CULTURAL LITERACY" (p. 307). The Department of Education and Office of Educational Research and Improvement (1987) reiterated, "Students read more fluently and with greater understanding if they have knowledge of the world and their culture, past and present" (p. 71). Additionally, "such knowledge and understanding is called cultural literacy" (p. 71). C. E. Finn et al. (1988) acknowledged, "Good teachers have long sensed that background knowledge is vital if readers and listeners are to comprehend what they read and hear" (p. 559). D. Zahler and K. A. Zahler (1988) noted, "It has long been clear to reading researchers that competent reading depends on background knowledge as well as ability to decode print. Jeanne Chall's recent work [i.e., *Stages of Reading Development*] delineates five levels of literacy. . . . Each stage entails a level of background or world knowledge" (p. ix). Moreover, concerning curriculum development, "the notion that a common background knowledge exists is the rationale behind the development of any school curriculum. Controversy has always surrounded the building of core curricula, since few people can agree on what that common knowledge should be" (p. ix).

In a study of background knowledge among remedial-reading college freshmen, English-as-a-second-language (ESL) college freshmen, and English 1 nonremedial-composition college freshmen, Drabin-Partenio and Maloney (1982) reported, "The results indicated that while ESL and remedial groups did not differ from each other in the knowledge surveyed, both were significantly different from the English 1 group" (p. 432). Later, in similar research on Hirschian cultural literacy among ESL college students, developmental-reading college students, and nondevelopmental college students, Longman and Atkinson (1990) produced comparable but not identical findings:

> The first hypothesis specified that the scores of the nondevelopmental group would be significantly higher than scores of either the ESL or developmental groups on the total and subtest scores of the cultural literacy survey. This hypothesis was substantiated, except in social studies where ESL students did not significantly differ from nondevelopmental students. The second hypothesis held that there would be no significant differences between ESL and developmental groups on the total and subtest scores of the cultural literacy survey. This hypothesis was substantiated

> except for social studies where ESL students had significantly higher scores than developmental students. The third hypothesis stated there would be no significant differences between the nondevelopmental and developmental groups on the level of academic preparation. This hypothesis was substantiated in four of the subject areas (English, social studies, foreign language, computer science); however, preparation in math and natural science was significantly higher for the nondevelopmental group. (p. 39)

The current researcher speculated that the unhypothesized strong performance of ESL students on social studies cultural literacy items may have been precipitated by ESL students' possibly greater personal interest in learning the sociocultural aspects of English, an unfamiliar second language for ESL students, whereas the developmental-reading students perhaps possessed a less active interest in learning the sociocultural aspects of English, a problematic native language for poor readers. Consequently, the ESL students may have been more avid readers and may have thereby increased their cultural literacy. This speculation would align with a finding by California State University (1990) in which high-volume reading substantially improved the cultural literacy of ESL students.

Hirsch's (1987) concept of cultural literacy found support from various others. Regarding basic skills students, Bertch (1984) contended, "Their success may be jeopardized not by lack of basic skills but by the lack of a more general literacy" (p. 1). Aligning with Bertch (1984), Bojar (1986) stated that "ignoring the problem—ignoring the all-important cultural component in what we call literacy—only ensures that remedial students will never become independent readers of college-level materials or, for that matter, independent readers of the daily newspaper" (p. 120). Furthermore, "they [i.e., remedial students] simply lack the necessary background information" (pp. 114-115). Byrne (1989) reported an experimental cultural literacy course for ninth graders in Brooklyn, New York's John Dewey High School:

> At John Dewey High School, the experimental CL [cultural literacy] class set

> up in February 1988 had only positive results. . . . Judged by their own statements and by the witness of their post-CL teachers, they now understand more of their reading material than do other ninth graders. They surprise many teachers with their knowledge of history, literature, and classical allusions. Most important, they have all stayed in school. Not one of the CL students has wanted to leave school, and all indicated that they were glad they participated in the experiment.
>
> On March 15, in the halls of John Dewey High School, a group of CL students saluted their teachers by shouting, 'Beware the Ides of March!' Other students stood by, puzzled. (p. 291)

Focusing on incoming college freshmen, Fordyce (1989) reasoned, "Hirsch's work is important because it sets forth the basic concepts which college teachers assume all American students should know by the time they enter our [collegiate] institutions" (p. 3) and suggested remedial cultural literacy instruction for those students found to be lacking. Unsurprisingly, Farley and Mikulecky (1988) "found that international students enrolled at a major American university have significantly less background knowledge of American culture than do American college students" (p. 14) and that "this difference in cultural background knowledge, while expected, suggests that even international students who are highly competent in English may have difficulty reading texts which contain references to American culture" (p. 14). Troiano and Draus (1990) made the following discovery at Charles County Community College:

> Students in our developmental [composition] classes could learn to write well enough about personal topics, but because they did not seem to share the general knowledge and culture which predominated in academic circles, they could not adequately evaluate their audience, understand their purpose, define appropriate topics, or choose adequate evidence when asked to do so in the context of an academic course. (p. 3)

Again at the postsecondary level, M. Gross, R. Hess, and Salamon (1984) considered one attribute of bachelor degree holders to be a knowledge of "human thought and culture" (p. 10). Geckle (1982) thought "that a comprehensive exit examination should be required of every English major in his or her senior year in college" (p. 8) and that "we should *expect* every student to have a certain core of information—literary, historical, biographical, as well as technical—when he or she graduates" (p. 8).

The pre-Core Knowledge Movement. Other educators had already subscribed to a cultural literacy initiative prior to Hirsch's (1987) best seller. Strong, Silver, and R. Hanson (1985) included cultural literacy as one of their "five principal goals of education" (p. 11). Likewise, W. J. Bennett (1986) maintained that "a principal function of elementary school must be to introduce children to the 'common knowledge' of our shared culture" (p. 14). Boyer (1983) wrote, "A core of common learning is essential" (p. 302). Considering children and grandchildren of their generation, C. E. Finn et al. (1988) concluded that "without the illumination that history and literature shed on the culture they are heir to. . . . they will be unable to communicate with others because they will lack a foundation of shared knowledge and common points of reference" (p. 564).

Before Hirsch's (1987) publication, a conservative educational trend had presented itself. For example, Hadeed (1984) lodged the following complaint:

> It is not that modern textbooks are without information; rather it's that the information is carefully selected and presented to create attitudes and impressions instead of systematically building toward a foundation of knowledge. The result is a widening gap in cultural literacy paralleled with an increasingly socialist mindset. (p. 114)

Writing about Winthrop College, Hawisher (1985) reported that "at least sixty semester hours of liberal arts courses with a 2.5 G.P.R." (p. 8) were established as one criterion for "formal admission in the teacher education program" (p. 8). Pertaining to St. Petersburg Junior College, Holladay (1986) wrote, "We must ensure that all our students receive a liberal arts foundation for education and for life" (p. 8). Fleischauer (1984) went so far as to encourage those educated in the liberal arts to assist others in discovering the truth, for this is their social responsibility. Referring to the teaching of creativity, Hatcher (1984) suggested, "Traditional learning in the liberal arts and highly developed critical abilities are the handmaidens of creativity" (p. 115). Penney and See (1986) explained "the New Liberal Arts" ("Introduction," p. 1) as "incorporation of the implications of science and technology developments into a standard liberal arts core" ("Introduction," p. 1).

In the year of Hirsch's (1987) national best seller *Cultural Literacy: What Every American Needs to Know*, a general liberal arts campaign joined the Hirschian cultural literacy camp. This alliance was not surprising in light of Hirsch's (1991b) explanation that *"80 percent of literate culture has been in use for more than a hundred years!* " (p. xiv). For instance, Ravitch (1987) situated herself with the conservatives:

> Cultural literacy is the background knowledge that a literate person has available to him [*sic*] as he [*sic*] goes through daily life. Cultural literacy is a fluid concept, dependent on time and place. . . . A great deal of the background knowledge that most adults take for granted—knowledge of myths, legends, fairy tales, tall tales, historical events and persons, folktales and stories, heroes and villains—was once learned in the early grades. Except in elite private schools and the homes of highly motivated parents, children are no longer reading or hearing the stories that are deeply woven into Western literature and history. They are more likely to read about Mr. T than about Martin Luther King, Jr., more likely to hear about Madonna than about Madame Curie, more likely to celebrate the exploits of Rambo than those of George Washington and Thomas Jefferson. (p. 354)

In 1987, a champion of the liberal arts, Allan Bloom, published his own national best seller, an essay entitled *The Closing of the American Mind: How Higher Education Has Failed Democracy and Impoverished the Souls of Today's Students*. A. Bloom (1987) recommended "the good old Great Books approach, in which a liberal education means reading certain generally recognized classic texts" (p. 344). This "Great Books" approach to education had been popularized by Mortimer Adler and Robert Maynard Hutchins of the University of Chicago. A. Bloom (1987) eloquently expressed his educational conservatism:

> We are like ignorant shepherds living on a site where great civilizations once flourished. The shepherds play with the fragments that pop up to the surface, having no notion of the beautiful structures of which they were once a part. All that is necessary is a careful excavation to provide them with life-enhancing models. We need history, not to tell us what happened, or to explain the past, but to make the past alive so that it can explain us and make a future possible. This is our educational crisis and opportunity. (pp. 239-240)

Support. Through discussion of diverse topics, some researchers or theorists offered their passing approval of the concept of cultural literacy while others were more fervently supportive. Leeson (1987) believed "the . . . position developed by E. D. Hirsch represents a middle ground, not pressing for especially high standards or promising that literacy will cure all ills" (pp. 58-59).

Patrick (1988b), in pondering William Bennett's mythical James Madison High School, offered this endorsement of cultural literacy:

> Cultural literacy is a characteristic of enduring civilizations and of thriving individuals in the civilization, who are enabled to succeed through mastery of the core ideas and skills of the civilization. Americans who lack cultural literacy are critically handicapped, as is the culture which may not survive a generation that fails to know it and value it. (p. 14)

Similarly, Purves (1988) asserted that "to be a member of a culture, one must possess a fair amount of knowledge, some of it tacit, concerning the culture: its rules, its rituals, its mores, its heroes, gods, and demigods. This knowledge lies at the heart of cultural literacy" (p. 3). Relating shared knowledge to government, T. H. O'Connor (1988) was convinced that "our unique Constitutional form of government . . . depends to a great extent upon this commonly shared knowledge" (p. 19).

Concerning segregation of curricular content from process, Estes (1988) made this statement:

> I will say again, I am in complete agreement with Hirsch, but I'll go further. I think it's worse than he thinks. The problem is not that curricula contain too much content and not enough process, or vice-versa; rather, because content and process are inseparable, to isolate one from the other is to sacrifice both. (p. 85)

In addition, Estes (1988) qualified, "I am not saying here that the items on Hirsch's list are useless, but I am saying that they will be best learned in a context of usefulness and meaningfulness" (p. 86). Hirsch (1987) was in closer agreement with Estes (1988) than the latter thought. Writing about the extensive curriculum's content (i.e., cultural literacy), Hirsch (1987) explained, "Of course, this curriculum should be taught not just as a series of terms, or list of words, but as a vivid system of shared associations" (p. 127).

On the topic of a cultural information list, Otto (1988) suggested that "if we could nurture and transmit the substance of such a collection [of culturally shared information], we Americans could become more comfortable with our robust pluralism and less apprehensive about drifting into cultural anarchy" (p. 677). Expressing it more powerfully and in consideration of the social underclass, Jacobs (1988) simply reasoned, "From cultural literacy can flow power—economic power, social power, political power. It is not, therefore, to 'relevance' that America's underclass should turn for an escape from their predicament, but to 'knowledge'" (p. 62). Olson (1989) quoted Richard Rorty as agreeing with Hirsch's (1987) cultural literacy initiative:

> Yes, I think he's [i.e., Hirsch is] perfectly right about that. The effect of the present system is to keep education for kids from relatively well-educated, middle-class families who pick up the common knowledge of society as a whole. And kids who come from other kinds of families don't have a chance to pick it up in school. (p. 7)

It is obvious that Hirsch (1987) enjoyed support from various sources. Cultural literacy was in vogue, but an opposing camp was forming as Hong (1990) illustrated. "A computer search was done of the ERIC database in order to collect writings related to cultural literacy. The result of the search gave me more than two thousand entries" (p. 2). Opposition to Hirsch (1987) appeared strong because "many of these entries are responses to Hirsch's book, and the responses vary a great deal. On the whole, there are more criticisms and negative responses than compliments and positive responses" (p. 2).

The Opposing Camp

Like the Hirschian cultural literacy camp, the opposing camp also comprised itself of seemingly discordant parties which, over time, synthesized a challenge to the cultural literacy movement.

The subtle and the not so subtle. An example of subtle criticism that reinforced such a challenge to the Hirschian cultural literacy camp was recorded in an interview published by Enright and A. M. Cohen (1988). Interviewee Arthur M. Cohen commented, "A whole lifetime of activity leads to cultural literacy. We must not despair that all 19-year-olds are not culturally literate. How much did Bloom and Hirsch know when *they* were 19, compared to what they know now?" (p. 16). Reporting research involving *The New York Times* and 424 random cultural literacy terms from Hirsch's list, Willinsky (1988) stated, "The results suggest that Hirsch and company have identified a corpus of cultural terms which play a part in the daily commerce of the published language" (p. 9). This concession was followed by a qualification:

> Hirsch's weak claim that the list plays a prominent part in the newspaper of substance receives a degree of substantiation, while the stronger claim that the fabric of the nation, as well as the newspaper, depends on the contents of this list needs to be set in perspective. To be culturally literate in this set of terms will be neither sufficient nor necessary for a high level of comprehension in reading this newspaper of substance, and to lead the public or students to believe that mastering this list opens the door to the *Times* or to the world of culture which it represents needs to be qualified.
>
> The results of this study highlight the fact that much of the *Times* is, as Hirsch's criteria suggests [*sic*], too specialized, too general, and too ephemeral. Yet that speaks to the nature of a multi-literate culture and a multi-cultural literacy, that is, to the ways in which we live within a series of cultures and forms of discourse. (p. 10)

Others were not so subtle. Regarding both A. Bloom (1987) and Hirsch

(1987), Pattison (1988) complained, "Together these two authors have given us what I will call the stupidity crisis. The stupidity crisis meets all the requirements of a genuine American panic" (p. 3) and advised "that we should oppose those who would inflict a stupidity crisis on us" (p. 4). Ostensibly stinging from Hirsch's (1987) use of "Canada as a negative model" (Orwin & Forbes, 1994, p. 16), Orwin et al. (1994) impugned the infamous list of cultural literacy items by submitting that "it is a brave man these days who would argue that Canadian or American prosperity or political stability depend upon familiarity with Achilles and the Acropolis [, items on the list]" (p. 20).

Challenging Hirsch's (1987) opening sentence of his preface, S. W. White (1989) asked, "Where is the sociological evidence to support the claim that cultural literacy is necessary for 'thriving', in the modern world" (p. 2). Grant (1994), an advocate of private education to be subsidized for the poor, lodged a comparable objection with "*Cultural Literacy* is very American. Globally speaking, it is a parochial work" (p. 1). The more abstract notion of cultural transmission was addressed by Hallpike and Sworder (1994):

> But what is entirely absent from Hirsch's book is any serious concern with how minds are formed, how cultural transmission actually occurs, and what conditions must prevail in order to establish the common ground of that transmission, so that the *content* remains embedded in the living traditions that give it meaning and value. (p. 37)

The liberal wing. As one would expect, Hirsch's (1987) conservative cultural literacy initiative elicited its strongest disapproval from assorted members of the liberal wing of the opposing camp. For example, Christenbury (1989) charged that "cultural literacy enforces the notion of elitism" (p. 15). Assuming a student-centered perspective, R. E. Miller (1989) cautioned, "In short, the real literacy crisis occurs whenever we deploy a pedagogy that asks our students only to consume texts and not to produce them as well" (p. 10). Similarly, Agnello (1996) coined the term *post-literacy* to advocate a student-centered literacy approach, especially in reading. V. M. Anderson (1989) referred to "theorists like Eagleton, Cain and Lentricchia" (pp. 1-2) as "more progressive academics [who] believe today's educational practice should respond to the more modern concept of cultural-relativism" (p. 2) and who believe "students should have credit for their own, self-generated ideas, not approval for being able to interpret, imitate and inculcate the best of the past as applicable in contemporary contexts" (p. 2). Goebel (1991) recommended studying literary works portraying radically nonmainstream cultural views. Studying the Amish, a nonmainstream sect, Fishman (1987) concluded that the role of teachers may simply be to educate students and parents in the advantages and disadvantages of entering mainstream society.

Critical of conservatism generally, Cummins and Sayers (1995) stated, "We argue that the writings of Hirsch and other conservative academics (such as William Bennett, Allan Bloom, Dinesh D'Souza, Diane Ravitch, and Arthur Schlesinger, Jr.) simply intellectualize xenophobia" (p. 9). Leveling a direct criticism at the Hirschian cultural literacy camp specifically, M. L. Johnson (1988) wrote, "His [i.e., Hirsch's] cultural-literacy imperative is naïve and conservative" (p. 312).

Ross (1989) submitted a more pointed indictment:

> The cultural literacy movement presents an agenda for providing students with an ethnocentric vocabulary[,] limited conceptual understandings, an attitude that takes for granted the phenomena they are learning about, and a false sense of objectivity about information included in the curriculum. (p. 15)

Moreover, Ross's (1989) liberal allegiances became obvious in his suggestion that "by examining the theories and methods of people such as Dewey and Freire we can learn ways to promote the development of creativity, reflection, critical thinking, and encourage action upon reality" (p. 15).

Aligning with Ross (1989) was the equally critical but less condemning Villanueva (1993):

> You see, those of us who have had to juggle our American-ness and our other-cultural-ness can't afford to be glib about the need for convention and cultural literacy. They *are* necessary, particularly in conservative times. But we stand to lose if we simply accept cultural literacy without a critical edge, if there isn't [*sic*] both the tradition and the change. Many of us throughout this country's history have become monolingual, standard dialect speakers and writers, have enjoyed successes, yet we remain somehow other—the successful African American, the successful Latino, never just the successful. We need to remain critical, recognizing our similarities *and* our differences, culturally *and* critically literate, recognizing the need for social action and having the tools with which to take action. (p. 19)

Other proposals called for cultural criticism (Trimbur, 1986); critical literacy in tandem with cultural literacy (Giddings, 1988); and background logic as opposed to Hirschian background knowledge (Paul, 1990).

The extremely liberal wing. Still other comments from the opposing camp revealed a more extreme educational and political liberalism, evidently the result of dissatisfaction with mainstream society overall. Promoting critical literacy, McLaren (1988) argued, "The purpose behind acquiring . . . [critical] literacy is to create a citizenry critical enough to both analyze and challenge the oppressive characteristics of the larger society so that a more just, equitable, and democratic society can be created" (p. 214). Schear (1992) alleged "that Hirsch speaks from a privileged 'we/they' orientation to minorities and local cultures, deifying the 'broad culture' of America and patting the heads of those not a part of the perceived mainstream" (p. 6). In a similar vein, Ohmann (1985) warned that "we should reject the dangerous calls for a spurious common culture handed down from above" (p. 17). Anson (1988) accepted traditional culture but negatively referred to it as "the traditions which the cultural literati want to force upon them [i.e., students] by fiat" (p. 18).

Reviewing the best sellers of both Hirsch (1987) and A. Bloom (1987), Aronowitz and Giroux (1988) maintained, "In the most general sense, Hirsch and Bloom represent different versions of the same ideology, one which is deeply committed to cleansing democracy of its critical and emancipatory possibilities" (p. 182). Additionally, "Hirsch and Bloom share a common concern for rewriting the past from the perspective of the privileged and the powerful. . . . Both disdain the democratic implications of pluralism" (p. 183). Specifically, "Hirsch's view of history is the narrative of the winners. It is the discourse of the elites in history that constitutes the fund of cultural knowledge that defines literacy" (p. 184). Harper (1990) offered two preferred alternative thinkers, Rosenblatt and Giroux, to Hirsch (1987):

> In the Hirsch classroom new knowledge is not created, the teacher and the student are passive. Old knowledge is simply poured into students' minds. For Rosenblatt and Giroux, teaching and learning seems [*sic*] more creative, more active, and particularly for Giroux, an activity that extends beyond the classroom door. (pp. 174-175)

P. M. Anderson (1989) was even more critical of the cultural literacy movement:

> If Hirsch said we need to enter schematic data into the memory banks of our children in order to program them in a socially-controlled way to support the labor needs of the military-industrial complex, the membership of NCTE [National Council of Teachers of English] would be after Hirsch with rakes and pitchforks. If he says we need prior knowledge as a necessary condition for cultural literacy to assure our competitive edge in world markets, we say he has a "point." (p. 6)

Registering a similar complaint in an open letter to Hirsch (1987), Booth (1988) remarked, "One way of putting my objection would be to say that your [i.e., Hirsch's] goal, despite its deep-felt democratic claims, too often sounds not like the education of free men and women, but rather the training of functionaries" (p. 15).

The most vehement attacks came from the anti-establishment left fearing the

Big Brother syndrome. J. Sledd (1988) wrote, "He [i.e., Hirsch] diverts attention from social realities and genuine social needs while assembling the pseudodoxia of middle-class middle-brows" (p. 5). In addition, "Exxon approves. A work force a cut above the *Reader's Digest* and a cut below the *Washington Post* should be able to read instruction manuals and [be] willing to obey orders" (pp. 5-6). A. E. Sledd and J. H. Sledd (1989) queried, "Why did the distinctive badness, the gross absurdity, of *Cultural Literacy* guarantee its success in the newspaper readers' marketplace?" (p. 379). They answered, "*Cultural Literacy* was distinctively crafted, by instinct or conviction, to appeal to the culturally illiterate in the interest of established power" (p. 379). Pertaining to cultural literacy's shared knowledge, J. W. Ward (1989) outright enlisted the Big Brother analogy in "The dreadful consequence of monoliteracy is dramatically illustrated in the texts of *1984* and *Brave New World*. It is assuredly not a proper end of education" (p. 22).

Factions. Also residing in the opposing camp were factions other than the noticeably liberal groups. One such faction protested the alleged trivial or isolated factual nature of Hirsch's (1987) approximately 5,000-item cultural literacy list. Estes, Gutman, and Harrison (1988) charged that "by reducing the information necessary for literacy to a list, Hirsch inadvertently represents the basis of literacy as the pursuit of trivia" (p. 15) and that "knowing the list becomes the criterion for being literate rather than the result of being literate" (p. 16). Likewise, Crowley (1991) maintained, "The cultural literacy curriculum represents a sort of 'trivial pursuit' approach to education" (p. 5). A study of Hirschian cultural literacy among undergraduate students enrolled in university business courses (Thibadoux et al., 1993) provided these critics some support when the researchers concluded, "Hirsch's critics who label this type of [cultural literacy] information as trivial may be correct"

(p. 31).

According to Trimbur (1987), "of course, we can explain Hirsch's success in part by the fact that the list in *Cultural Literacy* offers Yuppies and the parlor game set an academic edition of 'Trivial Pursuits.' [*sic*] (Houghton Mifflin reportedly is considering turning the book into a board game.)" (p. 346). Worsham (1988) was concerned that "cultural literacy lists, like all lists, merely invite memorization" (p. 20) and that students may "become living trivia libraries" (p. 20). E. R. House, Emmer, and Lawrence (1989) were troubled that "the cultural literacy advocates risk making education into a rote memory exercise in which students passively memorize lists of terms to prepare for multiple-choice tests" (p. 47). Law (1988) stated, "Hirsch's *Cultural Literacy* treats knowledge as discrete, unambiguous pieces of information to be presented for students to absorb. Acquisition of content is more important than skills" (p. 33).

Squire (1988) found "one dimension of Hirsch's argument particularly disturbing: his willingness to accept 'mentioning' or 'telling about' works of literature or events as the equivalent of experiencing or understanding them" (p. 76). Regarding Hirsch's (1987) list of cultural literacy items, G. Schwarz (1988) believed, "It is disturbing because it presents cultural concepts as unconnected, all equally important 'bites' out of context of the disciplines from which ideas arise, and removed from the human context of individual learners and educators" (p. 77). Ohanian (1990) submitted that "Hirsch's list starts, and ends, with a grimness of facts, disjointed bits of information that make no connections and add up to nothing" (p. 46). Similarly, Damon (1990) insisted that "a passing acquaintance with facts does not define the depths of functional literacy, 'cultural' or otherwise" (pp. 44-45). Hong (1990) contended that "to promote cultural literacy is not to teach language plus a list of need-to-know words and facts" (p. 13).

Paul (1990) cautioned that "*we must take care to distinguish possessing information from having knowledge*" (p. 431). This complaint was articulated well by Schuster (1989), who wrote, "The possession of information cannot be the defining characteristic of cultural literacy. If it were, computers would be more literate than people" (p. 540). Tarter and Christenbury (1989) argued, "Our students need fewer facts and better teaching" (p. 20). Accusations of superficiality were lodged by others (Christenbury, 1989; Newmann, 1988).

Preceding Hirsch's (1987) best seller, Warnock (1986) complained that "Don Hirsch's assertion that cultural literacy means not a knowledge of works but a knowledge of certain facts about some works is anything but consoling. I take it that all facts, all knowledge are the products of interpretation" (p. 4). Concerning the Arizona Social Studies Essential Skills Framework, the Arizona State Department of Education (1989) provided this explanation:

> The end product of a social studies program is *cultural literacy*—the idea that the humanities are interlinked, that history is an exciting and dramatic series of events in the past that helped to shape the present versus a factual presentation of names, dates, and events. ("Introduction to the Framework," p. 2)

Indictment of Hirsch's (1987) list of cultural literacy items was based not only upon the perceived trivial or isolated factual nature of the list but also upon other perceptions of the list. For instance, Hepburn (1989) preferred "Washburne's 1920's list and his methods for developing and updating it" (p. 12) and concluded that "if we must have facts lists or lists of knowledge objectives, it seems to me that 60 years ago Washburne had a better proposal" (p. 12). Furthermore, "perhaps most important to Washburne, the learning of the list of essential factual information was not to be an end in itself but a part of a well-balanced education diet that included reflective thinking and application" (Hepburn, 1988, p. 5).

After conducting a brief investigation involving Hirsch's (1987) list of cultural literacy items, Schuster (1989) advanced this report and conclusions:

> I recorded all the words and phrases that I thought a reader would need to know to understand 21 pieces of contemporary American fiction. The fiction was published in such magazines as *The Atlantic, Esquire*, and the *New Yorker* and was written by authors whose works appear in collections of the best stories of the year.
>
> I then checked my list against Hirsch's. Fewer than one in eight of the items on my list were also on Hirsch's. For me, this exercise demonstrated two key points:
>
> - there is no end to the information writers expect readers to possess, and
> - the items on Hirsch's list do not define cultural literacy. (pp. 539-540)

In a comparable study of high school and junior high school American history textbooks, A. Smith (1988) discovered that "with respect to so-called famous speeches and sayings by prominent Americans, there is not much agreement between Hirsch's list and textbook authors as to what information comprises a culturally literate person's vocabulary" (pp. 10-11). Moreover, "not all the historical sayings and speeches cited by Hirsch on his list are even 'mentioned' by the text authors" (p. 11).

Another faction, other than the noticeably liberal groups, in the opposing camp was a faction criticizing the cultural content of Hirsch's (1987) list of items or the cultural content of his overall educational approach. For example, an objection to Hirsch (1987) in the form of a general observation was that "it may be inappropriate to expect that there can ever again be any sort of national cultural identity in a nation of two hundred fifty million" (K. H. Adams & Cotton, 1989, p. 286). Making a more specific observation, Denham (1988) asserted that "cultural literacy . . . cannot be ideologically neutral" (p. 5) and that "the contents of cultural literacy are not value-neutral" (p. 4). E. R. House et al. (1989) agreed, "Such a list of cultural terms can never be value neutral as Hirsch claims" (p. 33).

Acknowledging cultural literacy's worth for speaking and writing, Mullican

(1991) nonetheless concluded that "we should be honest enough to recognize what we are doing: canonizing the dominant culture, considering that information essential which we ourselves know" (p. 245). V. L. MacDonald and A. F. MacDonald (1989) noted that "Hirsch's real argument seems to be with the force of popular culture rather than with any disintegration of literate America" (p. 317).

Concerned with the social studies classroom, Fleury (1989) criticized "Hirsch's emphasis on vague knowledge, nationalistic identity, tribal acculturation and historical myths" (p. 8) and characterized the Hirschian cultural literacy camp's orientation as "our Western heritage" (p. 9). Hepburn (1988) insisted, "His [i.e., Hirsch's] facts list for the eighties is biased toward western academic culture, and, based on the judgment of a few professors, it is thus static and limited and unlikely to provide for education for the future" (p. 7). P. Bizzell (1988) detailed several exceptions to the Western tendency of Hirsch's (1987) list of cultural literacy items:

> In addition to canonical literature, Hirsch includes non-literary references such as the Declaration of Independence, minority figures such as Frederick Douglass, and popular culture items such as Pinocchio. By and large, however, the concessions to popular and minority cultures appear to be few. The core of the list is the core of Western high culture. (p. 146)

Hoetker (1989) ventured so far as to state that "the traditional references of Western high culture are no longer of much currency or practical account" (p. 322). This sentiment aligned with B. M. Greene's (1988) belief that "cultural literacy is relative and may embody knowledge and values not reflected in the Western canon" (p. 45).

Likewise, Arvizu and Saravia-Shore (1990) decided, "His [i.e., Hirsch's] approach assumes that cultures are monolithic and fixed, and his content ignores the historical contribution of many ethnic communities in the United States" (p. 364). Examining Hirsch's (1987) list of cultural literacy items, L. Z. Bloom (1988) observed, "The average is 76% references to men (almost all white) (unless they're objects, such as Big Ben, or concepts, as in 'Boys will be boys') to 24% (mostly white) women, such as Lucretia Borgia and the Birth of Venus" (p. 3). Furthermore, "Hirsch's classical concept of cultural literacy privileges . . . the canon, selected literature of elitist white men" (p. 9). L. Z. Bloom (1988) suggested "an alternative model of cultural literacy, GODDESS, Gender or Diversity Designed to Show Significance" (p. 5), for "why not educate the dominant white middle and upperclass male culture to learn the culture of women, minorities, the old, and the poor?" (p. 5). Similarly, Trimbur (1987) disagreed with Hirsch (1987) in that "the list is ethnocentric, class-biased, male-dominated, and chauvinistic" (p. 349). Denouncing the 1988 edition of *The Dictionary of Cultural Literacy: What Every American Needs to Know* (Hirsch et al., 1991), A. E. Sledd et al. (1989) were of the opinion that "the mindset of a comfortable white gerontocracy can be traced throughout the *Dictionary*" (p. 386).

Still others disapproved of Hirsch's (1987) cultural literacy initiative not because of its exclusivity per se but rather because of what it excluded, namely the content of students' lives. Zurmuehlen (1989) charged that "it ignores the life experiences, histories, and vocabularies of students" (p. 49). This objection was joined by Carroll's (1988) complaint that Hirsch's (1987) mistake was to "invalidate the experiences, ethics, and aspirations of our students" (p. 5). Advising on curricular design for cultural literacy, Bowers (1974) recommended "incorporating into the curriculum unit the data derived from the phenomenology of the student" (p. 116).

The Hirschian cultural literacy camp did not allow the opposing camp's objections to remain unanswered.

Defense of the Hirschian Cultural Literacy Camp

Some members of the Hirschian cultural literacy camp, including Hirsch himself, came to its defense when critics began their attacks on the cultural literacy movement.

Self-defense. In one exchange, Hirsch (1988f) stated, "It is time to question and qualify some educational slogans . . . that have actively hindered the teaching of literate information to young children" (p. 64) and particularly suggested the following slogans to undergo inspection:

> 1. The home is more decisive for literacy than the school. (p. 64)
>
> 2. Schools should stress general skills and broad understanding, not mere facts. (p. 67)
>
> 3. The optimal contents of a language arts curriculum can be determined on scientific principles. (p. 68)

Confronting Hirsch (1988f), Tchudi (1988b) replied that "home values and home learning have a powerful effect on literacy, as do experiences inside and outside the school" (p. 72). Additionally, he favored a more experiential approach to education:

> Schooling needs to be much more than "piling on of facts." A sensitive "piling on" of *experiences*, challenging children's powers of imagination and inquiry, may well be in order, for it is through assimilated, evaluated experience (as John Dewey observed) that facts as well as concepts, values, and even critical thinking skills are mastered. (p. 73)

Emphasizing a more content-oriented approach, Hirsch (1988d) responded, "Traditional content is essential to schooling because literacy in English is itself conservative" (p. 75) and "the knowledge that is necessary to high literacy is inherently traditional. It changes slowly, because it is the property of many generations, and is recorded in hundreds of thousands of books" (p. 75). Hirsch (1988d) then extended this cogent defense of traditional content within a progressive society:

> Thus we confront a paradox which Dr. Tchudi has, I think, missed. Conservative curricular content is socially progressive. Giving all students access

> to traditional literate culture gives all students the key to mainstream economic and political life. That is a progressive aim. By contrast, not giving all students traditional materials keeps some of them out of the mainstream. That is a socially regressive result. (p. 75)

Their exchange ended with Tchudi's (1988a) rejoinder in which he commented, "Whether traditional content is socially progressive or regressive depends very much on who gets to define 'traditional content'" (p. 75).

Besides Tchudi (1988a, 1988b), other members of the opposing camp received direct replies from Hirsch himself. Hirsch (1988c) responded to Estes et al. (1988) for their alleged distortion of his national best seller; Hirsch (1988a) reacted to Newmann (1988) concerning the latter's disapproval of curriculum development from a list; and Hirsch (1988e) added an explanatory postscript to Booth's (1988) open letter to the former.

Hirsch also fortified his cultural literacy camp against conceivably damaging criticisms, which were not necessarily cited from specific members of the opposing camp. For example, in one interview (McMillen, 1987, April 22), Hirsch deftly defended his list of cultural literacy items against potential accusations of superficiality when he explained, "You have to be superficial before you're profound. . . . Ignorant profundity is not the answer" (p. 3). Moreover, once again pertaining to his list of cultural literacy items, Hirsch (1988b) braved possibly crippling elitism indictments. He clarified that "even if it [i.e., his list] included all minority and ethnic suggestions and removed all esoteric terms, any index to American literate culture would still remain preponderantly British-oriented and traditional and thus apparently elitist" (p. 17).

In a discipline-specific fortification of the cultural literacy camp, Hirsch (1990) offered his cultural literacy concept as a vehicle for defining the core content in art education. On the broader topic of educational equality, Hirsch (1991a) strengthened his argument relating cultural literacy and educational justice for all school children. Likewise, the prickly issue of multiculturalism was tackled by Hirsch (1992c), who concluded, "Cosmopolitanism is a true friend of diversity. It is the only valid multiculturalism for the modern era. Only a cosmopolitan, centrist core curriculum can enable all children to be well educated" (p. 7).

Finally, Hirsch's Core Knowledge Foundation located in Charlottesville, Virginia began regularly publishing a newsletter in which Hirsch could advance his cultural literacy initiative (Hirsch, 1992a; Hirsch, 1992b). Most recently, *The Schools We Need: And Why We Don't Have Them* (Hirsch, 1996) extended the message of Hirsch's (1987) *Cultural Literacy: What Every American Needs to Know* in arguing for educational conservatism or pragmatism, that is core knowledge, to replace allegedly failed educational progressivism. In this book, Hirsch (1996) mentioned his Core Knowledge Foundation and the resulting Core Knowledge Movement:

> The education press now calls our school reform movement the Core Knowledge Movement. It has spread to more than two hundred public schools in thirty-seven states, and there is a much larger, still uncounted number of schools that are successfully using the foundation's principles and materials.
>
> The foundation's activities have brought me into direct contact with hundreds of principals and teachers and thousands of knowledge-thirsty youngsters in schools all over the nation. (p. 13)

Compatriots. In addition to Hirsch himself, other members of the Hirschian cultural literacy camp came to its defense. In explanation of Hirsch's (1987) view regarding a core curriculum, Stimpson (1988) corrected a critical misperception with "Far more flexible and socially concerned than his critics often claim, Hirsch does not want to re-impose a list of great books that everyone must read, a canon that everyone must salute" (p. 28). Distancing Hirsch (1987) from the classical conservatism of A. Bloom (1987), J. Smith (1989) was of the opinion "that Hirsch does subscribe to a progressive political agenda and that in this he is poles apart from Allan Bloom" (p. 19). Additionally, "*Cultural Literacy* argues for teaching cultural knowledge as a way of empowering students (especially the economically disadvantaged) to participate in public discourse, hence in politics" (p. 19). Shanker (1991) deemed Hirsch's cultural literacy effort to be egalitarian. Helping to dispel charges of elitism, Bolter (1991) wrote, "Clearly Hirsch's definition of culture has nothing to do with high culture: it is simply anything that a reader might expect to encounter in a newspaper or magazine" (p. 236).

Emphasizing the communication principle of cultural literacy, C. E. Finn (1989) described cultural literacy as "at bottom, a simple proposition, namely that *there is some knowledge* that everyone needs to possess in common if only so that they [*sic*] can communicate effectively with one another" (p. 16). Regarding Hirsch's (1987) much maligned list of cultural literacy items, E. Greene (1988, November 16) reported, "While Mr. Hirsch never argues that his is the best list, he offers it as one possibility" (p. A16). In justifying the study of Western civilization, the groundwork of Hirsch's (1987) cultural literacy, W. J. Bennett (1989) maintained that "we must study the West because it is ours. It is the culture in which we live and in which most of us will continue to live: it is the water, and we are the fish" (p. 3).

Some critics of the Hirschian cultural literacy camp apparently had not sufficiently acquainted themselves with the subject of their criticism. Regarding the developing Hirschian concept of core knowledge, Frazee (1993) wrote, "Those who think of Core Knowledge [curricula] as 'rote learning of isolated facts' are simply misinformed or have too little faith in teachers" (p. 28). Referring to obvious misinterpretation of Hirsch's (1987) best seller, Bolter (1991) noted, "Many readers took it as a call to return to the classics, to a fixed curriculum of works and authors that would make one culturally literate. But this was a misreading, as anyone can see from the first sentences of the Preface" (p. 236). In a review of Hirsch (1987) and Ravitch and C. E. Finn (1987), Gagnon (1987) made this trenchant observation:

> Granted, academicians and university educationists are like most people. They hate to be told that they have not been doing their jobs, a message delivered by both books. Still, one expects them as professionals to read books fairly and to refute them, if need be, on their own grounds. When they do not, when they ignore the authors' central arguments, when they denounce things the books do not say and, in several instances, directly contradict, reviewers are pulling us backward to those dialogues of the deaf that held back educational progress so often in the past. (p. 41)

Other Camps

Generally, implied or stated definitions of cultural literacy range from those of the classical camp to those of the existential camp. But some outlying perspectives defy easy classification into the spectrum of conventional camps.

Outliers. Levesque (1989) wrote that cultural literacy is "the feeling one gets when touching the St. Louis Arch while saying, 'Go west[,] young man.' It is marveling at the mighty Mississippi River while wondering if Tom or Huck had drifted down to this very point" (p. 17). Skeptically, E. R. House et al. (1989) stated that they "seriously doubt that such a thing as cultural literacy exists and functions as its advocates suggest" (p. 65). Conversely, Ferreira-Buckley (1990) reportedly detected a coherent cultural literacy concept in existence in the 1700s and 1800s.

More recently, various definitions of or concepts of cultural literacy have surfaced. Relative to social studies education, Hepburn (1989) provided this overview:

> But it [i.e., cultural literacy] is an amorphous concept. . . . During certain periods of the history of the social studies, cultural literacy has been defined with emphasis on facts, information, western heritage and subject matter content. In other periods, however, cultural literacy has been viewed with a concern for social assimilation, citizen participation, assistance of the disadvantaged, public ethics, and solving social problems. (p. 12)

Broudy (1990) concluded that "it may be useful . . . to distinguish between 'classical literacy' and 'cultural literacy'" (p. 10).

Conventional camps. According to McLaren (1988), "two radically different positions characterize cultural literacy" (p. 213), the one camp being conservative and the other camp being student-centered. Shor (1986) explained that conservative cultural literacy involves an "ability to speak, write, read and make references within the elite idiom; Standard English, correct usage, lexicons and accents inside the wordworld of high culture. Idioms without such cultivation are signs of social inferiority" (p. 190). Interviewee Arthur M. Cohen (Enright et al., 1988) commented, "Cultural literacy includes the command of the various figures of speech including irony, metaphor, and allusion" (p. 17). Pertaining to British postcolonial African states, Merryfield (1989) defined cultural literacy as "an essential core of knowledge, skills and values that serve as a common denominator of cultural understanding for a people, in this case an African country" (p. 3).

The participant-centered cultural literacy camp encompassed Kaufer's (1989) "contributing theory" in which "literate readers and writers may share a cultural background, but the importance of that sharing is that it provides a vehicle for contributing to common issues" (p. 24). Law (1988) wished to augment the conservative perspectives of A. Bloom (1987) and Hirsch (1987) in an "attempt to involve the student more thoroughly as a participant in the culture in which he or she is increasingly sharing" (p. 34). Similarly, Tchudi (1988b) contended, "Cultural literacy is a process of participating fully and actively in society, a product of home and schooling, and above all of living in society" (p. 74). E. Greene (1988, November 16) quoted Stanley Fish, who remarked that "the only way to be culturally literate in any culture is to be a long-term participant" (p. A17). Concerning Paulo Freire's liberal educational philosophy, Winterowd (1987) stated that "from the Freirean standpoint, the question is not how to get the cultural knowledge into the student, but how to get the student into the culture" (p. 873). Defining cultural literacy as "a profound conception of the underpinnings and premises of the whole civilization" (p. 72), O. Patterson (1980) surmised that one attains cultural literacy "only by becoming totally involved in the wider culture, by refusing to segregate oneself from it, by moving into it, capturing it, changing it" (p. 72). Estes et al. (1988) argued that "it [i.e., cultural information] must be acquired in what appears to the learner a *gestalt*, an awareness of the whole acquired over time, as part of living in and comprehending a world that each learner must both invent and participate in with others" (p. 16).

An existential cultural literacy camp's ideology was assumed by Schuster (1989) in deeming "a culturally literate person . . . [to be] someone who uses what she or he knows about the culture to understand the self and to enrich life" (p. 540). Likewise, Bowers (1974) suggested that "designing curriculum materials for cultural literacy involves, as the starting point in the learning process, the exploration of the interface between the student's existential self and the social-cultural milieu" (p. 115).

Coattail camps. A miscellany of coattail, or tangential, camps developed out of some theorists' or practitioners' invocation of cultural literacy to advance their particular disciplines or agendas. Examples include an application of the cultural literacy concept or a mention of cultural literacy to promote geography (P. S. Anderson, 1989); technology education (Pucel, 1992); music (Ball, 1991; G. E. Clarke, 1990; Levinson, 1990); literature assessment (P. Brody, DeMilo, & Purves, 1989); law (Bolton, 1989); dance (Sparshott, 1990); historic preservation (Patrick, 1988a); heritage education (Patrick, 1989); history (Cheney, 1989; D. W. Moore, 1989); science and technology (Yager, 1989); reference librarianship (D'Aniello, 1989); the arts (Fichter, 1989); world civilizations and related disciplines (Sjoquist, 1993); theater (Gillespie, 1990); the built environment including architecture (Graves, 1990); values (W. B. Martin, 1985); basic speech (M. D. Jensen, 1989); the school library (K. Harris & Baskin, 1989); philosophy of science for science teacher education (Loving, 1989); the visual arts (Richardson, 1990); television news (Pitts, 1985); and geology (Shea, 1987).

Multiculturalism. Besides the cultural literacy camps, a discrete multicultural literacy camp emerged. Regarding Delaware County Community College, G. Anderson and Ewing (1989) advocated multicultural education because, in their words, "our 'home grown' population shows an appalling lack of knowledge about other cultures, exhibits very little curiosity about others, and seems totally unaware that their [*sic*] level of ignorance is so deep" (p. 1). They espoused "educating the World Citizen" (p. 6). Cortés (1978) reasoned that "the rationale for multicultural education is clear and simple. Educational institutions exist to prepare young people for the future. That future will be in a culturally pluralistic nation and rapidly shrinking world" (p. 20). A multicultural approach was also recommended by others (Arizona State Department of Education, 1989; A. T. Edwards, 1984; Suhor, 1988).

Simonson and S. Walker (1988) published the beginnings of a multicultural literacy list, which included, but was not limited to, such nonHirschian items as "AA (Alcoholics Anonymous)" (p. 192); "cinéma verité" (p. 193); "Cosby, Bill" (p. 194); "Hasidic" (p. 195); "Lone Ranger" (p. 196); "O'Keeffe, Georgia" (p. 197); "PASCAL" (p. 197); "premenstrual syndrome" (p. 198); "wars of liberation" (p. 199); and "Zulu" (p. 200).

The multicultural literacy camp, although, was not necessarily opposed to the cultural literacy camps. Jacob (1986) wrote, "Do young people need common background, or do they need cultural diversity? The obvious answer is that they need both" (p. 21). The present researcher reasoned that perhaps as a national culture becomes more multicultural, that nation's cultural literacy perforce equates itself with multicultural literacy, thereby rendering moot any cultural literacy versus multicultural literacy debate. If this reasoning were correct, then multicultural literacy would assume the cultural literacy problem (Tchudi, 1988a) of deciding the content of multicultural literacy as S. W. Green and Perlman (1995) explained from an anthropological perspective:

> Indeed, when we view culture as a dynamic process we can see why it is so difficult to define one American Culture. To begin, the American continent has always been multicultural. The recent colonization of peoples from the Old World (Europe, Africa, Asia) complemented the already diverse cultures of the Native Americans (the first colonizers from Asia). The interaction between these cultures over time forms the mosaic of American life. If one could define an "American" culture and assess its particular history, given the changes that have occurred, we would be brought back to a central problem: which culture from which time? (p. 4)

Cross-culturalism. Finally, in addition to the cultural literacy camps and the multicultural literacy camp, a cross-cultural literacy camp surfaced. Cross-culturalism generally appears to differ from multiculturalism in that multiculturalism recognizes different cultures subsumed under an inclusive national culture of which a multicultured individual is knowledgeable, whereas cross-culturalism recognizes different cultures remaining more or less autonomous but across which a cross-cultured individual can comfortably interact. Multiculturalism appears relatively microcosmic and presumes cultural convergence while cross-culturalism appears relatively macrocosmic and presumes cultural divergence. Both presume an understanding of cultures other than one's native culture.

According to Arvizu et al. (1990), "a cross-cultural perspective goes beyond a belief in cultural nationalism . . . or even biculturalism. . . . It is also broader than multiculturalism" (p. 372). Bowers (1974) contributed this viewpoint:

> The purpose of the cross-culture perspective is not to encourage value judgments about which culture is better, but to provide a means of helping the student to understand another view of reality and thus to be able to come back to his [*sic*] own in a different frame of mind. (pp. 119-120)

Hamilton-Wieler (1989) noted, "Experiences with other cultures influence *how you look at* and *what you see* in your own" (p. 1). Cummins et al. (1995) suggested the Worldwide Web, or Internet, as a means of promoting intercultural literacy "to prepare students for the twenty-first century" (p. 15).

The ism limbo. It seems virtually impossible to pigeonhole some theorists' or practitioners' nonstandardized cultural literacy ideologies into standardized definitions of cultural literacy, multicultural literacy, or cross-cultural literacy.

For instance, the term *cultural literacy* was coined by H. B. Wilson (1965), whose concept paradoxically incorporated cross-culturalism (P. Allen, Munroe, Grigg, & W. Beck, 1980; H. B. Wilson, 1965, 1974). Similarly complicating, Busick (1988) reported a nine-jurisdiction, *cross-cultural* approach to define Pacific Region *cultural* literacy. Contributing further confusion, Jaros (1991) asserted, "Cultural literacy means that we must be literate polyculturally" (p. 16). Attempting to synthesize differing definitions of cultural literacy or attempting to categorize overlapping definitions of cultural literacy ultimately results in a cumbersome amalgam not strictly cultural, multicultural, or cross-cultural. This inconvenience was clearly illustrated by Melenchuk and Newton's (1987) cultural literacy definition suggested by their literature review:

> Cultural literacy is the recognition or awareness of one's own culture or ethnicity and cultural continuities and discontinuities that exist between cultures. It is the development of a clarified cultural self-identity, positive attitudes toward self and other cultural, ethnic and racial groups, and personal self-actualization.

> The culturally literate individual has the ability to function, at least at a minimal level, within several cultural environments and is able to understand, appreciate and share the values, symbols, and institutions of several cultures. It is the development of multicultural perspectives and feelings which enables the individual to live a more enriched and fulfilled life and involves the ability to formulate creative and novel solutions to personal and social problems. (p. 85)

Obvious irreconcilable ambiguities exist in the definition of cultural literacy. Therefore, in order to define cultural literacy as unambiguously as possible, the present study employed Hirsch's (1987) cultural literacy concept as operationalized by the now out-of-print *Cultural Literacy Test* (Riverside Publishing Company, 1989).

Concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test* surfaced in issues raised by reviewers (Gilmer, 1994; Gullickson, 1994), whose findings are discussed under "Instrumentation" in Chapter III. Likewise, questions exist concerning the standardization of the *Cultural Literacy Test*. According to Gullickson (1994), "the 'national' norms are based on the testing of students in 33 high schools or school districts across 18 states, with fewer than 3,000 students used in the norming of each form. Thus, results of the test are *not* representative of broad reaches of the U.S." (p. 64). Ultimately, nonetheless, the *Cultural Literacy Test* composite raw score was deemed acceptable for the current research (Gullickson, 1994).

Intelligence

Cultural literacy entails achieving basic cultural information (Hirsch, 1987) which can be successfully taught to students (M. S. Smith, Dydo, & P. Costello, 1990) and for which there existed an achievement test (Riverside Publishing Company, 1989). Cultural literacy of rather specific cultures or subcultures may also be assessed with a test such as the *Bilingual Mini Head Start Test of Cultural Concepts* "developed in 1975-76 to meet the need of a test of knowledge related to [Mexican and American] culture that was appropriate to [migrant or seasonal farm workers'] children age 3-8" (McConnell, 1980, p. 95). In other words, cultural literacy's reliance on acquiring learnable information or knowledge that can be assessed places cultural literacy in the achievement domain. Additionally, a significantly ($p < .001$) positive relationship has been demonstrated to exist between cultural literacy and academic achievement (Kosmoski, 1989; Kosmoski et al., 1990). Furthermore, Gullickson (1994) argued that "the correlations between the cultural literacy test [*sic*] and aptitude measures are as high as the test's correlations with achievement measures. This suggests the test is as much a measure of aptitude as a measure of achievement in cultural literacy" (p. 64).

The present study investigated lifelong adaptability from a cultural literacy perspective, which is by definition an achievement perspective as opposed to an affective perspective, a psychosocial perspective, an ability perspective, or an attitudinal perspective although these other perspectives certainly may be related to lifelong adaptability, perhaps highly so. In the current research, considering lifelong adaptability from a cultural literacy perspective permitted an expanded demographic literature review that encompassed the broader achievement domain in which the more narrow cultural literacy subdomain appears to reside. Moreover, the present study considered the relationship of intelligence to cultural literacy. Accordingly, the intelligence section below and the following demography section present research on cultural literacy, achievement, intelligence, family structure, parental age, parental educational level, and student gender.

Intelligence and Cultural Literacy

Empirical research. The primary study applicable to the current research was reported by Kosmoski et al. (1990). Reporting on urban fifth graders in Kosmoski's (1989) dissertation study, Kosmoski et al. (1990) explained a researcher-developed Cultural Literacy Assessment Test (CLAT), which was "an orally administered, multiple-choice instrument developed from items randomly selected from Hirsch's list of cultural literacy terms" (p. 266). Operationalizing IQ by scores on the *California Achievement Tests (CAT)* Cognitive Skills Inventory (CSI) (G. J. Kosmoski, personal communication, February 7, 2011), they found that "the correlation between IQ and CLAT scores was .82" (p. 267) leading them to the following conclusion:

> The high correlation between IQ and CLAT scores suggested two major implications. First, the CLAT may serve as a viable proxy for existing group IQ measures. Second, the strong relationship between scores on the CSI and the CLAT may indicate that this IQ test is heavily influenced by cultural literacy or may be a measure of cultural literacy itself. (pp. 269-270)

In addition, they provided five other interesting results. First, cultural literacy was significantly ($p < .001$) positively related to the *Comprehensive Tests of Basic Skills (CTBS)* reading and arithmetic achievement. Second, within a random subsample possessing IQ data, "the relationship appeared to be slightly stronger than the relationship that existed between IQ and academic achievement scores" (p. 267). Third, "ethnicity, SES, and type of school attended appeared to affect cultural literacy achievement for the subjects of this study" (p. 267) in that "students who were White, did not attend a Chapter I funded school, and were not identified as low SES scored highest in cultural literacy" (pp. 267-268). Fourth, "ethnicity, sex, SES, and school attended did not appear to affect the pattern of the relationship between cultural literacy and academic achievement" (p. 268) in that "regardless of subgroup, those students who scored high in cultural literacy also tended to score high in academic achievement, and those who scored low in cultural literacy tended to score low in academic achievement" (p. 268), which led Kosmoski et al. (1990) to conclude that "these findings are consistent with the directionality of academic and cultural literacy achievement predicted by Hirsch" (p. 268). Fifth, student gender was not significantly related to cultural literacy.

Analyzing data from high school juniors of 1960, DiMaggio (1982) discovered that cultural information "of a prestigious status culture" (p. 191) exhibited a "high collinearity (over .800) with the composite ability measure" (p. 194). But, in a study of senior psychology majors, R. F. West and Stanovich (1991) wrote, "Performance on our measure of cultural literacy [, a combination of Hirsch's cultural literacy list and Simonson and Walker's multicultural literacy list,] was predicted by exposure to print, television, and movies even after controlling for ability" (pp. 327-328).

There exists conspicuously limited research on the intelligence-cultural literacy relationship, but there does exist other research exploring Hirschian cultural literacy and *The New York Times* (Willinsky, 1988); Hirschian cultural literacy among ESL college students, developmental-reading college students, and nondevelopmental college students (Longman et al., 1990); background knowledge among remedial-reading college freshmen, ESL college freshmen, and nonremedial-composition college freshmen (Drabin-Partenio et al., 1982); Hirschian cultural literacy among a group of graduate students (R. M. Brown, 1989); general education/liberal education knowledge among a sample of freshmen, sophomores, juniors, and seniors at Michigan State University (Burhans, 1984); Hirschian scientific cultural literacy among a sample of university or college students (J. R. Cannon et al., 1992; Groves & A. F. Pugh, 1994); high-volume reading to improve cultural literacy among ESL students (California State University, 1990); Hirschian cultural literacy among undergraduate students enrolled in university business courses (Thibadoux et al., 1993); Hirschian cultural literacy among professors of education (Stallings et al., 1994); Hirschian cultural literacy among incoming law students (Vance et al., 1992); and the validity and reliability of the *Cultural Literacy Test* (Pentony, 1992).

Alleged cultural bias. The suggestion of an intelligence-cultural literacy relationship derives support from the research literature alleging a cultural bias in conventional intelligence assessment.

According to S. Graham and K. R. Harris (1989), “psychometric intelligence refers to the psychometric measurement of intelligence, or IQ, and is influenced by biological intelligence as well as cultural factors, education, socioeconomic status, and so forth” (p. 500). Brescia and Fortune (1988) contended that “testing students from backgrounds different from the culture in which the test was developed magnifies the probability of invalid results” (p. 1). Conducting research on a sample of Hispanic elementary students with limited English language proficiency, Collier (1987) stated, “It may be concluded that culturally and linguistically different children continue to be disproportionately referred and placed in special education” (p. 188). In a follow-up of the Minnesota Transracial Adoption Study, Weinberg, Scarr, and Waldman (1992) concluded that “in general, the results support the original findings: Being reared in the culture of the tests and the culture of the schools benefits all children’s IQ scores and school achievements” (p. 117). This Weinberg et al. (1992) follow-up study has been the subject of debate involving a racially genetic explanation of intelligence (M. Levin, 1994; Lynn, 1994; Waldman, Weinberg, & Scarr, 1994).

Employing eight referred Native Canadian children and eight referred non-Native Canadian children, Persi and Brunatti (1987) wrote, “Native children scored higher, relative to their psychometric IQ, than non-Natives on a [supposedly] culture-free test of abstract reasoning [i.e., the *Category Test*]” (p. 18). They also commented that “IQ measures such as the WISC-R [*Wechsler Intelligence Scale for Children—Revised*], the McCarthy Scales, and the Stanford-Binet all assess a fund of knowledge which is easily acquired in the course of typical experiences of non-Native children” (p. 15) but that “the different fund of knowledge acquired by traditional

Native children is relatively unmeasured by such tests" (p. 15). Similarly, in research on "100 White fifth and sixth graders and 100 Mexican American fifth graders" (p. 156), Valencia, Rankin, and Livingston (1995) reported, "In short, the Mexican American sample's performance compared to the White group's performance [on the *Kaufman Assessment Battery for Children (K-ABC)* intelligence subtests, achievement subtests, and global subtests] was (a) very comparable in intellectual functioning, but (b) significantly and consistently lower in Achievement" (p. 158).

Croft (1982) offered the following overview:

> Major writers in the field of psychological testing agree that there is no such thing as a 'culture fair' or 'culture free' test, especially since there is no universal culture that test items can validly measure. 'Culture fairness' is not an either-or attribute but rather a number of dimensions along which various aspects of tests can range, and so is a matter of degree.
>
> . . . . No test is culture free. (p. 3)

Less indulgent of cultural effects, Nash (1984) delivered this indictment of intelligence testing:

> *Ability (IQ) tests are biased in the strongest sense of all because it is claimed, on grounds which are ridiculously easy to demonstrate cannot be proven, that they offer scientific evidence for the social and racial distribution of mental powers when they merely sample acquired (cultural) knowledge.* (p. 155)

The alleged bias of intelligence tests sparked early disagreement within the judiciary as reported by R. L. Hale, Raymond, and Gajar (1982):

> In October 1979, Judge Robert Peckham, in the Larry P. decision, ruled that intelligence tests were culturally biased and permanently extended the moratorium in California on the use of IQs for placing minority children into classes for the educable mentally retarded. In July 1980, Judge John Grady, in Pase *v.* Hannon, ruled that intelligence tests were not biased and upheld their use for assessing minority children. (p. 145)

Despite inconclusive judicial debate over the possible bias of intelligence measures, a convincing case for the relationship between intelligence measures and cultural factors can be constructed from research evidence documenting the inappropriateness of allegedly biased intelligence testing for clients relatively unfamiliar with the cultural underpinnings of such testing.

For instance, G. M. Pugh and Boer (1989) submitted that the *Wechsler Adult Intelligence Scale—Revised (WAIS-R)* with its 10 culturally specific items "may contain other inherent problems of cultural bias" (p. 138) and that "it may be that the WAIS-R should not be used in Canada or other non-U.S. countries when only continental U.S. norms are available" (p. 138). To accommodate Canadian clients, G. M. Pugh and Boer (1991) provided some possible Canadian substitution items for culturally specific American items contained in the *WAIS-R* Information subtest. Some of those substitutions are Prime Ministers (Canadian) substituted for Presidents (American), *Gordon Lightfoot* (Canadian) substituted for *Armstrong* (American), and *W. O. Mitchell* and *Margaret Atwood* (Canadian) substituted for *Earhart* (American). Concerned about culturally biased testing of minority children in Canada, Tamaoka (1988) somewhat reconciled the cultural bias of intelligence tests with the originally intended purpose of intelligence tests in that "the commonly-used IQ tests in Canada do not necessarily represent the child's true general ability, even though these tests will have a reasonable predictive power of [a] child's academic success at Canadian schools" (p. 19).

In a study of Hispanic, black, and white urban elementary pupils, Olivarez, D. J. Palmer, and Guillemard (1992) discovered that "with WISC-R and K-ABC [*Kaufman Assessment Battery for Children*] IQ measures as predictors, regression analyses on the W-J [*Woodcock-Johnson Psychoeducational Battery*] Mathematics and Oral Language achievement measures evidenced bias across ethnic groups for both referred and nonreferred students" (p. 182). In addition, "bias due to language dominance also was found for the K-ABC Sequential and Mental Processing scales when regressed on the W-LPB [*Woodcock Language Proficiency Battery*] Oral Language achievement scale" (p.

184). Grubb (1984) tested the "*cultural distance* hypothesis" (p. 23) among a sample of black and white postsecondary school adults and contributed this eloquent conclusion:

> Intelligence can take many forms and it is time psychologists and educators realized that this complex subject, intelligence, cannot simply be given a number on a unitary scale. It is so much more. It is as much culture as electro-chemical brain synapses, as much ethnicity as categorical knowledge, as much a consequence of role defined behavior as it is a result of opportunity. (p. 52)

The controversy over culturally biased intelligence testing generated professional interest in culture-fair intelligence testing (Cattell, 1971) and in culture-free intelligence testing (Boocock, 1980) as alternatives to apparently culturally biased intelligence testing. Sigmon (1983) explained that some psychologists had hoped to find culture-fair assessment in nonverbal intelligence testing:

> Because of the issue of test bias, contemporary psychologists—who have been intimately involved with intelligence and IQ tests since their inception—have searched for a "culture-fair" test of cognition for schoolchildren. Raven's Colored Progressive Matrices Scale (revised order, 1956, booklet form . . .) was thought by some to be the panacea. (p. 16)

But "it appears that the CPM [*Colored Progressive Matrices*] is neither a 'class-fair' or 'gender-fair' test" (p. 24). In fact, Croft (1982) noted, "There is a large body of evidence to suggest that non-verbal and performance tests may be *more* culturally biased than language tests" (p. 2).

The controversy over culturally biased intelligence testing also generated professional interest in culture-specific intelligence testing, which could not exist unless intelligence testing could be intentionally culturally biased. Some examples of culture-specific intelligence tests are the *Black Intelligence Test of Cultural Homogeneity (BITCH-100)*, the *Student Hype Arranged for Teachers (S.H.A.F.T.)*, the *American Cross Cultural Ethnic Nomenclature Test (ACCENT*, Form A*)*, and the *Dove Counterbalance Intelligence Test* (R. L. Williams, 1975). Conversely, a culturally sensitive variable labeled Estimated Learning Potential (ELP) was derived from traditional intelligence data in an attempt to adjust for cultural influences. Figueroa and Sassenrath (1989) explained that "the primary purpose of ELP is to uncover abilities in children who, because of language and cultural differences, never succeed in optimizing their potential for learning in school" (p. 10).

Other perspectives. Some novel perspectives or findings regarding intelligence and culture have also been contributed by researchers. For instance, Church et al. (1985) found that even among children in a relatively nonacademic rural Philippine setting, a culturally appropriate intelligence measure was significantly related to the verbal/intellective aspect of barrio adaptive competence. Subsequently, an unexpected result was recorded by Church and Katigbak (1988), who found that Western intelligence "measures are better predictors of school performance than [culture-specific] . . . measures" (p. 171) among rural Philippine children, but they added that "it is possible, however, that [culture-specific] . . . measures will be more useful as predictors of performance in schools adopting an indigenous educational curriculum, for example, one that teaches locally relevant agricultural and animal-care skills" (p. 175).

Another unanticipated finding was presented by Dunn (1988), who, after a research review, wrote that "it has been repeatedly demonstrated that individual intelligence tests [other than the *Peabody* tests] administered in English predict school success as accurately for Hispanics as for whites and blacks. There is no evidence of test bias" (p. 51). Furthermore, regarding the *Peabody Picture Vocabulary Test (PPVT)* Spanish-language and English-language versions, "the revised PPVT has also been found to be as reliable for Latin as for Anglo children, and to correlate equally well with school achievement scores for these two ethnic groups, predicting reading scores slightly better than arithmetic scores" (p. 52). Similarly, Oakland (1983a) reported no evidence of "racial-ethnic or social class bias in the WISC-R . . . data" (p. 61) among Mexican-American, black, and Anglo subjects.

Conducting research entailing the *Wechsler Intelligence Scale for Children (WISC)*, the *Wide Range Achievement Test (WRAT)*, and teacher ratings, Svanum and Bringle (1982) wrote, "These findings indicate more or less equal predictability for both white and black [elementary school] children and for children from differing socioeconomic background" (p. 285) but cautioned, "Verification of a reasonable level of psychometric accuracy is only one of the issues involved in evaluating the 'cultural fairness' of tests" (p. 285). A review of the literature led Hernandez and Descamps (1986) to conclude the following:

> Studies attempting to find cultural differences between Mexican-American and Anglo students that affect schooling have generally been unsuccessful. It has been found that when SES factors are controlled, few differences exist between the two groups other than a greater family orientation, a different language, different nurturance/interpersonal intimacy needs, and a Mexican Catholic morality. (p. 4)

Support for those researchers unable to confirm cultural bias in intelligence testing was furnished by A. R. Jensen (1984), who focused attention on information processing deficit:

> The present evidence from studies of test bias renders as extremely implausible the explanation of racial and social class differences in terms of cultural differences in knowledge-base or differential opportunity for acquiring the content sampled by existing tests. Highly diverse test items maintain the same relative standing on indices of item difficulty within every American-born social class and racial group, regardless of the items' rated culture loadings. This phenomenon requires an explanation of group differences at some more basic level than that of cultural differences in exposure to the various kinds of knowledge sampled by standard tests.
>
> The answers, I believe, must be sought at the level of information processing. (pp. 9-10)

An apparently similar perspective on assessing cognitive competencies was forwarded by Miller-Jones (1989):

> Because representations of knowledge may be configured and accessed differently by individuals varying in cultural background, it is important to develop assessment procedures that permit and direct examiners to probe for the reasoning behind a child's response to an item. (p. 364)

A more vitriolic alternative to the cultural bias perspective was offered by Ogbu (1986) in this condemnation of the "American caste system":

> The performance of Black-Americans on IQ and other tests is not a true reflection of their intellectual ability or knowledge. It also is not evidence that black parents have failed to raise their children as white middle-class parents raise their children. Nor is it due merely to differences between blacks and whites in selected cultural traits. Rather, . . . it is the product of black subordination in the caste system. . . . (p. 50)

Overall, the role of culture in distinguishing intelligence testing from achievement testing, and thereby culture's inseparability from either type of assessment, was deftly elucidated by Berliner (1988):

> Vocabulary, while a strong correlate of the g factor of intelligence, and present as a sub-test in most familiar intelligence tests, is also the best example of a test that easily shifts from a central indicator of intelligence to an almost pure measure of academic achievement. For example, a test of French vocabulary, given in France, is ordinarily considered a measure of intelligence. A test of French vocabulary, given in the United States, is almost surely a test of school achievement. The cultural group one belongs to clearly determines whether this test is one of intelligence or one of achievement. The cultural group one belongs to is the basis of the classification of the test. That is, the classification of the test as one of intelligence or achievement cannot be made independent of the cultural group of the examinee. (p. 282)

Intelligence and Academic Achievement

Preponderance of evidence. Shaha and Wittrock (1983) recounted, "Since the days of Alfred Binet, educators have traditionally used tests of intelligence to predict academic achievement" (p. 1). Consequently, it is not surprising that the research literature supplies a preponderance of evidence that intelligence and academic achievement are unquestionably related. Haertel and Walberg (1980) assured, "The relationship between student ability and scholastic achievement is undisputed, and there would be little purpose in amassing empirical evidence merely to document that such a relationship exists" (p. K-19). They submitted the following summation:

> Group-administered tests of verbal ability correlate from .40 to .90 with achievement tests in a range of school subjects across grade levels 1 to 12, with the median correlation being .74 and the mean correlation . . . being .71 for grades 1 to 4, .75 for grades 5-8, and .76 for grades 9-12. (pp. K-24-K-25)

Moreover, "higher correlations [of ability and achievement] are obtained with [achievement] test scores than with grades, but the latter may represent a broader range of significant schooling outcomes than do [achievement] test scores alone" (p. K-25). The ability-achievement relationship may be greater than customarily supposed, due to its apparent endurance over time, according to Kuusinen and Leskinen's (1988) analysis of a longitudinal study spanning 8 to 10 years:

> The bulk of evidence in previous research is based on the relations between observed ability and achievement variables. In the present study the relations between ability and achievement were analysed by using latent variables. The results showed that intellectual ability explained 49% of general achievement and, considering the long time interval between measurements and the young age of subjects at the time of first testing, the results indicate that intellectual ability and school achievement are more highly correlated than is currently believed. However, in generalizing the findings the nature of ability tests and the type of school curriculum as well as teaching methods should be considered. (pp. 115-116)

Bryan (1989) stated that "the IQ test remains the best instrument for predicting academic achievement" (p. 480). In a study analyzing High School and Beyond data, D. S. Watts and K. M. Watts (1991) reported that "the best predictor of student academic achievement was ability" (p. 105). This finding aligned with that of Cool et al. (1991), who, examining High School and Beyond data, concluded that "similar to previous studies of this type, the strongest direct influence on achievement was from intellectual ability" (p. 34).

Addressing a possibly attenuating variable of traditional schooling versus open schooling, Curry (1984) commented, "The relationship of IQ to achievement seems to transcend school type differences" (p. 183). Researching psychometric intelligence, cognitive style, location (urban versus rural), and culture (Anglo-Australian versus Aboriginal-Australian), L. A. Clark and Halford (1983) explained that "a final comparison was made to determine the relationship between nonverbal intelligence and school achievement when all the other variables—style, culture, and location—were held constant" (p. 290). They determined that "psychometric test intelligence is a more powerful predictor than all the other variables combined" (p. 290). It is also noteworthy that intelligence has been identified as an effective covariate (Creemers, Reynolds, & Swint, 1996; Kundert et al., 1995).

Researchers have investigated the comparative advantage of one intelligence scale over another. Using a sample of University of Salamanca students, Ortega Esteban, Ledesma Sanz, López Sánchez, and Prieto Adanez (1983) noted the comparative advantage of verbal intelligence data. They stated, "With this [research] we can corroborate a conclusion repeatedly found in other research work: verbal [intelligence] tests are more predictive about output than general intelligence or practical intelligence tests" (p. 72). Citing Sattler's (1982) summary of previous studies' results, M. J. Wiese, C. Lamb, and Piersel (1988) reported that *WISC-R* Verbal IQ-*WRAT* median correlations were stronger than Performance IQ-*WRAT* median correlations and Full Scale IQ-*WRAT* median correlations.

This comparative advantage of verbal intelligence may not apply equally to other subject samples. For instance, a contrasting result with Columbia River Basin Native Americans was reported by McCullough, J. L. Walker, and Diessner (1985), who wrote, "It should be noted that the WISC-R Full Scale score was a stronger predictor of [*Sequential Tests of Educational Progress (STEP)*] reading achievement than were the other two Scales [i.e., Verbal and Performance]" (p. 27). Moreover, "this may indicate that the Verbal Scale is not accurately assessing the subject's verbal abilities, but rather some cultural differences in knowledge acquisition" (p. 27). They also documented nonpredictive and inverse relationships between intelligence and achievement:

> This study of Columbia Basin Native Americans provides results that are consistent with studies of other Native American groups. Verbal Scale scores of the Wechsler intelligence test (WISC-R and WAIS [*Wechsler Adult Intelligence Scale*]) were significantly below the normative mean. Performance Scale scores were at or above the normative mean. Further, Verbal and Full Scale scores were predictive of [*STEP*] reading achievement, with correlations significant at the .001 level. However, for [*STEP*] math achievement, the Verbal Scale was a fair predictor (.38), the Full Scale did not predict at all (.04), and the Performance Scale predicted inversely at a fair level (-.41). (p. 27)

Addressing the comparative advantage of psychometric intelligence over Piagetian intelligence, Silverstein, L. B. Pearson, and Legutki (1987) suggested that, among educable mentally retarded children, "psychometric intelligence is the better predictor of academic achievement" (p. 328).

An ability-achievement relationship based upon various ability measures and achievement measures has been collectively suggested by researchers (Buttner, 1984; Carey & Cummins, 1983; Dash, Mohanty, & Kar, 1989; Drudge, T. P. Reilly, Rosen, Fischer, & D. Loew, 1981; Eaves & Subotnik, 1989; J. Gottlieb, B. W. Gottlieb, Schmelkin, & Curci, 1983; R. C. Johnson, Nagoshi, Ahern, J. R. Wilson, DeFries, McClearn, & Vandenberg, 1983; Lassiter & Bardos, 1995; Massoth, 1985; McCabe, 1991; Monk, Mayer, & Pezaro, 1985; Mukerjee, Chatterji, & R. Gupta, 1991; Okasha, Kamel, Lotaif, Khalil, & Bishry, 1985; Paal, Skinner, & Reddig, 1988; Poteat, Wuensch, & Gregg, 1988; Potter & Emanuel, 1990; Randhawa, 1989; Ruble & Schurr, 1986; Sauer et al., 1985; Sharma & Rao, 1983; S. Sinha et al., 1988; Sudhir &

Muraleedharan Pillai, 1987; Teachman, 1996; Tori, 1989; Walberg, R. P. Singh, & Tsai, 1984; A. K. Watson & Monroe, 1987).

Worthy of mention in discussing the ability-achievement relationship is the fundamental educational expectation that a strong ability-achievement relationship ought to be present within the human population and that a weak ability-achievement relationship, in which ability is discrepantly greater than achievement, indicates a dysfunctional ability-achievement relationship. Such a dysfunctional ability-achievement relationship has become the working diagnosis of *learning disability* for which Shepard, M. L. Smith, and Vojir (1983) provided a legislative perspective:

> In 1975, the U.S. Congress created an entitlement, the right of the handicapped to a "free, appropriate education". . . . The learning disabled were referred to in government regulations as those individuals with severe discrepancies between their achievement and intellectual ability, the discrepancy having been caused by disorders in basic psychological processes (e.g., memory, perception). Those whose underachievement was caused by environmental or cultural deprivation or sensory, mental, or emotional deficiency were excluded from the category. (pp. 309-310)

L. D. Evans (1990) noted the educational response to this legislative action:

> In 1977 the U.S. Office of Education issued regulations to clarify the identification of students with learning disabilities. Identification was to be based upon a severe discrepancy between intellectual ability and achievement that was not primarily due to exclusionary factors. (p. 406)

It was further explained, "The RDM [Regression Discrepancy Model] is a tool to help fulfill a portion of the identification criteria for learning disability, the assessment of discrepancy between intellectual ability and achievement" (p. 411). It is therefore not surprising that "the most common strategy for screening children with learning disabilities has been to search for a discrepancy between ability and achievement" (Berk, 1982, p. 11). Connell (1991) confirmed the discrepancy criterion's popularity with "Several experts . . . agree that the one common indicator in all the definitions [of learning disability] is the existence of a severe discrepancy between aptitude and achievement" (p. 1).

Standardized measures. Some notable standardized tests have surfaced in the research literature. The standardized instruments which have been utilized by researchers to measure ability include the *Wechsler Preschool and Primary Scale of Intelligence (WPPSI)*, the *Wechsler Intelligence Scale for Children—Revised (WISC-R)*, the *Wechsler Adult Intelligence Scale—Revised (WAIS-R)*, the *Kaufman Assessment Battery for Children (K-ABC)*, the *Differential Aptitude Tests (DAT)*, the *Peabody Picture Vocabulary Test—Revised (PPVT-R)*, the *McCarthy Scales of Children's Ability (MSCA)*, the *Woodcock-Johnson Tests of Cognitive Ability (WJ)*, the *Cognitive Levels Test (CLT)*, the *Cognitive Abilities Test (CAT)*, the *Slosson Intelligence Test (SIT)*, the *Otis-Lennon Mental Ability Test (OLMAT)*, and the *Otis-Lennon School Ability Test (OLSAT)*. The standardized instruments which have been utilized by researchers to measure achievement include the *Peabody Individual Achievement Test (PIAT)*, the *Wide Range Achievement Test (WRAT)*, the *Wide Range Achievement Test—Revised (WRAT-R)*, the *Comprehensive Tests of Basic Skills (CTBS)*, the *California Achievement Tests (CAT)*, the *Kaufman Test of Educational Achievement (K-TEA)*, the *Academic Levels Test (ALT)*, and the *Stanford Achievement Test (SAT)*.

Evidence of the intelligence-achievement relationship has been suggested in studies involving these notable standardized tests. For example, in an Israeli study, Katz and Ben-Yochanan (1990) found that *WPPSI* "verbal intelligence in kindergarten was significantly associated with reading comprehension at the end of Grade 1" (p. 48) but that *WPPSI* verbal intelligence in kindergarten proved an insignificant latent predictor "of reading comprehension, general intelligence and academic achievement at the end of Grade 8" (p. 49). Employing private, coeducational day school students, Novak, W. T.

Tsushima, and M. M. Tsushima (1991) reported a modest correlation between prekindergarten Full Scale IQ based on verbally weighted and equally weighted short forms of the *WPPSI* and "certain [*Educational Records Bureau Comprehensive Testing Program*] school achievement test scores obtained at the end of the first- and second-grade years" (p. 700). Considering grade point average, the *PIAT*, *WISC-R* Vocabulary, and *WISC-R* Block Design, Pellegrini, Masten, Garmezy, and Ferrarese (1987) wrote that "[after student gender was entered into regressions and found to be nonsignificant in predicting PIAT or GPA,] as expected, IQ was a powerful predictor of academic achievement, providing R^2 increments of 59 and 44% for PIAT performance and GPA, respectively" (p. 708).

T. C. Smith, B. L. Smith, and Dobbs (1991) demonstrated that "the PPVT-R correlated significantly with the WRAT-R in Reading, Spelling, and Arithmetic" (p. 55). They also showed that "correlations of the [*WISC-R*] Full Scale IQ . . . with the WRAT-R scores ranged from .41 to .57" (p. 55). Reporting on referred children to whom were administered at least 10 *WISC-R* subtests in addition to *WRAT* Reading and Arithmetic, R. L. Hale and Saxe (1983) indicated that *WISC-R* Full Scale IQ "was the most important single predictor of achievement" (p. 160). T. P. Reilly, Drudge, Rosen, D. E. Loew, and Fischer (1985) concluded that the *WJ*, *MSCA*, and *WISC-R* "appear to be quite useful in predicting achievement, measured objectively [by the *WRAT*] or subjectively [by teacher ratings]" (p. 382). Their report aligned with that of Fisher (1995):

> A positive correlation was found between intelligence scores, obtained on the Otis-Lennon School Ability Test, and [final yearly grades in] the subject areas of reading (.49), English (.50), social studies (.44), science (.51), and math (.47). A lesser correlation was found with spelling (.30). (p. 6)

Examining *PPVT-R* and *PIAT* scores among a sample of Navajo children, Naglieri (1984) concluded, "The two [tests'] arrays of standard scores, correlated by Pearson's method significantly [$p < .005$] over time [i.e., 10.5 months], imply that the PPVT-R has potential as a predictor of achievement for Navajo children similar to those in the present sample" (p. 298) but added, "However, the lower PPVT-R mean score suggests that use of the obtained scores to predict achievement will likely lead to many false negatives [i.e., false negative predictions]" (p. 298).

Assigning *DAT* Abstract Reasoning to operationalize intelligence and assigning public examinations to operationalize educational achievement in a sample of secondary students in Northern Ireland, Lynn et al. (1983) demonstrated that "intelligence accounts for 23.6% of the variance in examination results for boys and 26.1% for girls, after standardizing for home background" (p. 477). Sampling a group of adjudicated adolescent delinquents, Eaves and Cutchen (1990) provided discriminant validity correlation *r*'s of .76 between *ALT* Total Achievement and *CLT* Cognitive Index; .69 between *ALT* Total Achievement and *WISC-R* Full Scale IQ; .74 between *PIAT* Total Achievement and *CLT* Cognitive Index; and .79 between *PIAT* Total Achievement and *WISC-R* Full Scale IQ.

Analyzing *WRAT-R*, *K-TEA*, and *WISC-R* data from learning disabled elementary students and from referred-but-not-placed elementary students, Prewett, Bardos, and D. B. Fowler (1990) established that "the various achievement subtests on both tests [i.e., the *WRAT-R* and the *K-TEA*] correlated significantly with the [*WISC-R* Full Scale IQ]" (p. 57).

Other studies have documented a relationship of *WISC-R* Verbal with *WRAT-R* achievement measures among learning disabled and mentally retarded subjects (T. C. Smith & B. L. Smith, 1986); *WISC-R* Verbal with reading, spelling, and mathematics scores (Yule, R. D. Gold, & Busch, 1981); *WISC-R* Verbal IQ, Performance IQ, and Full

Scale IQ with *PIAT* Total Test among child psychiatric inpatients (A. J. Finch, Blount, Saylor, Wolfe, Pallmeyer, McIntosh, Griffin, & Carek, 1988); *WISC-R* Freedom from Distractibility and Verbal Comprehension with *WRAT* Reading, Spelling, and Arithmetic among student psychological referrals (F. M. Grossman & K. M. Johnson, 1982); *WISC-R* subtest regroupings with several areas of *WRAT* achievement among referred children (F. M. Grossman & Galvin, 1987); *WISC-R* Full Scale IQ with *WRAT-R* Arithmetic, Spelling, and Reading among children making inadequate academic progress (Prewett & D. B. Fowler, 1992); *WAIS-R* Performance Scale with *SAT* (*Stanford Achievement Test*) Special Edition for the Hearing Impaired Reading Comprehension and Mathematical Computation among deaf adolescents of high school age (Paal et al., 1988); second grade *CAT* (*Cognitive Abilities Test*) intelligence scores with second grade, fifth grade, and seventh grade *CTBS* among K-5 retained or kindergarten-delayed students (Kundert et al., 1995); *WISC-R* Verbal IQ, Performance IQ, and Full Scale IQ with *WRAT* subtests among Mexican-American children (Mishra, 1983); *WISC-R* nonverbal subtests factor scores with *WRAT* subtests among Mexican-American children (Mishra, 1983); the *SIT* with *SAT* (*Stanford Achievement Test*) achievement scores among gifted students (F. M. Grossman & K. M. Johnson, 1983); the *OLMAT* with *SAT* (*Stanford Achievement Test*) achievement scores among gifted students (F. M. Grossman et al., 1983); *WISC-R* IQs with *CAT* (*California Achievement Tests*) Total Battery among black and white students (Poteat et al., 1988); and *SIT* IQ with *WRAT-R* Arithmetic, Spelling, and Reading among children making inadequate academic progress (Prewett et al., 1992).

Contrary to most intelligence-achievement research, which focuses on the presence or absence of an intelligence-achievement relationship, a study by Antonak (1988) challenged the validity of a group intelligence test:

No support was found for the contention that the [*OLSAT*] group IQ score can

> explain [*SAT* (*Stanford Achievement Test*)] achievement test scores. The group IQ scores co-vary strongly with scholastic achievement scores within a grade because the group IQ score is a measure of scholastic achievement and not mental ability, scholastic potential, or achievement capacity. (p. 28)

Additionally, the achievement instrument was deemed a possible predictor instrument in that "the SAT composite score appears to be an actuarial predictor of later scholastic achievement for groups of pupils and therefore may be useful for gross evaluations of educational programs and curricula using large samples of pupils" (p. 28).

Other factors. In a synthesis of nine papers analyzing National Assessment of Educational Progress (NAEP) data and in which SES surprisingly was employed as an ability proxy, Borger and Walberg (1983) summarized, "The results support the theoretical view that no single factor dominates learning; any factor—most plausibly ability, motivation, and amount and quality of instruction—may be necessary but insufficient by itself for learning" (p. 13). After a literature review, Mohan and Gulati (1986) determined that "the correlations between academic achievement and intelligence reach up to approximately .50 which leaves a scope for entertaining some other environmental and psychological factors, which also play an important role in a person's academic achievement" (p. 2).

Studies have suggested that an understanding of the relationship between intelligence and student outcomes may be enhanced by independent variables, alternative variables, attenuating variables, or complementary variables defining achievement motivation (Cassidy & Lynn, 1991); learning style (Birrell, Phillips, & Stott, 1985; P. A. McDermott, 1984; Stott, 1985); socially influenced intrinsic intellectual motivation (J. Lloyd & Barenblatt, 1984); adaptive behavior (diSibio, 1993; Oakland, 1983b); study habits, attitudes, and fieldwork (G. Webb, 1987); teachers' qualifications and experience (G. Webb, 1987); death of biological father (Smilansky, 1982); Piagetian task achievements (Haupt & Herman-Sissons, 1981); a preschool intervention program (Walden & Ramey, 1983); mother-child interaction style (Portes & Dunham, 1984); social class of school attended, teacher behavior based on conception of student ability, and parent behavior based on conception of student ability (Entwisle & Hayduk, 1982); locus of control (Creek, McDonald, & Ganley, 1991; Keith, Pottebaum, & Eberhart, 1985, 1986); primary school achievement (Meester & de Leeuw, 1985); previous achievement levels (B. D. Anderson & Dorsett, 1981); teacher evaluation of students (Aubret, 1987); neuropsychological status in children presenting psychiatric disorders (Tramontana, Hooper, Curley, & Nardolillo, 1990); self-efficacy (J. W. Thomas, Iventosch, & Rohwer, 1987); learning skills (L. F. Green & Francis, 1988); school environment (Kneip, 1987); cognitive processes and affective processes (Shaha et al., 1983); metamemory (Kurtz, Borkowski, & Deshmukh, 1988); socioemotional characteristics of persistence and adaptability (R. P. Martin & Holbrook, 1985); neuropsychological subtests and cognitive subtests in explaining specific achievement areas (Shurtleff, Fay, R. D. Abbott, & Berninger, 1988); SES (Grewal, 1985); home language, gender, ethnicity, and age (Helmstadter & Walton, 1986); friendship reasoning stage (Berkowitz & M. Keller, 1989); interaction of school area socioeconomic status and student gender (Caskey & Larson, 1983); nonacademic factors influencing teachers' grades (D. L. Johnson and McGowan, 1984); interaction of *WISC-R* Verbal IQ-Estimated Learning Potential, race, and sociocultural quartile (Figueroa et al., 1989); home environment factors (Heath, P. F. Levin, & Tibbetts (1988); and early childhood participation in a self-controlled interactive reading and language program (Steg, Swinton, Schulman, & Rudderow, 1978).

Dissenting opinion. Other researchers' work has challenged the conventionally accepted relationship between ability and achievement. In some cases it would appear that their results may have been attenuated by the specific subject samples used. For example, G. Webb (1987) published unexpected findings regarding *General Certificate in Education (GCE)* A-level geography achievement among students in Jamaica and England:

> Cognitive ability was found to be unimportant in terms of explaining achievement in Jamaica, and it played only a minor role in England. It may also be added that none of the individual cognitive variables [i.e., *DAT* Space Relations, *DAT* Verbal Reasoning, and the *Group Embedded Figures Test*] was significantly correlated with [*GCE* A-level results] . . . in Jamaica, but that both [*DAT* Verbal Reasoning] . . . and [the *Group Embedded Figures Test*] . . . correlated with [*GCE* A-level results] . . . in England. In terms of the overall A-level geography result, therefore, nothing of significance was added to the debate concerning the importance of the various aspects of cognitive ability for overall achievement in geography. (p. 225)

In a study of high school graduates, Stockard, Lang, and Wood (1985) noted that "ability test scores showed little relative influence on grades, except for a slight *negative* impact on mathematics grades" (p. 16). Regarding precocious readers, Jackson (1988) explained, "The relationship between general intellectual ability, as measured by scores on standard tests, and precocious reading ability has been investigated repeatedly and always has been found to be modest" (p. 200).

F. M. Grossman and J. H. Clark (1984) concluded, "The present results further question the use of selected WISC-R IQs for educable mentally handicapped students in predicting achievement as measured by the WRAT subtests. . . . [There was an] absence of predictive validity in the current study" (p. 229). In research on hearing children versus deaf children, Padmapriya and Mythili (1988) determined, "The correlation co-efficient between academic achievement [measured by annual examination marks] and intelligence [measured by *Raven's Standard Progressive Matrices (RSPM)*] is significant . . . for normal children whereas it is not significant for the deaf children" (p. 34). Employing both handicapped and gifted special education students, F. W. Beck, Spurlock, and Lindsey (1988) learned that "correlations between the [*WISC-R*] Verbal Scale IQs and the [*Woodcock-Johnson Tests of Achievement (WJTA)*] reading and mathematics achievement clusters were significant (r = .8). The [*WJTA*] written language cluster was not predicted by any of the [*WISC-R* subtest] models" (p. 590).

Investigating the intelligence-achievement relationship's controversial genetic aspect, Cardon, DiLalla, Plomin, DeFries, and Fulker (1990) studied families in the Colorado Adoption Project:

> The association between tests of achievement and intelligence is largely due to genetic factors. It has been known for a long time that IQ and school achievement measures are substantially correlated. However, the typical correlation of .50 means that there are many cases of bright children who do not achieve and vice versa. The present results imply that the two domains are nearly perfectly correlated in terms of genetic influence and that heredity is largely responsible for the phenotypic association. (p. 255)

Others have become embroiled in the debate over a racially genetic explanation of intelligence (M. Levin, 1994; Lynn, 1994; Waldman et al., 1994; Weinberg et al., 1992).

Additional potentially challenging insights into the historically well-established intelligence-achievement relationship have been offered by other researchers (Dash et al., 1989; Gersten, Becker, Heiry, & W. A. T. White, 1984; F. M. Grossman & J. H. Clark, 1982; A. Obrzut, R. B. Nelson, & J. E. Obrzut, 1984; Saigh & Antoun, 1983; Stedman, R. M. Costello, Gaines, Villarreal, D. Abbott, & Duross, 1989; Steg et al., 1978).

Demography

A landmark report on educational equality (J. S. Coleman et al., 1966) stated, "It is known that socioeconomic factors bear a strong relation to academic achievement. When these factors are statistically controlled, however, it appears that differences between schools account for only a small fraction of differences in pupil achievement" (pp. 21-22). In other words, J. S. Coleman et al. (1966) indicated that student demography seemed to transcend the classroom in determining academic achievement. Subsequent research has bolstered their finding. For instance, V. E. Lee and Frank (1989) reached a similar conclusion at the community college level. In a longitudinal study, Schiamberg and Chin (1987) found occupational attainment to be affected more so by home and family than by schooling. Boocock (1980) offered this summation of SES:

> The family characteristic that is the most powerful predictor of school performance is socioeconomic status (SES): the higher the SES of the student's family, the higher his or her academic achievement. This relationship has been documented in countless studies and seems to hold no matter what measure of status is used (for example, occupation of principal breadwinner, family income, parents' education, or some combination of these). . . . It holds . . . even when the powerful variables of ability and past achievement are controlled. (p. 40)

Dumaret (1985) explored "the effects of environmental factors on the development of closely related children raised under contrasting conditions" (p. 573) and discovered that "adoption [into privileged environments] played a dynamic role, permitting . . . [adopted] children to develop their intellectual resources thanks to a favourable social, cultural and familial environment" (p. 573). A Danish adoption register provided subjects for Teasdale and Owen (1984), who reported that male adoptees "reared in homes that were significantly wealthier and of a higher social class" (p. 622) were found to "have a significantly higher BPP [*Børge Prien Prøve* intelligence test score] and EL [educational level score], the latter effect being more marked than the former" (p. 622). On the contrary, Sauer et al. (1985) found no significant relationship between SES and academic achievement.

Examining more specific demographic variables in then unpublished data of the National Center for Education Statistics, Feistritzer (1985) observed, "Students who live with both parents, come from high-income families, the top socio-economic status quartile, have relatively highly educated parents, with both parents in the home—these students score highest on achievement test scores" (p. 1). Wells (1983) noted a significant relationship between family background and use of written language at school entry, which was "the single most powerful predictor of educational attainment at 7 years [of age]" (p. 71).

From a school effect perspective, a tempering of the student demography effect was supplied by Edmonds (1982), who wrote, "While schools may be primarily responsible for determining whether or not students function adequately in school the family is probably critical in determining whether or not students flourish in school" (pp. 4-5). In a study of reading and science scores in seven Latin American countries, Sanguinetty (1983) further qualified the student demography effect by reporting that the significant influence of family variables "decreases as the educational level increases" (p. 26). Conversely, Madhere and E. Walker (1985) concluded that, among a sample of Chapter I students, "the significance of strictly academic factors on learning diminishes while that of social factors increases as one moves up the grades" (p. 20).

Another perspective was supplied by Grissmer et al. (1994), who explained the multiple-risk hypothesis:

> The child development and more clinically oriented literature focuses on the effects of multiple-risk factors on children. The underlying hypothesis implies that test scores might fall dramatically (nonlinearly or exponentially) when children are under conditions of multiple risk. Basically, this means that the effects on test scores of having low family income and low levels of parental education are worse than the additive effects of each factor independently. (p. 108)

Byrd and Weitzman (1994) perhaps illustrated the multiple-risk hypothesis with a scenario example from their research involving the 1988 Child Health Supplement to the National Health Interview Survey:

> The average child in this [logistic regression] model has a 7.6% chance of early [i.e., kindergarten and first grade] retention. A female who had a low birth weight

> and who is living in poverty with a poorly educated mother without the biological father in the home would have a 29.8% risk for early failure, a fifteen-fold increase in risk over the lowest risk group. (p. 484)

Contrary to J. S. Coleman et al. (1966), other researchers do not support the strength of demography on outcomes. For example, Stickney et al. (1987) studied district-level demography and arrived at the following:

> Similar to Coleman, the current survey finds that family variables are more related to achievement than are school variables, if one looks across grade levels. . . . Contrary to Coleman, however, is the finding that some schooling processes in the elementary grades *are* associated with predicting a greater variability in achievement than are the family variables. (p. 48)

In examining factors affecting successful repetition of first grade, Sandoval and Hughes (1981) discovered that, among other factors, family background was "relatively unimportant as to whether or not the child emerged successfully from the repeated year, ready for the second grade" (p. 149). Those students who successfully repeated first grade appeared to have "had learned some academic material (particularly reading), had good self-concepts, and had adequate social skills. . . . They also had average vocabularies (or intelligence) and had parents who were involved in the school and had positive attitudes about retention" (p. 149). According to S. Dornbusch (1986), "students' activities and relationships with their parents predict grades more surely than do all the other indicators—parental education, family income, ethnicity, gender, and family structure—put together" (p. 2).

Operationalizing sixth-grade student achievement by and determining school effectiveness by the *Sequential Tests of Educational Progress (STEP)*, Fenn and Iwanicki (1986) presented the following school effect result:

> The covariates utilized were the background variables of family socioeconomic status [i.e., school lunch assistance eligibility], student sex, family mobility, student attendance, student age, family size, family intactness, father's education, mother's education, and father's occupation. . . . [S]tudent achievement in the more

> effective schools was significantly higher than student achievement in the less effective schools across the . . . achievement areas tested. . . .
>
> . . . [T]here was no significant difference . . . between the more effective and the less effective schools in terms of student ability. (p. 14)

Considering, among other variables, the characteristics of family and community, Schiefelbein and Farrell (1983) learned that in a "group of academically successful Chilean students changes in achievement level during secondary schooling can be explained primarily by the quality of the educational experience they have received" (p. 67). This finding aligned with a conclusion of A. Cuellar and M-F. Cuellar (1991) "that solutions to advance students and have them in the winners' circles are best obtained in the school itself" (p. 129).

In preface to "the final report of a nine-month study of effective schools for poor black children" (p. iii), Glenn (1981) concluded "that efforts to make schools effective for poor children should center around improving the professional skills and characteristics of the adults who are paid to work in schools" (p. v). Reinforcing this conclusion in research involving black, inner-city elementary school students, Murnane (1981) discovered school employee "vintage effects" in that "teachers hired in periods of rapidly growing enrollments were less effective on average than teachers hired during periods of enrollment declines" (p. 39). Pallas, Entwisle, Alexander, and Cadigan (1987) investigated student demography and verbal performance of first graders in a longitudinal study:

> We are left with an uncomplicated view of some complex results. Exceptional growth in verbal performance across the first grade is associated prominently with the characteristics of teachers and with indicators of the students' psychological maturity or temperament. Other noncognitive measures of students, most notably sex and race, and parent/family background variables, such as the parents' expectations or story reading, add nothing to our understanding of why some students are outliers in terms of verbal gains and others are not. (p. 268)

Detracting from the strength of the student demography effect per se, Lockheed, Fuller, and Nyirongo (1989) studied student motivational factors in Thailand:

> In both urban and rural settings, the conventional family background characteristics that were significantly related to initial levels of achievement were unrelated to gains in achievement except insofar as they operated through the motivational variables. (p. 253)

Detracting also from the strength of the school effect per se in science attitude and science achievement, Simpson and Oliver (1990) wrote, "It appears that family and school influences are heavily mediated by self and that science self concept, achievement motivation, and science anxiety are the major filters through which this relationship is formulated" (p. 13). Assigning nonconventional definitions to student demography, A. M. Bloom, G. W. McLaughlin, and D. D. Long (1984) reported "that [at Virginia Tech] the set of demographic measures which make a difference in explaining [physics] grades . . . include overall grade average, SAT [*Scholastic Aptitude Test*] Math score, high school rank, and the year in which the student took the course" (p. 4). Echoing the multiple-risk hypothesis (Grissmer et al., 1994), Shipman (1981) provided this statement from research on high and low achievers among economically disadvantaged black children:

> Finally, in reviewing the information gathered, one becomes acutely aware of the multiplicity of positive and negative factors for the children in these extreme achievement categories. Thus, it is not a particular parent, teacher, or child attitude, attribute, or behavior, or a particular social setting, but the cumulative effects of their multiple interactions. Moreover, for different children, different clusters of variables appear to be differentially effective, suggesting the need for multidimensional assessment of individuals and their environments. (p. 89)

The effect of student demography on educational outcomes appears to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Yet there exists a dearth of research describing the effect of student demography on the more narrow subdomain of cultural literacy within the broader domain of academic achievement. Nonetheless, due to the extent of research illustrating the effect of demography, the present study incorporated four conventional demographic variables in the form of family structure, parental age, parental educational level, and student gender.

Family Structure Main Effects

Main effects and interaction effects are reported in separate sections. In other words, if main effects reported here have attenuating interaction effects, then those attenuating interaction effects are reported in the subsequent "Interaction Effects" section.

As with demography generally, conflicting reports of the effects of family structure specifically have surfaced in the research literature. For instance, regarding intact families, Gill (1992) made this statement:

> One must begin by noting the mass of simple, direct evidence strongly suggesting that children who are brought up by their biological parents in intact families are far better off economically, emotionally, and developmentally than are children in any other family structure. (p. 83)

Yet in a meta-analysis involving a total of 137 published and unpublished individual studies between 1925 and 1986, Salzman (1987) wrote, "The findings . . . suggest that father absence does have negative effects on children's cognitive performance, although the magnitude and practical significance of the effects cannot be clearly established" (p. 32) and "There are data indicating that father absence is detrimental, that it has no effect, and that it may even stimulate the child's cognitive performance" (pp. 3-4). Vandamme and Schwartz (1985) found that, among 8-year-olds to 12-year-olds, "father-absence leads to poorer scholastic performance" (p. 212) but that "father-absent children had higher achievement motivation than father-present children" (p. 211).

Investigating data from the National Educational Longitudinal Study of 1988, Downey (1994) concluded that "children from single-father families do no better in school than children from single-mother families. Although children from single-father families score better on standardized tests, they fail to produce higher grades" (p. 144). Reporting on High School and Beyond vocabulary test scores, Mulkey et al. (1991) stated that, whereas mother absence proved insignificant, "after allowing for differences in background, economic status, and behavioral monitoring of the student, the effects of father-presence, which are not absorbed into any of these categories, represent on the whole, negative influences on the student's performance" (p. 12).

Blumenthal (1985) "did not find any strong or direct relationships between traditional maternal background characteristics such as income, father presence, welfare status, etc., and child outcomes [on a battery of instruments] at 36 months" (p. 5). Okasha et al. (1985) discerned a nonsignificant trend in which academically successful male Egyptian university students were without their fathers. This trend aligned with results of Amato et al. (1986), who researched life skills such as washing dishes, babysitting, hammering a nail, and using a telephone. They learned that among Australian primary school children "life-skills competence was [positively] associated with parental loss, maternal employment, and parental attention" (p. 66). On the other hand, considering the family a social system, Schwertfeger (1983) suggested "that presence of the father is especially important for the positive [cognitive and social] development of infants and toddlers" (pp. 24-25).

Using a national probability sample, Barbarin et al. (1993) examined parent-reported academic adjustment of black children and demonstrated a disadvantage for students "in single-adult biological mother households" (p. 433). Zakariya (1982) found lower school achievement among one-parent students than among two-parent students. In a longitudinal study, McConahay and Ferrett (1982) noted a tendency of high grade point averages among students from united families. Other researchers presented similar conclusions regarding the two-parent household's positive relationship with mathematics achievement (McNab & Å. Murray, 1985); with better student grades (D. M. Rosenthal & Hansen, 1980); and with higher academic achievement and intelligence (Buceta-Fernandez, Garcia-Alcaniz, & Parron-Solleiro, 1982).

In district-level research, Stickney et al. (1987) indicated an association between single-parenting and dropout rate. Kinard et al. (1987) noted that single-mother preschool children scored lower on verbal reasoning skills than did two-parent preschool children. N. M. Astone et al. (1991) extended the negativity of one-parent households to include stepparent households with "A key finding is that growing up in a stepparent family has similar negative consequences on the educational attainment process as growing up in a single-parent family" (p. 319). Featherstone et al. (1992) advanced a comparable finding in which students from intact families earned a higher grade point average than did students from single-parent families and stepfamilies. In contrast, Allison and Furstenberg (1989) observed that "remarried parents reported less academic difficulty for their children than did those parents who had not remarried" (p. 543). Adding a behavioral qualification, Thomson et al. (1994) wrote, "We find it particularly interesting that there are no significant differences in academic performance between mother-stepfather and original two-parent families, but that children in the former families exhibit more problematic behaviors and temperament" (p. 238).

With respect to divorce, Beer (1989) demonstrated lower grade point averages for students from divorced households. Results from J. Kunz and J. P. Kunz (1995) aligned with this finding. Investigating the parent-child relationship and recent divorce, Forehand, Middleton, and N. Long (1987) determined that students "experiencing 3 stressors (a poor relationship with both parents *and* divorce) are functioning less well [cognitively and socially] than . . . [students] experiencing 0, 1, or 2 of these stressors" (p. 314). But M. S. Thompson et al. (1988) detected no significant relationship between "parent-child interaction such as time spent reading or watching television" (p. 446) and children's achievement.

Related issues. There also exists more detailed research concerning family structure and related variables. Noting their conclusion to be especially applicable to white males and females, Myers, A. M. Milne, K. Baker, and A. Ginsburg (1987) stated that "students from single-parent families with mothers who work tend to experience increases in misbehavior and decreases in [academic] performance" (p. 30). Regarding academic achievement, D. W. Taylor (1986) stated that, among eighth graders in three Chicago elementary schools, "whether there is [*sic*] one or two parents in the households is not significant" (p. 49) but rather "the significant difference tends to point to the sex of the parent [favoring fathers]" (p. 49). But Shilling and Lynch (1985) differentiated students of single-parent fathers from students of single-parent mothers in that the former group exhibited lower reading and mathematics achievement. Regarding father-only versus mother-only households, Eagle (1989) determined, "The educational attainment of these [father-only] students was not significantly different from that of students in mother-only households" (p. 6). Introducing the consideration of stepfamilies, Kurdek et al. (1988) submitted these results:

> [Data] indicated that students in two-parent nuclear families had higher grades than those in either mother-custody or stepfather [i.e., mother-remarried] families . . . and higher [achievement and ability] quantitative factor scores than did students in stepfather families. . . . Last, students in mother-custody families had more absences than did students in either two-parent nuclear or stepfather families. (p. 92)

In preface to their study of Australian boys, Berry and Poncini (1982) commented, "The bulk of research done in North America indicates that father absence generally interferes with children's development, particularly the development of male children" (p. 1). They then reported that "it appears that father-present Australian boys tend to achieve significantly better [academically] than father-absent children" (p. 4). Conversely, Allison et al. (1989) detected "virtually no support for the hypothesis that marital dissolution has a greater impact on [American] boys" (p. 543). They offered this synopsis of their results:

> On the basis of a large, representative sample of children in the United States, we found that those who experienced a marital dissolution were significantly worse off than those who did not, with respect to several measures of problem behavior, academic performance, and psychological distress. These differences were observed in reports from parents, teachers, and the children themselves. Moreover, the differences persisted in the presence of such control variables as age, race, sex, mother's education, and mother's religious preference. (p. 546)

But "the proportion of variation in the outcome measures that could be attributed to marital dissolution was generally quite small, never amounting to more than 3%" (p. 546).

Other researchers have delineated a quite detailed component within the family structure main effect: reason for parental absence. Salzman (1987) summarized, "There is a wide discrepancy among research findings as to the effects of father absence due to divorce, separation, desertion, and death on children's cognitive performance" (p. 3). Okasha et al. (1985) discovered that "polygamy, divorce, separation and marital discord were . . . found more often in the homes of the failed [male Egyptian university] students" (p. 146) and that "perhaps surprisingly, the death of a parent was not associated with subsequent poor academic performance" (p. 146).

Diversity of samples. Family structure research has utilized diverse samples of subjects ranging from Israeli children (Pasternack & Peres, 1986)) to black

Transkeian Xhosa-speaking children (Cherian, 1990).

Some researchers (W. R. Allen, M. Hall, & Tabler, 1982; Myers et al., 1987) have insinuated a racial effect within family structure. S. M. Harris, S. R. Gold, and B. B. Henderson (1991) suggested "that [although] black females whose fathers leave the home have high daydreams of achievement and view themselves as masculine, these findings were not applicable to white women" (p. 1314). Researching nondisadvantaged University of Michigan black students, almost three fourths of whom had been raised in two-parent homes, W. R. Allen (1981) rhetorically asked, "Why is it that these high achieving, highly motivated youngsters, whose backgrounds seem to predict success, do so poorly as a group?" (p. 8). Grubb (1984) deduced, "It would appear that Black children require the presence of a father in the home in order to adequately gain the White sub-culture trait measured by the Peabody [Picture Vocabulary Test]" (p. 47). Employing a sample of rural black children, Gatlin and R. M. Brown (1975) explained that father absence seemed to be of no significant consequence on student achievement "while mother only does make a difference in the language arts area at least. The children living with their grandparents do as well as those living with both parents" (p. 4). Yet, Ravitch et al. (1987) ascertained that students from two-parent households achieved somewhat higher history assessment scores across every racial group in their popular study of 17-year-olds. Similarly, in a meta-analysis of 82 studies, Salzman (1988) compiled results that implied negative "father-absence effects independent of socioeconomic status or race" (p. 12).

In addition to racial samples of subjects, other population samples have been examined for family structure effects. For instance, B. Hall and S. Taylor (1984) documented a rather significant (p = .001) result distinguishing pregnant father-absent adolescent girls from nullipara father-present adolescent girls with a suggestion that race may also have been a factor in the 98%-black pregnant group versus the 81%-black nullipara group. Sack et al. (1987) reported that, within a sample of Native American children, "high achieving students more often belong to two-parent families" (p. 43). In research on second graders through fifth graders, Chalker and Horns (1986) revealed "that children in Grade 5 in intact families obtained significantly higher reading scores" (p. 6).

Whitford, J. W. Chapman, and Boersma (1982) concluded, "Absence of natural father clearly differentiated LD [learning disabled] and NA [normally achieving] children" (p. 240) in that LD children were significantly more likely to be children of separation. Boyd and Parish (1985) demonstrated higher grade point averages among learning disabled children from intact households versus learning disabled children from divorced-nonremarried households, but these two groups of children did not differ on *CAT* (*California Achievement Tests*) reading and mathematics scores. Furthermore, learning disabled children from divorced-remarried households exhibited higher grade point averages than did learning disabled children from divorced-nonremarried households, but these two groups of children did not differ on *CAT* (*California Achievement Tests*) reading and mathematics scores. The authors provided this possible explanation of their results:

> GPAs are so much more sensitive to teachers' perceptions than are standardized achievement tests. In other words, teachers are more likely than tests to unknowingly establish limiting expectations for students from divorced families as opposed to other familial configurations. (p. 230)

On the contrary, Guttmann and Broudo (1988) found "that teachers' evaluations of the actual performance of a pupil are not affected by their stereotypic expectations regarding the inferior functioning of the children of divorced parents" (p. 110).

Cook, Wessell, and Dincin (1987) learned that intact family status positively predicted reading performance for severely mentally ill white subjects. McCarthy and Anglin (1990) noted, "The absence of a parent . . . [was] associated with earlier cessation of formal schooling" (p. 112) among male heroin addicts although "family size was the most important predictor of the age at which the . . . [subject] left school" (p. 112) in that large families were associated with earlier withdrawal. Employing a sample of black Transkeian Xhosa-speaking children, Cherian (1990) determined that children from monogamous households had better grades than did children from polygynous households.

Other variables. Existing studies have indicated potential mediating variables, confounding variables, or otherwise attenuating variables in explaining family structure effects. As Lindner, Hagan, and J. C. Brown (1992) wrote, in referring to single-mother households and remarried households, "while marital transitions may place children at risk for adjustment problems, the emergence of problems is not inevitable and is likely to be related to other factors than just family status" (p. 72).

Blum, Boyle, and Offord (1988) reported on the Ontario Child Health Study in which "maternal education, poverty, and welfare status differentiate single-parent families that experience poor school performance from those that do not" (p. 218). Family income was submitted as a possible intervening variable for family structure by several researchers (H. L. Allen & Tadlock, 1986; Entwisle et al., 1995; S. T. Johnson, 1992; K. R. McDermott, 1990; A. M. Milne, Myers, F. M. Ellman, & A. Ginsburg, 1983; A. M. Milne, Myers, A. S. Rosenthal, & A. Ginsburg, 1986; Thomson et al., 1994).

Acknowledging disagreement with such researchers' findings, Mulkey, Crain, and A. J. Harrington (1992) introduced additional possibilities in accounting for family structure effects after controlling for race-ethnicity and parental education:

> [Parental absence] effects cannot be explained by the depressed income of one-

> parent households. They can, however, be reduced to zero by controlling for behavior, especially for lateness-absences, not doing homework, not having contact with parents, and frequent dating. The negative impact of the one-parent home on students' grades seems to be weak compared to the effects found by other researchers on high school dropout rates, teenage pregnancy, arrest rates, or income. (p. 62)

Likewise, Mulkey et al. (1991) concluded that effects of family structure on student school performance are not a function of income level.

Moreover, some conceivable confounding variables to family structure were outlined by M. S. Thompson et al. (1988) in their study of first graders:

> Using a model that includes race, parent's educational attainment, parental expectations, and other variables that are potentially confounded with household composition, our results show: (1) that household composition has an important influence on school achievement, in particular on teachers' marks; (2) that these effects are larger and more consistent for blacks than for whites; (3) that these effects appear more often in the verbal than in the quantitative domain; (4) that the presence of another adult dampens the adverse effects of father absence, at least among blacks; (5) that household arrangements influence parents' expectations for their children's school performance; and . . . (6) that such differences in social support account for much of the adverse impact of single parent households on academic outcomes. (p. 444)

Yet the authors also reported "mother's educational level to be the most important socioeconomic predictor of school achievement" (p. 446). Furthermore, "it is the mother's disadvantaged status and not family configuration which is *the more likely* factor depressing the child's achievement" (pp. 446-447).

Others supported M. S. Thompson et al.'s (1988) conclusion. For example, Entwisle et al. (1995) offered this summation:

> The socioeconomic status of single mothers, not family configuration or ethnicity, seems to be the key, and children of never-married mothers are at a particular disadvantage. Census data cited earlier testify to the very low incomes of never-married mothers, as well as to their increasing prevalence in the single-parent population. (p. 408)

Their summation aligned with that of Thomson et al. (1994):

> Our analyses confirm much previous research showing that economic

> disadvantages of single-mother families account for much of disadvantages of children from these households. This is particularly true for academic performance, somewhat less so for problem behaviors and temperaments. (p. 237)

They added that "adolescent children living with never-married mothers do not have significantly lower grades than those living with two original parents" (p. 229), the results showing that "all the difference in grades between adolescents living with never-married mothers and those with both original parents is due to family differences in exogenous control variables, primarily the much lower educational attainments of never-married [mostly black] mothers" (p. 229).

Regarding family processes over family statuses, S. T. Johnson (1992) commented, "Families that are successful in motivating teenage members toward school achievement tend to have these characteristics: strong parental educational values and expectations, academically related activities, optimism, and sense of control" (p. 116). S. M. Dornbusch et al. (1987) stated "that family processes, of which parenting style is just one element, are more powerful than structural variables in the explanation of variability in [student] grades" (pp. 1252-1253). According to Steinberg, Mounts, Lamborn, and S. M. Dornbusch (1990), "virtually regardless of their family background, adolescents whose parents are warm, firm, and democratic enjoy psychological and behavioral advantages [including doing better in school] over their peers" (pp. 15-16).

Aligning with this focus on family processes over family statuses was Eastman's (1988) review of the relevant research literature. Additionally, an interesting result was provided by Newmann (1991), who found "that family structure and parenting behaviors were significant factors directing students into crowds [of peers] that were more or less academically oriented" (p. 27). In a longitudinal study of nonconventional family lifestyles extending from communes to single mothers, Weisner and Garnier (1992) argued that conventional family structure variables "are not capturing important differences in values, commitment, and stability, which influence children living in these kinds of families" (p. 628). Investigating middle-class family process variables and parenting philosophies, Martini (1995) supplied this summation after a review of studies:

> This review of studies indicates that middle-class parenting practices [i.e., process variables]—encompassing features of the physical environment, family structures, roles, and interaction patterns—reflect a coherent set of beliefs about how the individual should relate to others and about the role of parents in drawing children into the social group. These practices mesh well with the demands of middle-class schooling and prepare children well. (p. 63)

Concerning family structure, some further plausible research variables may be variables defining an adequate social support network (Hiew, 1992; C. M. Roy & Fuqua, 1983); authoritarian father absence (Wagaw & Achatz, 1985); an extended family (Wagaw et al., 1985); mother-child interaction (Blumenthal, 1985); the affective mother-child relationship (Estrada, Arsenio, R. D. Hess, & Holloway, 1987); father-child contact after marital separation (Salzman, 1989); household income (Grissmer et al., 1994); parental conflict (N. Long, Forehand, Fauber, & G. H. Brody, 1987); interaction of paternal visitation and parental conflict after divorce (Forehand, Wierson, A. M. Thomas, Armistead, & Kempton, 1990); family size (Cherian, 1991; Grissmer et al., 1994); student characteristics (Prom-Jackson, S. T. Johnson, & M. B. Wallace, 1987); interaction of family structure and number of children (Prom-Jackson et al., 1987); family prestige, income, and educational background (Dawson, 1981); number of siblings (M. S. Thompson et al., 1988); number of older siblings (K. Black, C. Hale, & M. Stevenson, 1981); a preschool-age younger sibling (Levine, 1983a); after-school time use (Levine, 1983a); high school curriculum track (K. R. Wilson et al., 1987); parental interest (Cherian, 1995); nonschool activities and time use (Levine, 1983b); child care (Howes, 1988); Catholic schooling (J. Coleman & Hoffer, 1987); and interaction of family risk and child's developmental stage (Maykut, 1983).

Qualifications. Some researchers' results have weakened the presumed importance of family structure. For example, Marsh (1992) wrote, "[The High School and Beyond] results suggest that for a wide variety of outcome variables, growth and change during the last two years of high school are relatively unrelated to different family configurations [i.e., two-parent, single-parent, and stepparent families]" (p. 5). This paralleled or reiterated previously reported findings (Marsh, 1990; D. S. Watts et al., 1991). Similarly, K. R. Wilson et al. (1987) stated "that father absence from the [black] household during the high-school years was unrelated to educational attainment" (p. 71). Family structure's lesser effect on secondary students was mentioned by others (A. M. Milne et al., 1986; Myers, A. Milne, F. Ellman, & A. Ginsburg, 1983; Zakariya, 1982). Lerner, L. E. Hess, and Tubman (1987) contributed a possible corollary effect in that early maternal employment was related to a child's lower grade point average during early elementary school but not during later elementary school.

Some researchers have even drawn surprising inferences that family structure generally exhibits little or no relationship to student outcomes (N. Adams, G. Miller, Reavis, & Reglin, 1989; K. Black et al., 1981; Blatchford, J. Burke, Farquhar, Plewis, & Tizard, 1985; Congress of the U.S., 1987; Eagle, 1989; H. S. Goldstein, 1982; Grissmer et al., 1994; Kaiser, 1991; Stickney et al., 1987; N. A. Vacc, N. N. Vacc, & Fogleman, 1987). Accordingly, Hetherington, Stanley-Hagan, and E. R. Anderson (1989) stated that "in recent years, researchers have begun to move away from the view that single-parent and stepfamilies are atypical or pathogenic" (p. 310).

Parental Age Main Effects

Main effects and interaction effects are reported in separate sections. In other words, if main effects reported here have attenuating interaction effects, then those attenuating interaction effects are reported in the subsequent "Interaction Effects" section.

Relative to other variables in the present study, there exists a paucity of research involving parental age. Nonetheless, there is evidence hinting that parental age may be a significant demographic variable to include in exploratory educational research.

Employing a sample of preterm infants, Rose et al. (1985) demonstrated a significant positive correlation between maternal age and six-year-old *WISC-R* Verbal, Performance, and Full Scale IQ. Similarly, concerning a study of men born during the first half of the 20th century and subsequently raised in two-parent households, the following was written by Mare et al. (1989):

> We find a substantial positive effect of [older] father's age at son's birth on son's educational achievement. . . . Once family background composition of fathers' age groups is taken into account, the effects of father's age on son's achievement is positive throughout all father's childbearing years. (p. 128)

Furthermore, they submitted this conclusion:

> Our results also reinforce previous research on the handicaps suffered by children born to teenage parents. Throughout the period covered by the OCG [Occupational Changes in a Generation] data, sons born to teenagers have averaged approximately 1.5 years of schooling less than sons born to older adults, a difference that holds even among children whose parents' educational attainments and other socioeconomic factors are equivalent. (p. 129)

Although mother's age was not a focus of their research, they speculated that "because ages of parents are highly correlated, the associations reported here may also reflect the effects of mother's age" (pp. 128-129). In more recent research "on changes in families with children between the ages of 14 and 18 between 1970 and 1990" (p. 110), Grissmer et al. (1994) revealed, among other results, that "older mothers . . . are associated with higher [achievement] test scores" (p. 106).

In contrast, a longitudinal study of black children by Ensminger et al. (1992) found that "having a mother who began childbearing as a teenager . . . did not affect the likelihood of graduating [from high school]" (p. 103). Regarding mother's age at first birth, K. A. Moore, Peterson, and Nord (1985) summarized, "In line with other studies, we find that the children of early childbearers do less well than the children of older mothers on a variety of measures of academic achievement and school performance. This is particularly true of white children" (p. 3). But they also noted "that a substantial proportion of the children of teenage parents are doing quite well" (p. 3). Additionally, there was a suggestion that, after controlling for numerous other variables such as family composition and student gender, maternal educational status at the time of conception may be a more explanatory variable than is maternal age at first birth.

Fergusson, M. Lloyd, and Horwood (1991) found that, among five significant covariates in their longitudinal study, maternal educational level and maternal age helped to explain ethnic variance in achievement or intelligence of Pakeha, Maori, and Pacific Island children in New Zealand. Kinard et al. (1987) conjectured that "the apparent effects of maternal age reported in some other investigations may be due in fact to maternal education or other intervening variables" (p. 84) and deduced that "maternal education is far more critical than maternal age for children's school aptitude and achievement" (pp. 84-85). Likewise, K. A. Moore et al. (1991) stated, "The most clear conclusion is that there is strong selectivity into both school failure and teenage parenthood, and that the disadvantages apparent among low-achieving mothers are transmitted to their children" (p. 622). Researching students in Athens, Greece, Repapi, Gough, Lanning, and Stefanis (1983) determined that parental educational level was more frequently related to student grade point average than was parental age.

A more unusual observation was made by Whitford et al. (1982). In attempting to identify variables differentiating learning disabled from normally achieving Canadian elementary school children, they discovered that variables denoting family size, "adopted children, age of the mother, education of parents, or family income" (p. 240) were all nonsignificant as differentiating variables.

Parental Educational Level Main Effects

Main effects and interaction effects are reported in separate sections. In other words, if main effects reported here have attenuating interaction effects, then those attenuating interaction effects are reported in the subsequent "Interaction Effects" section.

Generally, parental education has been universally included in research on student outcomes. Specifically, it has appeared as a variable in an assortment of studies such as those on the NAEP (Gorman & Yu, 1990), the differentiation of good versus poor readers among male children (Morris, Blashfield, & Satz, 1986), the prediction of success on nursing's *National Council Licensure Examination* (A. R. Campbell & Dickson, 1996), and the achievement of Punjabi geometry students (P. Singh, 1983). It has been present in studies of unique population samples such as Kenyan primary and secondary students (Maundu, 1988) and young urban black South African children (Griesel & Richter, 1986). Sometimes the variable of parental educational level has been more narrowly defined as paternal educational level or maternal educational level.

Paternal educational level. H. L. Smith et al. (1986) observed that paternal educational level "is clearly the strongest determinant of educational attainment for both men and women, across all cohorts [of Philippine subjects born between 1900 and

1950]" (p. 1400). Researching the Republic of China's elementary student achievement in mathematics, science, and Chinese, T. Lee (1987) identified paternal educational level as the strongest predictor. S. Sinha et al. (1988) discovered that "a significantly larger number of fathers of high achieving [Indian] students were professionals (i.e.[,] doctors, engineers, advocates)" (p. 106). Similarly, Japanese students with more highly educated fathers exhibited "clearer goals, higher aspirations and higher attainments [i.e., higher ranking high schools after middle school]" (LeTendre, 1991, p. 27).

In a longitudinal study, McConahay et al. (1982) noted a tendency of high grade point averages among students whose fathers were more highly educated, whereas maternal educational level did not enter "the most parsimonious composite" (p. 13) of independent variables. In research on learning disabled subjects in the area of Vancouver Island, S. C. O'Connor and Spreen (1988) detected "that fathers' SES and education level played an important role in the outcome of children with LD [learning disabilities] and brain damage as well as those without brain damage and controls" (p. 152). After adjusting reading achievement for intelligence in a sample of elementary-age immigrant epileptic children, W. G. Mitchell et al. (1991) demonstrated a significant positive correlation with paternal educational level.

Some research results pertaining to paternal educational level have not been so definitive. For example, Polydorides (1986) reported paternal education to exert a small effect on Greek student grade point average. Crook et al. (1989) determined that college students of fathers without high school diplomas were not significantly disadvantaged in earning a B.A. degree. In a study of Turkish students, Hortaçsu, Ertem, Kurtoglu, and Uzer (1990) stated that "children with less educated parents [i.e., fathers] . . . had lower GPAs" (p. 539). But these researchers added that student-supplied background demography was more predictive of student grade point average for children of fathers without university degrees, "whereas individual [social] measures [such as loneliness] explained more of the remaining variance for children with more educated parents" (p. 539). Robinson and Shearon (1983) examined North Carolina Community College System student enrollment in the college-transfer track, technical track, or vocational track respectively ranked highest track, middle track, and lowest track. They found that "among the [self-reported] ascriptive variables, the strongest [positive] correlation is between father's education and program track" (p. 15) although overall "the standard ascriptive and achievement variables explain little of the variation in student enrollment in the program tracks" (p. 17).

Maternal educational level. There also exists within the research literature evidence of universal maternal education effects. In fact, Rogers et al. (1987) provided this rather unorthodox remark on standardized testing following their review of preschool studies:

> Since information acquired from birth certificates and socio-economic data are better predictors of at-risk learners than most achievement test data, it appears impractical and unnecessary to spend time, effort, and money to conduct psychoeducational norm-referenced testing. More reliable predictors of school success are the race and educational status of the mother, the gender of the child, and their socio-economic background. (p. 18)

Hortaçsu et al. (1990) learned that student-supplied maternal educational data constituted the leading positive predictor of Turkish male and female primary school grade point average. Researching public examination results for teenagers in Northern Ireland, Lynn et al. (1983) commented that student intelligence, maternal educational level, and paternal occupation respectively presented themselves as primary, secondary, and tertiary predictor variables. Mothers of high-achieving Sioux children were found to be more highly educated than were mothers of low-achieving Sioux children (Sack et al., 1987). Employing *PPVT* data, K. A. Moore et al. (1991) explained, "Maternal education is the more important predictor for cognitive scores of Hispanic [firstborn] children" (p. 622). Laosa (1982) differentiated between paternal education effects and maternal education effects in Chicano families:

> It is interesting to note that whereas *maternal* schooling and maternal reading to the child correlated significantly with the child's acquisition of preschool literacy, *paternal* schooling and paternal reading to the child did not correlate significantly with the child's acquisition of preschool literacy. This contrast is particularly intriguing because these families were intact. Indeed, the contrast suggests that in Chicano families the mother tends to have a stronger influence on the child's early acquisition of literacy than does the father. (pp. 805-806)

K. R. Wilson et al. (1987) reported "that the educational attainment of the Black mother is significantly related to the educational attainment of her offspring" (p. 74).

Blatchford et al. (1985) designated maternal educational level and parental home teaching as the two best predictors of test scores for children within the Inner London Education Authority. Examining Panel Study of Income Dynamics longitudinal data for metropolitan "neighborhood and family influences on schooling outcomes" (p. 21), Duncan (1994) noted, "It is . . . important to keep in mind that, although some neighborhood factors proved important, family-level factors were generally much more powerful. . . . Among the most potent family-level variables were economic status and mother's schooling" (p. 49). Cassidy et al. (1991) determined that "the child whose mother is better educated, and who comes from a more economically stable background, is more likely to aspire to leadership" (p. 8).

Comparing maternal age effects with maternal education effects, Kinard et al. (1987) wrote, "The critical variable in assessing children's academic abilities seems to be maternal education rather than maternal age" (p. 84). K. A. Moore et al. (1985) explained the maternal age effect versus the maternal educational level effect in greater detail:

> Whether a child is behind the modal grade for a child of their [*sic*] age is strongly related to the mother's age at first birth. Interestingly, the mother's own [school] dropout status is not as consistently related to the child's being behind grade as it is to vocabulary score. Nevertheless, in most cases, the proportion of children behind grade for age is still higher in the [maternal] dropout category than in the [maternal] non-dropout category. (p. 6)

Surprisingly in disagreement with conventional research findings, Bridgewater State College Alumni Association (1986) discovered that "mother's level of education is related to academic failure. The higher the mother's level of education, the greater the likelihood of failure. This is an aggregate finding that includes both males and females" (p. 36).

Overall. Overall, the effect of parental educational level on student outcomes has been well documented in the research literature. For instance, reporting on a study of Greek students, Repapi et al. (1983) stated, "Father's and mother's education . . . were significantly related to GPA" (p. 184). Parental educational level has also surfaced as an effective covariate (H. S. Goldstein, 1982). Sauer et al. (1985) reported that, among home environment variables, parental educational level proved most predictive of academic achievement.

Likewise, Springstein (1984) deemed parental educational level, vis-à-vis social or biological factors, to be a stronger factor in intelligence and achievement within a sample of six teenagers who had suffered hemolytic disease as infants. In a study of elementary-age immigrant epileptic children, W. G. Mitchell et al. (1991) noted a significant positive correlation between parental educational level and general knowledge adjusted for intelligence.

Amato et al. (1986) concluded that "the effect of parental education [on practical life skills] suggests that more highly-educated parents encourage the acquisition of life-skills as well as more academic skills" (p. 66). Research on rural high school students (Yang, 1981) revealed that "father's education had a positive effect on college aspiration, while mother's education had a positive effect on college attendance" (p. 4). Citing *Home and School Institute Report* (1983) and Seginer (1983), Becher (1984) wrote, "Children with higher [achievement, competence, and intelligence] scores had parents who acted as stronger models of learning and achievement for their children than did parents of children who did not score as high" (p. 4).

Parental educational level has displayed a positive association with student outcomes in other educational studies (DeBaz, 1994; C. E. Finn et al., 1988; Fyans & Maehr, 1987; Grissmer et al., 1994; Kalk, Langer, & Searls, 1982; Langer, Kalk, & Searls, 1982, 1984; Lynch, 1985; Tölgyesi, 1985; P. L. Williams, Lazer, Reese, & Carr, 1995; P. L. Williams, Reese, Lazer, & Shakrani, 1995).

Challenges. Some researchers have cast doubt upon or have questioned the presumed importance of parental educational level. Reporting on a longitudinal study of Swedish school students, Härnqvist (1984) made this statement applicable to the current research incorporating cultural literacy:

> "Cultural" activities such as reading literature, going to theaters and concerts were more frequent activities among the better educated respondents. . . . "Entertainment" through weekly magazines, television and sports events, on the other hand, was negatively correlated with educational level. (p. 6)

But Härnqvist (1984) also offered this scholastic comment:

> We have an example of associations in the negative direction with both intelligence and education. Those at lower levels more often demanded more education for the younger generation than they obtained themselves, and this holds not only for English . . . but for most academic subjects, with the exception of history and civic education where the association with education is positive. (p. 5)

Regarding their history assessment of the nation's high school juniors, Ravitch et al. (1987) summarized, "Judging from the results of this assessment, parent education (or the knowledge, values, and priorities for which it is a proxy) is the single most significant element in family background" (p. 123). Yet, "just as coming from a relatively disadvantaged background does not preclude high achievement on an assessment of this kind, neither does a reasonably privileged background ensure such achievement" (p. 147). Furthermore, "the higher the parents' level of educational attainment, the likelier it is that the student will be in the academic track. . . . [Again,] parent education is important, but not inexorably determinative" (p. 169).

Conducting an early childhood study, Maclean, Bryant, and Bradley (1987) discovered a *fleeting* link between parental educational level and phonological awareness after controlling for child intelligence. Although R. C. Johnson et al. (1983) observed significant positive relationships of both paternal educational level and maternal educational level to educational attainment of children in the Hawaii Family Study of Cognition, they concluded that "in general, family background has relatively less influence on either educational or occupational attainment than is commonly believed" (p. 98).

Describing the school success of Punjabi students living in pseudonymous Valleyside, California, Gibson (1983) wrote, "Punjabi students do comparatively well in school even though only 42 percent of their fathers and 11 percent of their mothers have completed high school" (p. 229). D. Adams et al. (1994) reported that maternal education "had no significant effect on [high school freshman] GPA" (p. 9) among Puerto Rican and Mexican-American students. Employing a black sample of the University of Pittsburgh's relaxed-admissions University-Community Educational Program, Eddins (1982) learned that parental educational level and family income were not significantly related to academic achievement.

Analyzing longitudinal data from the Glueck generational study, Snarey and

Vaillant (1985) demonstrated a negative correlation between parental educational level and social class mobility. Additional challenges to the presumed importance of parental educational level have been lodged by other researchers (Lin, 1990; Onocha & Okpala, 1987; Prom-Jackson et al., 1987; G. Webb, 1987; Xie et al., 1996).

Further considerations. Existing studies have contributed possible complementary variables, mediating variables, or otherwise attenuating variables in further explaining parental educational level effects. For example, Salzman (1989) demonstrated a significant positive relationship between maternal educational level and the father-absent child's school grades but then noted that "the child's attributions for success [to internal sources like effort and ability] added significantly to the variance in school grades beyond the demographic and family interaction variables often cited in the father-absence literature" (p. 15). D. L. Stevenson et al. (1987) indicated "that parental involvement mediates almost all the influence of mother's education on the child's [teacher-assessed] school performance" (p. 1356). Ortiz (1986) contributed an interesting result incorporating race and generational status:

> When non-Hispanic whites are compared to Hispanics as a group, mother's educational attainment has a weaker impact on educational attainment among Hispanic youth. When finer distinctions are made among Hispanics with respect to generational status, *both* mother's and father's educational attainment have a weaker impact among the second generation. (p. 43)

J. Singh and Srivastava (1983) observed that parental literacy can affect academic achievement of younger children more than it affects academic achievement of older children. In apparent contradiction, Hauser and Wong (1989) stated, "There are indications . . . that the effect of parental statuses on younger offspring may be less than that among older offspring" (p. 168).

Based on a sample of adult college undergraduates receiving homework assistance from their parents, Zehner (1981) reported that "those parents with the most education appear to find more time to assist their children with their homework" (p. 9). Gabriel and P. S. Anderson (1987) insightfully extended the standard parental educational level variable to include the community-at-large:

> Regression analyses we conducted showed the educational attainment of the adults residing in the district to be highly related to the dropout rate of current students there. The strength of this relationship exceeded that of family poverty, rurality, and other indicators traditionally thought to be strong predictors of high school dropout rate. (pp. 13-14)

Moreover, studies involving parental educational level have suggested that student outcomes may also be related to variables defining parental teaching, parental knowledge of and contact with school, child vocabulary, and child literary experience (Blatchford & Farquhar, 1988); student expectations and SES (Voelkl, 1993); female student sexual behavior, female student educational aspirations, and maternal aspirations for daughters (Bourque & Cosand, 1989); visual-motor integration, younger male students, family learning disabilities, student gender, and school readiness (M. G. Fowler & A. W. Cross, 1986); black female student age at birth of her first child and black female student number of children (Scott-Jones & S. L. Turner, 1990); family income (Schaefer & Edgerton, 1985); maternal interaction/stimulation, correlated maternal demography, and correlated maternal psychological factors when child is one year of age (Schaefer & W. M. Hunter, 1983); household educational materials, family involvement in developmental stimulation, and whether assessment was conducted in English for elementary-age immigrant epileptic children (W. G. Mitchell et al., 1991); mother's expectation (Yang, 1981); parental encouragement and parental income (Nommay, 1988); requisite intelligence for parental occupation (Liu & Jun, 1992); home reading materials and parental occupation (J. Roy & Veeraraghavan, 1990); parental employment (Trautman, Erickson, Shaffer, P. A. O'Connor, Sitarz, Correra, & Schonfeld, 1988); student school attendance record, student television viewing, extent of student academic coursework, student time spent on homework, and student daily pleasure reading (C. E. Finn et al., 1988); race (W. R. Allen et al., 1982); student entry ability at university admission as measured by the *SAT* (*Scholastic Aptitude Test*) Verbal and Math subtests (Eddins, 1982); mother-child process characteristics (Mohite, 1987); parental expectations and parental behaviors (Barber, 1988); abstract uses of language (Wells & P. French, 1980); parental reading to child (Saterfiel, Cagle, & Grace, 1982); visual recognition memory (Rose et al., 1985); student motivation and conversation with parents about school (Fyans et al., 1987); student preference for English, maternal academic role modelling, and maternal encouragement of an intellectual attitude (McGowan & D. L. Johnson, 1984); mother's conflict with ex-husband in adolescent's presence and intensity of mother-adolescent arguments (McCombs & Forehand, 1989); student characteristics (Prom-Jackson et al., 1987); nonschool activities and time use (Levine, 1983b); parental involvement in high school student education (Eagle, 1989); maternal nurturing of child (Hersh, 1988); and parental exposure to mainstream culture formal education and number of siblings (Grubb, 1984).

Student Gender Main Effects

Main effects and interaction effects are reported in separate sections. In other words, if main effects reported here have attenuating interaction effects, then those attenuating interaction effects are reported in the subsequent "Interaction Effects" section.

Significant and nonsignificant student gender effects have been widely published in the research literature. Significant student gender effects have been demonstrated not only among mainstream students but also among special education students (Tindal, Germann, Marston, & Deno, 1983). Overall, reports of student gender effects have presented mixed conclusions in that some results have indicated a superiority of females, other results have indicated a superiority of males, and still other results have indicated a fluctuation of gender effects or an absence of gender differences.

Female superiority. Some results have indicated a superiority of females. For instance, reporting on retention in a study of NAEP 4th graders, 8th graders, and 11th graders, Langer et al. (1984) concluded that "the male student had the primary retention problem [through eighth grade]" (p. 73). Similarly at the elementary level, Hersh (1988) stated that "approximately 61% of retained students were male. This is consistent with published research" (p. 3). Employing a sample of fifth and sixth graders in eastern Kansas, Beer (1989) reported that "girls had significantly higher GPAs than boys" (p. 1381).

At the secondary level, D. Adams et al. (1994) reported a female superiority in high school freshman grade point average among Puerto Rican and Mexican-American students. Researching Northern Ireland secondary students for whom intelligence was operationalized by *DAT* Abstract Reasoning, Lynn et al. (1983) discovered no significant intelligence difference between females and males, but females presented significantly higher ($p < .001$) public examination grades and significantly higher ($p < .001$) public examination passes.

At the postsecondary level, J. V. Couch et al. (1983) demonstrated a significant female superiority in cumulative grade point average among James Madison University college students. But a lessening of this female superiority at the postsecondary education level was observed by V. Lee (1985), who noted, "Other research has shown, and this research has confirmed, that girls get better grades than boys. This was markedly true in high school, moderately so in college" (p. 9). K. J. Roberts (1986) found that, in several programs at Milwaukee Area Technical College, "all other measurable variables being equal, a male student will get a lower GPA than a female student" (p. 8).

Arriving at paradoxical results regarding graduate students, R. B. Young (1987) wrote the following:

> Women performed at a higher overall level than did men in the University of Vermont [student personnel graduate] program. Their final GPAs were significantly higher than those of men, and women were rated slightly higher on leadership potential. . . .
>
> Of special interest is the GRE Quantitative score, which is the best predictor of female students' academic success and of their rating as potential leaders in the field. The women in this study scored significantly lower on the GRE Quantitative test than did men. These scores could have many causes, attitudinal as well as aptitudinal. (p. 376)

Conversely, Ferrini-Mundy (1987), using a different quantitative measure, determined that "the mathematical performance of women in [first-semester university] calculus equals or surpasses that of men" (p. 137).

Aligning with the above was a study by Elmore and Vasu (1986) in which they documented the performance of graduate students from various disciplines who were undertaking inferential statistics at a midwestern university. The researchers included an interesting observation regarding attitudes:

> In summary, female students, when compared with male students, had lower spatial ability scores, lower GRE quantitative scores, and less college mathematics; yet, they were more positive than men about their success in mathematics and viewed mathematics as less of a male domain. In addition, women received a significantly higher total number of points in the statistics course than did the men despite their background and ability differences. As attitudes toward feminist issues were found to be a significant predictor of statistics achievement, these data indicate that attitudes toward feminism help to explain why, despite their weaker mathematical backgrounds, women were able to perform so well. (p. 221)

Researchers have supplied evidence of a stereotypical female superiority in the more verbally oriented disciplines. Summarizing the International Association for the Evaluation of Educational Achievement results, Purves (1982) wrote, "Girls generally outperform boys in tests of comprehension of literature" (p. 2). Ravitch et al. (1987) explained, "There is good reason for girls to do better in literature than boys: girls read much more than boys in their free time" (p. 131) and "Furthermore, girls do more homework than boys" (p. 131). Accordingly, Kalk et al. (1982) detected a female superiority in reading performance. Females have also exhibited significantly higher *SAT* (*Scholastic Aptitude Test*) Verbal scores (K. Black et al., 1981). Unsurprisingly, T. Lee (1987) observed that, in Chinese language achievement, "girls did better than boys" (p. 72).

In addition, researchers have provided evidence of superior female performance in various disciplines. Reporting on the 1981 Alaska Statewide Assessment Program math and reading tests composite, Hiscox et al. (1983) noted that girls surpassed boys. In a longitudinal study involving verbal and mathematical proficiency, Sandqvist (1995) observed the following propensity of Swedish females regardless of proficiency type:

> [There was a trend that] girls obtained higher marks than boys even if they were equally verbal or equally mathematical. We have to conclude that girls' ability to obtain high marks must have other sources than their verbal proficiency. Also, it seems to be a pervasive trait, occurring at different levels of ability as well as different ability types [e.g., high verbal/medium math] and course programmes [e.g., three-year technical/scientific]. (p. 35)

Examining student grades in university-level interpersonal communication and public speaking courses, J. C. Pearson and P. E. Nelson (1981) described a highly significant ($p < .00001$) student gender effect in which "females receive higher grades than do males, regardless of the course" (p. 10). Another quite significant ($p < .001$) effect favoring females was exhibited by University of Birmingham medical students in their epidemiology assessment (Marshall, 1987). Concerning history assessment, E. L. Baker (1992) stated, "We have found gender differences in this small sample, favoring females" (p. 36).

A superiority of females on miscellaneous outcome measures has been suggested by other researchers (H. L. Allen et al., 1986; Barbarin et al., 1993; Bensoussan & Zeidner, 1989; M. G. Borg, & Falzon, 1991; Clagett & P. Diehl, 1990; Clagett & P. K. Diehl, 1988; Durio, Helmick, & Slover, 1982; Hans, 1987; Leonard, 1984; LeTendre, 1991; Loucks, 1985; McConahay et al., 1982; Potter et al., 1990; Saterfiel et al., 1982; Stedman et al., 1989).

Male superiority. Some results have indicated a superiority of males. For example, in a study of high-ability Trondheim, Norway students, J. O. Undheim et al. (1995) documented a male superiority in mathematics and on a knowledge test. Concerning the 1981 Alaska Statewide Assessment Program *SAT* (*Scholastic Aptitude Test*) Verbal and Math subtests, Hiscox et al. (1983) reported that males outscored females. Averaged High School and Beyond data from reading and math standardized tests resulted in Cool et al. (1991) suggesting "that males achieve at a higher level than females once other influences are controlled" (p. 34).

Kalk et al. (1982) noted a stereotypical male superiority in NAEP mathematics and science. Likewise, High School and Beyond data revealed that "although . . . there was a slight male advantage in terms of math achievement and math/science course enrollment in high school, the differences become magnified when these same students' college behaviors are considered" (V. Lee, 1985, p. 9). According to Kinard et al. (1987), "gender of the child had significant main effects on [Grade 4] mathematics achievement. . . . [B]oys had higher scores on mathematics achievement than did girls" (p. 79).

Researchers have suggested that this stereotypical male superiority in mathematics manifests itself at an early age. Examining high school freshman *Tests of*

Achievement and Proficiency (TAP) Math subtest scores derived from a longitudinal study of Mexican-American students, Duran et al. (1992) wrote, "The large effect for gender on TAP math scores indicates that females were already performing below males" (p. 173). This finding aligned with Robitaille's (1981) observation that, on the 1981 British Columbia Mathematics Assessment, "differences in achievement generally favored males over females, as they did in 1977. While these differences were small at Grade 4, they were quite substantial at Grade 12" (p. 2).

Employing a sample of United States, Japanese, and Taiwanese youngsters, Lummis et al. (1990) interestingly concluded that "boys and girls were more alike than they were different in their performance on the mathematics and reading tests, and on the cognitive tasks" (p. 262) and that "although some consistent gender differences were found, there was a far greater number of instances in which the scores of boys and girls did not differ significantly" (p. 262). Moreover, "gender differences tended to appear either in all three of these diverse cultures (i.e., Taiwanese, Japanese, and United States), or in none of them" (p. 262). Nevertheless, it is notedly congruous with the above studies that Lummis et al. (1990) made this compelling cross-cultural observation regarding stereotypical gender differences:

> Superior performance of boys did appear, however, in some aspects of mathematics. As early as the first grade, boys were better able than girls to solve word problems, problems involving visual estimation of quantity and distance, and problems requiring the visualization of various transformations of geometrical forms or scenes. . . . This is a remarkable effect. . . . [I]t occurred in both Japan and Taiwan . . . as well as in the United States. (p. 262)

Investigating Stanford University student performance in technical disciplines, Boli, Katchadourian, and Mahoney (1984) made this qualified statement:

> In sum, detailed investigation of the natural science and engineering courses shows that the differences between men and women majoring in these areas were smaller for more advanced courses than for introductory courses. The superior

performance of men was thus limited and not universal. (p. 18)

Polydorides (1986) ascertained that, among Greek students, "gender has a negative impact on the national examination for girls enrolled in the science track" (p. 7). A slight male superiority in science achievement was detected by T. Lee (1987). Evaluating Jewish high school students in Israel, Tamir (1990) offered a more encompassing discipline-specific conclusion:

> Generally speaking, EA [European-American Jewish] boys occupy the highest position at all levels regarding all four dependent variables, namely [science] achievement, educational and occupational aspirations, self concept as science learners and attitude toward the study of science. (pp. 395-396)

Employing a sample of high school juniors in research on history achievement, Ravitch et al. (1987) concluded that "on the history assessment, boys fare better than girls" (p. 130). Their conclusion aligned with Furr's (1992) finding that, in "a random sample of 317 students from a midwestern community college and large urban university" (p. 59), "men were over twice as likely to know history than [were] women" (p. 63).

Regarding the sensitive topic of gender-based intelligence differences, N. J. Cohen (1989) determined that "girls had significantly lower IQ test . . . scores" (p. 117) among child psychiatric outpatient referrals. Using a set of *DAT* subtests to operationalize IQ, Lynn (1996) likewise concluded, "The better average performance of males at [Irish] universities can be attributed to their higher mean IQ" (p. 651). But Lynn et al. (1993), in a study of second language acquisition, found "little difference between boys and girls in general intelligence assessed by Raven's Progressive Matrices" (p. 277) although "on the four [Drumcondra Irish Tests] . . . girls obtained significantly higher means on 21 of the 24 comparisons [i.e., overall]" (p. 278).

A superiority of males on miscellaneous outcome measures has been suggested by other researchers (Bolger, 1984; California State Department of Education, 1982; Cook et al., 1987; DeBaz, 1994; Dossey, 1985; Janman, 1987; Krener & Cranston, 1990; O'Connell, 1989; Rudd, 1984; Topp & Kardash, 1986; P. L. Williams, Lazer, Reese, & Carr, 1995; P. L. Williams, Reese, Lazer, & Shakrani, 1995).

Fluctuation. Examining performance of medical students at the University of Kentucky College of Medicine, Ramsbottom-Lucier, M. M. S. Johnson, and Elam (1995) discovered that "the men had higher MCAT [*Medical College Admission Test*] scores than the women in all age groups, while the older women had higher undergraduate GPAs than the older men" (p. 238) and that "the men performed better during year one [of medical school], but the women performed better in year four [of medical school]" (p. 238). Stockard et al. (1985) also detected an age-related or time-related effect in that "gender was actually a more important influence in the 12th-grade [of high school] than earlier, although the influence of social class declined slightly" (p. 18).

On the topic of declining discipline-specific gender differences, Marsh (1992) wrote, "The [High School and Beyond] findings suggest that stereotyped sex differences favoring boys in mathematics and girls in verbal areas are diminishing" (p. 3). Conducting a study of Jewish high school students in Israel, Tamir (1990) provided evidence of student gender differences waning from 9th grade to 12th grade:

> As far as science is concerned we find that the differences between boys and girls in each ethnic group [i.e., European-American and Afro-Asian] in achievement are substantially larger in grade 9 than in grade 12. With the exception of physics, in which boys consistently exhibit higher achievement at all levels, the gaps found in grade 9 are closing in grade 12. In biology and chemistry girls achieve somewhat better than boys even though the educational and occupational aspirations of boys are consistently higher than those of girls. (p. 395)

As mentioned above, T. Lee (1987) stated that "boys scored slightly higher than girls in science achievement" (p. 124), but it also ought to be noted that "gender accounts for less than one percent of the variance" (p. 124). Additionally, in mathematics achievement, student gender was generally not a predictor (T. Lee, 1987). After analyzing High School and Beyond longitudinal data covering sophomore and senior years in high school, Zimiles et al. (1991) offered an interesting comparison of student gender effects and family structure effects on student grade point average:

> Gender differences in grades favor females and exceed those associated with family structure. Both factors produce statistically reliable patterns of difference. Females outperform males in all three family structure groups [i.e., intact, single-parent, and stepfamily]. Children in intact families obtained the highest grades. Variation in grades associated with family structure shrinks when it is corrected for differences in SES but continues to maintain statistically significant levels. The overall pattern of variation in grades for in-school seniors according to gender and family structure is unchanged [from their sophomore year]. (p. 316)

Absence of gender differences. Other results have indicated an absence of gender differences. Several studies specifically involved cultural literacy. For instance, Adelman (1989) organized postsecondary coursework into four cultural literacy clusters and analyzed coursework data from more than 3,200 institutions of higher education. He discovered that "with one exception [minority and women's studies in which more women than men enroll], there is very little variation in coursetaking across these clusters by gender" (p. 11) but that "on the other hand, if we focus on individual course categories rather than clusters, ... [d]emography is curricular destiny" (p. 11). Measuring Hirschian cultural literacy of 100 University of Kansas Medical Center School of Medicine fourth-year medical students, C. R. King (1988) reported, "No difference was observed in the number of correct responses between the men and women students" (p. 919). In a comparable study of 144 Wake Forest University School of Law incoming first-year students, Vance et al. (1992) found that "the student who scored the highest overall . . . was a male Asian/Pacific Islander, between 40 and 50 years old, who had a doctoral degree" (p. 237); otherwise, they identified no significant gender differences.

Assessing a sample of university students with a researcher-constructed *Cultural Literacy Science Assessment* developed from the Hirschian list of roughly 5,000 cultural literacy terms, J. R. Cannon et al. (1992) made the following observation:

> The most important outcome of this study was that achievement on the *Cultural Literacy Science Assessment* was not influenced by age, sex, the size of the high school attended, or a possible future career in education or business. This supports the basic premise of the study. It appears that the science terms from the Hirsch cultural literacy list are indeed general since they were not influenced by the subgroup characteristics. (p. 199)

Similarly, assessing a sample of fifth graders with a researcher-constructed Cultural Literacy Assessment Test (CLAT) developed from the Hirschian list of cultural literacy terms, Kosmoski et al. (1990) commented, "The lack of a sex difference in achievement on the CLAT was surprising" (p. 271). Replicating the J. R. Cannon et al. (1992) study with a larger, more diverse sample, Groves et al. (1994) discovered a questionable male superiority on the *Cultural Literacy Science Assessment* and speculated that the gender difference may have been the result of a lack of randomization within the sample.

Noncultural literacy studies have also reported an absence of gender differences. For instance, some researchers' results have challenged traditional discipline-specific gender stereotypes which assume a male superiority in mathematical disciplines and a female superiority in verbal disciplines. As a general conclusion precipitated by a study of student performance in high school computer courses, Alspach (1988) reported, "There was no statistically significant difference found between the computer grades of the males and the females" (pp. 27-28). Paralleling this outcome was a finding by Stoneberg (1985), who investigated mathematics computer-assisted instruction in one Oregon elementary school:

> There were no significant differences between the number of boys and girls whose math achievement scores either improved or dropped. Both sexes shared similarly

> in the mathematics achievement gains associated with the first year of computer assisted instruction. (p. 1)

Researching aptitudes and mathematics performance, M. Daniel (1982) observed, "Females perform at least as well as males in the mathematics courses, but males obtain higher scores on the math sections of the PSAT [*Preliminary Scholastic Aptitude Test*] and SAT [*Scholastic Aptitude Test*]" (p. 14). Norman (1988), writing on mathematics achievement of Montgomery County, Maryland public school students, rendered a possible explanation of gender differences:

> The study did turn up one puzzling disparity in performance between boys and girls. Even in the advanced classes, male and female students perform equally well on two standardized tests, but on the SAT [*Scholastic Aptitude Test*], boys tend to outperform girls. This may indicate that the disparity is unique to the SAT [*Scholastic Aptitude Test*] itself. (p. 409)

Lovely (1987) noted that, among science majors who had completed four semesters, "women of comparable aptitude and pre-college achievement also have similar survival rates as the men" (p. 9). Similarly, B. Jones (1990) observed no significant correlation between gender of medical students and performance on Term 1 final exams. Stocking et al. (1992) found an absence of stereotypical gender differences among exceptionally talented teenage students.

Concerning the topic of intelligence or ability, Kundert et al. (1995) reported that "when IQ was covaried, there were no significant differences on achievement measures for . . . gender [i.e., by gender]" (p. 205). Employing a sample of fifth graders, Tracy (1990) concluded, "Boys had significantly higher spatial ability than girls" (p. 645) yet "there was not a significant difference in the science achievement of girls and boys in this study" (p. 645) despite the finding that "those students with high spatial abilities . . . had [significantly] high science achievement scores" (p. 645). Similarly, in research on intelligence and final yearly grades among elementary students, Fisher (1995) noted “no significant differences . . . in correlations between intelligence of genders and any of the academic categories” (p. 6).

Other discipline-specific studies have documented an absence of gender differences. In a study of Iowa State University accounting courses, Bouillon and Doran (1992) presented this explanation:

> In this study, male students significantly outperformed female students in Accounting Principles I. . . . [But] this outcome can be partially explained by the high number of male engineering students in the first principles course. The results in the second principles course show neither men nor women significantly outperforming each other. (p. 227)

Examining student performance in an Illinois State University macroeconomics class, Manahan (1984b) reported that, after controlling for student age and ability, although “male students have both a greater stock of economic knowledge and more favorable attitudes toward economics at the start of an economics course” (p. 260), “there is no difference in the achievement of male and female students in an economics course when age, ability, attitude toward economics, and quality of instruction are controlled” (p. 260). This absence of student gender differences aligns with results of another study by Manahan (1984a) involving student samples from three universities. Hallgren (1982) analyzed University of Northern Colorado marketing achievement scores and detected no significant contribution of student gender in the prediction of those scores. Writing on another discipline, psychology, Kessler and Pezzetti (1990) found that “[Rancho Santiago College] men and women performed equally well on the [introductory psychology] exams” (p. 14).

Assessing achievement of third graders and fourth graders with the *Canadian Tests of Basic Skills*, Violato and Travis (1985) wrote, “There were no significant sex differences on any [achievement] subtest” (p. 222), but they proposed student gender as a moderator variable:

> It was revealed that for the whole sample, about 45% of the variability in academic achievement was explained by the seven predictors. Moreover, at least in the present study, it is also clear that sex can act as a moderator variable in academic achievement. For females, 61% of the variability in academic achievement was explained by the seven predictors; for males 42% was explained. There were also notable differences in the structural relationships of the predictor variables for males and females. These findings suggest the usefulness of sex as a moderator variable in studying academic achievement. (pp. 225-226)

An absence of significant gender differences on miscellaneous outcome measures has been suggested by other researchers (Allbritten, 1983; Beer, 1989; Berkowitz et al., 1989; Church et al., 1985; Crook et al., 1989; Grubb, 1984; T. J. Harvey & Wareham, 1984; Jacobowitz, 1985; Kaiser, 1991; N. Long et al., 1987; McNab et al., 1985; Monk et al., 1985; Ortega Esteban et al., 1983; Pellegrini et al., 1987; Sack et al., 1987; Salzman, 1989; Sormunen, 1986; Sudhir et al., 1987; Tamir & Gardner, 1989; Walden et al., 1983; A. A. Ward & L. W. Murray, 1985; K. R. Wilson et al., 1987).

Alternative explanations. Research results have contributed a miscellany of possible complementary variables, mediating variables, or otherwise attenuating variables in further explaining student gender effects. For instance, H. S. Goldstein (1986) contributed the following conduct problems perspective:

> The results . . . clearly indicate that, even when family background factors are carefully controlled, white male youths with conduct problems in- and out-of-school do less well in their academic development than youths without such problems. For white girls, however, only the in-school conduct problems were associated with lower achievement. (p. 657)

Relying on the *Kit of Factor-Referenced Cognitive Tests,* Elmore et al. (1986) provided a spatial visualization perspective in that “male [graduate] students received significantly higher mean scores than women on four of the five spatial visualization subtests” (p. 218). Focusing on student achievement in Newfoundland “where girls are performing as well as and mostly better than boys in all school subjects at the high school level" (p. 221), Bulcock, Whitt, and M. J. Beebe (1991) hypothesized from an economics perspective that "when relative incomes are low, male incentives to invest in intellectual competencies are low while, in contrast, when relative incomes are low, female incentives and opportunities are high" (p. 221). Therefore, "if demographic circumstances were favorable for girls but not for boys, then the relationship between gender and both the perceived quality of student life and student well-being would favor girls" (p. 221). Likewise, Bobbett and Dorothy (1990) speculated on an external explanations perspective of musical independence:

> At higher or more advanced levels of MI [musical independence], males appear to be more MI than females. . . . Instead of gender bias, there may be other considerations such as professional expectations, job limitations, or social considerations that might skew the available data. (p. 24)

In a study of Iowa State University engineering students, Whigham (1988) proposed a transitions perspective explaining that "perhaps, the transition from high school to college was more difficult for women in this study. This appears to mark a point at which their academic achievement is no longer superior to their male peers" (p. 43).

Still other results of studies involving student gender have suggested that student outcomes may also be related to variables defining high school curriculum track (K. R. Wilson et al., 1987); academic self-esteem (Spencer et al., 1993); working mother status (B. Bennett & Reardon, 1985a); student race and student age (Langer et al., 1982); test anxiety (J. V. Couch et al., 1983); parental involvement (Hickman, Greenwood, & M. D. Miller, 1995); mixed-gender classroom groups (Rennie & Parker, 1987); student ability (T. J. Harvey, 1981); teacher gender and teacher expressiveness (Basow, 1987); lessons and procedures (Berge, 1990); gender identity and teacher differential treatment of the genders (P. J. Burke, 1989); nontraditional curriculum versus traditional curriculum (Shymansky, 1984); self-confidence of bright students (Licht, Linden, D. A. Brown, & Sexton, 1984); prior knowledge, interests, and reading habits (Bügel et al., 1996); previous student experiences (Smail & A. Kelly, 1984); small group interaction in high-achieving classes (N. M. Webb & Kenderski, 1985); student completion of assigned homework (North Carolina State Department of Public Instruction, 1983); student preference in classroom seating (C. I. Brooks & Rebeta, 1991); preservice teacher evaluation of students (Tuthill & Ashton, 1986); school mathematics curricula, classroom processes, teacher attitudes, societal influences, and student attitudes and achievement-related behavior (Reyes & Stanic, 1988); free-response assessment format versus objective-response assessment format (Bolger, 1984; Breland, Danos, Kahn, Kubota, & Sudlow, 1991); student attitudes toward reading and mathematics (H. W. Stevenson & R. S. Newman, 1986); aptitude, grades, and educational resources such as a studying place (Teachman, 1987); number of older brothers (K. Black et al., 1981); middle class status or working class status (Stockard et al., 1985); type of child care during infancy (J. C. Schwarz, 1983); maternal biases concerning gender-differentiated abilities of children (Lummis et al., 1990); differential socialization of genders by parents (Levine, 1983b); parental attitudes and encouragement, teacher encouragement, and student liking of the school subject (Norman, 1988); socially influenced intrinsic intellectual motivation (J. Lloyd et al., 1984); student birthdate and student psychological services referral due to learning and/or behavior problems (V. S. Harvey, 1991); maternal educational level, parental teaching at home, and parental attitudes toward family's educational role (Blatchford et al., 1985); teacher-assigned student conduct marks (Entwisle et al., 1982); nonpublic school student status (Ravitch et al., 1987); and number of long vocabulary words used in taped interviews (Härnqvist, 1984).

Interaction Effects

Main effects and interaction effects are reported in separate sections. In other words, if main effects reported in the above sections have attenuating interaction effects, then those attenuating interaction effects are reported here in isolation from their main effects.

In discussing single-parent households, subsumed by family structure in the present study, Roddy (1984) articulately alluded to the importance of considering interaction and the difficulty of addressing its multivariate nature:

> The diversity among research findings suggests that while, as a group, single-parent children tend to have more behavioral problems in school and are at greater risk in terms of truancy and dropout rate, the likelihood of any particular child having cognitive or behavioral problems depends upon the interaction of many factors. Among those factors are the adequacy of child care arrangements; the number of siblings; the structure of the child's environment in both the home and the school; the amount of nurturing the child receives; the age, sex, and race of the child; the socioeconomic level of the family; and the circumstances surrounding the separation of the parents. Therefore, the only accurate answer to the question of whether single-parentness is harmful to a child's academic or behavioral development may well be, "It depends." (p. 2)

Nonetheless, the current researcher attempted to impose greater definitiveness and order on the findings available in the research literature. As the above main effect sections imply, the research literature reports interaction effects involving two or more of the present study's demographic variables (family structure, parental age, parental educational level, and student gender). There is evidence that two or more of these demographic variables may interact internally with each other, and there is also evidence that these demographic variables may interact externally with variables outside the present study's interaction hypothesis.

Internal interaction. There is evidence that two or more of the present study's demographic variables (family structure, parental age, parental educational level, and student gender) or their approximations may interact internally with each other. For example, Feldman et al. (1993) reported that urban public school ninth graders' school performance exhibited a student-gender-by-family-structure interaction:

> Females appear to perform poorest within family units characterized by mother's presence coupled with father's absence. By contrast, males performed best in those family groups where the mother and/or maternal relations were present. Contrary to expectation, males performed best in family configurations where the father was absent. (pp. 2-3)

A longitudinal study of black children by Ensminger et al. (1992) likewise revealed a student-gender-by-family-structure interaction:

> Family structure related to [high school] graduation status for females but not for males. . . . Females who were in mother-father families in first grade were more likely to graduate . . . than were females in mother-alone families. . . . However, the males in the two family types had odds that were similar. (p. 103)

Dissimilarly, regarding High School and Beyond science test scores, Mulkey et al. (1991) noted, "It is in the case of daughters rather than that of sons, that students from father-absent families do 'better.' The influence of father-absence also take [*sic*] a positive sign in the case of sons' performance, but is insignificant" (p. 13). Studying self-care children's performance on *CAT* (*California Achievement Tests*) Language, Math, and Reading subscales, Kaiser (1994) demonstrated that "fifth-grade boys of single parents scored significantly lower than boys of two-parent families on all three subscales of the CAT. Family configuration did not seem to make a difference in the CAT scores of fifth-grade girls" (p. 102).

Revealing a likewise detrimental effect concerning males and divorce, Steinberg, B. B. Brown, Cider, Kaczmarek, and Lazzaro (1988), after reviewing the research literature, concluded that "studies of family structure suggest that, among youngsters living with their mother following a divorce, the process of divorce appears to be more deleterious among boys than girls, but the process of remarriage appears to be more deleterious among girls than boys" (p. 12). This outcome partially aligned with a more comprehensive finding by Zimiles et al. (1991):

> There is a significant interaction between family status and gender with respect to dropping out of school. Whereas male students are more likely to drop out of school when living in both intact or single-parent families, it is the female students who are the most likely to drop out in stepfamilies.
>
> When the drop-out data are further broken down according to the gender of the custodial parent, an altogether different pattern emerges. . . . Adolescents who live in single-parent families are more apt to drop out when they have an unlike-gender custodial parent. When they live with a mother who is a single parent, females drop out of school less frequently than do males, but it is the males who drop out less frequently when they live with a single-parent father.
>
> Among stepfamilies, a similar interaction is found, but the pattern is reversed. Here, adolescents are more prone to drop out when they live with their like-gender custodial parents. These differences remain statistically significant after adjustment for SES differences and also after adjustment is made for differences in intellectual aptitude as well. (p. 316)

But, analyzing data from the 1987-88 National Survey of Families and Households, Thomson et al. (1994) reported "no statistically significant interactions of child's gender with family structure, and the pattern of estimated regression coefficients was not consistent with hypothesized stronger adverse effects of single-mother families for boys and stepfather families for girls" (p. 229). Examining data from the National Educational Longitudinal Study of 1988, Downey (1995) similarly detected no interaction of student gender and stepmother/stepfather households on academic achievement. Interestingly, also using data from the National Educational Longitudinal Study of 1988, J. D. Finn et al. (1994) discovered a novel interaction in the same database:

> The hypothesis that family structure effects are attributable to race and SES was supported in the present study for mother-only families but not for other alternative family arrangements. Results for other family structures differed by gender. Eighth-grade males exhibited achievement decrements when living with a father or with a father and stepmother. These decrements were found especially in technical areas, that is, science and mathematics.
>
> Eighth-grade females exhibited still greater achievement decrements when living in either stepfamily situation. In mother-stepfather families, all four school subjects [i.e., reading comprehension, mathematics, science, and history/citizenship/geography] were affected. Since mother-stepfather couples

> constitute almost 13% of families of eighth-grade females, this outcome is particularly significant. (p. 185)

Suggesting a possible interaction effect of gender and parental educational level, Teachman (1987) in researching educational attainment concluded, "Father's education appears to be more important among men, and mother's education appears to be more important among women" (p. 551). In research more closely paralleling the present study from a cultural literacy perspective, DiMaggio (1982) employed data from high school juniors of 1960 and provided the following interaction effects from "a prestigious status culture" (p. 191) perspective:

> Cultural capital [measured by attitude and activity] had its largest impact on the daughters of women whose fathers were college graduates. Effects on [self-reported] grades of daughters of high school graduates without college degrees were smaller, and effects on grades of daughters of men without high school diplomas were smaller still. By contrast the impact of cultural capital on grades was substantial, relative to that of ability, for sons of men in the two less educated groups, but negligible for sons of college graduates. (pp. 196-197)

A miscellany of outcomes has been collectively studied by other researchers whose comments have suggested that outcome measures may be influenced by potential internal interactions of student gender and father absence (Bain, Boersma, & J. W. Chapman, 1983; Belz & Geary, 1984; Fry & Scher, 1984; Vandamme et al., 1985); student gender and nuclear family structure change (Bergman, 1981); student gender and family structure (Bronstein et al., 1993; Gringlas et al., 1995; Guidubaldi, Cleminshaw, Perry, & McLoughlin, 1983; Hetherington, Camara, & Featherman, 1981; Parsons, 1990); student gender and parental separation (Richek & O. H. Brown, 1989); student gender and parental educational level (Boulon-Diaz, 1992; Ravitch et al., 1987); student gender and maternal/paternal educational level (Boisset, MacKenzie, & Sidorenko, 1989); student gender and family type (Guttmann et al., 1988); student gender and same-sex parental educational level (Bridgewater State College Alumni

Association, 1986); student gender and divorce (Dawson, 1981); student gender and single-parent family status (Blum et al., 1988); student gender and maternal age (Denno, 1983); parental educational level and family structure (Å. Murray et al., 1990); student gender, parental educational level, and family structure (Å. Murray et al., 1990); paternal educational level and student gender (Hortaçsu et al., 1990); and student gender and heterogeneity of parental educational level (Kiss & Schuttler, 1984).

Some researchers have collectively reported miscellaneous outcomes exhibiting an absence of internal interaction effects for maternal age and student gender (Kinard et al., 1987); family structure and maternal age (Kinard et al., 1987); parental marital status and student gender (Beer, 1989); student gender and family structure (H. S. Goldstein, 1982; Kurdek et al., 1988; Mensink et al., 1989; D. W. Taylor, 1986); maternal age and maternal education (Ketterlinus et al., 1991); and student gender and household composition (C. J. Patterson et al., 1990).

External interaction. There is evidence that one or more of the present study's demographic variables (family structure, parental age, parental educational level, and student gender) or their approximations may interact externally with variables outside the present study's interaction hypothesis. For instance, J. D. House et al. (1989) reported a significant interaction of student gender and tutor gender in university mathematics and science courses whereby "students earned better grades when working with same-sex tutors than when working with opposite-sex tutors" (p. 195). Supplying a more sophisticated scenario, T. E. Smith (1992) reported a three-way interaction "in which gender, year in school, and parental separation interact in their effects on adolescent—but not on preadolescent—science achievement" (p. 480) in that better performance was observed among dual-parent, ninth-grade male students.

Describing a longitudinal study of black children, Ensminger et al. (1992)

recorded another three-way interaction of student gender, maternal educational level, and first-grade performance in that "for males who received Cs or Ds (or worse) in first grade, having a mother who had finished high school was protective. However, males who received high grades in first grade in spite of having a mother with a low education were especially likely to graduate [from high school]" (p. 107). For females in the Ensminger et al. (1992) study, a different three-way interaction presented itself:

> Grades [in first grade] did interact with poverty level to influence [high school] graduation. This interaction showed there was no relationship between grades and dropout for girls whose family income was below the poverty level, but for girls who were not poor, early grades did relate to later graduation. While 77 percent of the nonpoor girls who received As or Bs in the first grade graduated, only 57 percent of the nonpoor girls who received Cs or Ds did. For the poor girls these percentages were 58 percent and 60 percent [respectively]. (p. 109)

Ensminger et al. (1992) also noted that poverty and family structure were highly interrelated in their study.

Using *CAT* (*California Achievement Tests*) scores as an outcome variable, Bridges (1986) detected a student-gender-by-race interaction in that "*black males attained the lowest average scores within the study sample*" (p. 5). Suggesting a depreciating interaction of race and student-reported parental educational level, J. D. House (1996) wrote, "[Of Hispanics, Asian-Americans, African-Americans, Native Americans, and whites, for white students only,] parental education was significantly correlated with cumulative GPA after one [$p < .01$] and two [$p < .05$] years [but not after four years of college]" (p. 10). Examining student gender and relative age, Kalk et al. (1982) found another depreciating effect in that "the statistically significant interaction between relative age and sex was a function of the retention rate increasing faster for males than females, as relative age becomes younger" (p. 104).

A miscellany of outcomes has been collectively studied by other researchers whose comments have suggested that outcome measures may be influenced by potential external interactions of student gender and maternal employment (Etaugh, 1984; Steinberg et al., 1988); student gender, socioeconomic class, and maternal employment (B. Bennett & Reardon, 1985b); family structure and summer-winter seasonal effect (Entwisle et al., 1995); student gender, parental educational level, public school attendance, and race (Ravitch et al., 1987); family structure and race (H. S. Goldstein, 1982); marital status and maternal warmth (Gringlas et al., 1995); family structure and maternal stress (Gringlas et al., 1995); student gender, early age intervention, and SES (Portes et al., 1984); student gender, student age, and parental involvement (D. L. Stevenson et al., 1987); student gender, maternal interaction, and paternal interaction (Ferguson, 1987); student gender and father availability after divorce (Lohr, Legg, Mendell, & Riemer, 1989); student gender and single-sex schools (Carpenter & Hayden, 1987; V. E. Lee & Bryk, 1986); student gender, ancestry, and family background (R. C. Johnson et al., 1983); family structure and general school subjects (Sears, 1995); student gender and government/independent coeducational secondary school attendance (D. J. Young & Fraser, 1990); family structure, student gender, SES, and parental aspiration (Cherian, 1994); student gender, maternal/paternal age, and year in school (Repapi et al., 1983); student gender and single-sex/coeducational schools (Hamilton, 1985); student gender and prekindergarten program type (L. B. Miller & R. P. Bizzell, 1983); student gender and death of father (Smilansky, 1982); student age and death of father (Smilansky, 1982); student gender, father absence, and race (Svanum, Bringle, & J. E. McLaughlin, 1982); student gender, family structure, and race (S. M. Dornbusch et al., 1991); parental educational level and race (S. M. Dornbusch et al., 1991); student gender and teaching method (Lutzer, 1986); student gender and biological father involvement (Kurdek et al., 1988); student gender, minority status, and SES (H. L. Allen & Tadlock, 1987); family structure and SES (H. L. Allen et al., 1987); student gender, family structure, and SES (H. L. Allen et al., 1987); student gender and student age (Blum et al., 1988); student gender and student intelligence (Abeti, 1983); student gender and school attendance (Abeti, 1983); student gender and parental unity (Abeti, 1983); student gender and SES (Abeti, 1983; Denno, 1983); student gender and various family resources (Abeti, 1983); student gender, student age, and father availability (Dawson, 1981); student gender and verbal/spatial IQ (Denno, 1983); student gender and physical development (Denno, 1983); paternal educational level and student age (Hortaçsu et al., 1990); student gender, parenting style, and ethnicity (S. M. Dornbusch et al., 1987); student gender, parental educational level, parenting style, and ethnicity (S. M. Dornbusch et al., 1987); student age at father absence and student gender (Wagaw et al., 1985); maternal age at first birth and maternal dropout status at child's conception (K. A. Moore et al., 1985); student gender and perceived violent context of student's life (Spencer et al., 1993); student gender and grade in school (Spencer et al., 1993); student gender and parental life satisfaction (Spencer et al., 1993); father absence, race, and income (H. S. Goldstein, 1983); family structure, student gender, ethnicity, and income (Kraig, 1989); maternal educational level and race (Currie & D. Thomas, 1995); maternal educational level, family structure, and race (A. M. Milne et al., 1983); and student gender, intelligence, and teaching method (Ryman, 1977).

Some researchers have collectively reported miscellaneous outcomes exhibiting an absence of external interaction effects for student gender and reason for father absence (H. S. Goldstein, 1982); student gender and family income (C. J. Patterson et al., 1990); household composition and family income (C. J. Patterson et al., 1990); student gender, household composition, and family income (C. J. Patterson et al., 1990); student gender and ability (Kundert et al., 1995; Lutzer, 1986); family structure, student gender, and parenting style (S. M. Dornbusch et al., 1987); and family structure, student gender, parental educational level, parenting style, and ethnicity (S. M. Dornbusch et al., 1987).

Ratings or Rankings and Curriculum

Two Basic Components

The present study utilized two basic data-related components evident in the research literature. These components are ratings or rankings and four respondent groups.

Ratings or rankings. The first basic component, ratings or rankings, has enjoyed popularity among researchers who collectively have written on numerous topics such as a basic skills program (Hartman-Haas & Brandao, 1982); basic employability skills (Comprehensive Adult Student Assessment System, 1995); a vocational agriculture curriculum (Crawford, 1984); a medical school curriculum (Schmidt, Des Marchais, & R. Black, 1990); a women's studies program (Koon, 1981); an automated systems/robotics technology curriculum (Luzerne County Community College, 1987a); a drug education video package (C. Eiser, J. R. Eiser, & Böcker, 1988); a computer integrated manufacturing technology curriculum (Luzerne County Community College, 1987b); a television series on early childhood (J. C. MacDonald, 1984); a laser/electro-optics technology curriculum (Luzerne County Community College, 1987c); medical technology administration and supervision (Becan-McBride, 1977); college course evaluation (Redman & Willie, 1988); medical patient desire for physician involvement in patient problems (Frowick, Shank, Doherty, & T. A. Powell, 1986); training program evaluation (Michener & Kesselman, 1986); micro-teaching (Jerich, 1987); speech communication doctoral programs (R. Edwards & Barker, 1982); course and instructor evaluation (National Association of Secondary School Principals, 1982); educational program review (Dhariwal, 1990); medical student evaluation of courses (Scott, Hunt, & Greig, 1986); and the databased course assessment method (DCAM) (Starr & G. Grossman, 1991).

Four respondent groups. The second basic component, four respondent groups (parents, teachers, administrators, and students), has collectively surfaced in the research literature incorporating or recommending respondent groups comprised of at least students (J. A. Johnson, 1981); teachers (Louisiana State Department of Education Division of Vocational Education, 1982); students and parents (Sullivan, 1983); teachers and administrators (J. A. Williams, Lasley, Matczynski, & C. Benz, 1991); parents and teachers (Olmsted & Lockhart, 1995); parents, teachers, and students (Halasa, Benjamin, & Deininger, 1983; Overman, 1980); and parents, teachers, administrators, and students (Bailey, 1982; Kettle, 1983).

Offering justification for the inclusion of various groups in curricular revision, particularly for the hearing impaired, Sass-Lehrer (1984) reasoned that "administrators, supervisors, teachers, curriculum specialists, parents, and students may all be affected by the proposed revisions, and therefore should be consulted concerning the development of any new or improved curriculum" (p. 10). Regarding middle school evaluation, W. W. Powell and Romano (1981) similarly indicated that "participants in the evaluation process should include district-wide personnel, community people, students from the middle school being evaluated, school personnel from the middle school being evaluated . . . and parents" (p. 6).

The current researcher utilized these two basic data-related components (ratings or rankings and four respondent groups of parents, teachers, administrators, and students) in the present curricular study of lifelong adaptability.

The Delphi Technique

Although unsuitable for the present study in which multiple rounds of respondent ratings were impractical, the Delphi Technique's established reputation among researchers warrants its recognition in any discussion of ratings or rankings. The Delphi Technique is a systematic research tool that "has been successfully used with knowledgeable persons in many fields, including education, to reach consensus on matters about which they were well informed" (dos Santos Silva, 1984, p. 66). Advocating greater use of the Delphi Technique in education, M. L. Evans and McKeough (1981) stated, "The Rand Corporation's development of the powerful Delphi technique has been seriously underemployed in educational settings despite its obvious applicability" (p. 3).

A sketch of the Delphi Technique's ideal consensus-building process was furnished by Dailey and Holmberg (1990):

> In round one of the typical delphi study, respondents are asked to develop a set of responses to the specific questions, issues, or projected programs/policies listed in the questionnaire. In round two, the group selects a specified number of responses, for example five, from the responses to each issue contributed in round one. In round three, each group member ranks the responses identified in round two. If they exist, rounds four and five are devoted to choosing and ranking new responses that appeared in rounds two and three. Alternate formats for rounds include voting for one of many options for each issue, or a yes-no voting pattern. (p. 129)

Not all Delphi Technique studies include the ideal model minimum of three rounds, and the term *three-round modified* (Hambrick, Sanders, Stowers, & J. Williams, 1993) may also appear in the research literature.

In educational research, the Delphi Technique can assist in gathering data for diverse curricular purposes. For example, P. Green (1982) reported a study involving land-based outdoor pursuit leaders responding to a Delphi survey to rate outdoor leadership course topics for a Pacific Northwest outdoor leadership course. Their course topic ratings yielded these top five course topic rankings: 1) risk management plans, 2) judgment, 3) wilderness ethics, 4) first aid, and 5) analyzing risks. In a more recent study entailing a two-round Delphi process, Jamieson (1991) found that the top four commercial outdoor recreation topics in the preparation of commercial outdoor recreation employees were communication skills, ecological ethics, technical skills, and marketing/research.

Enlisting a national Delphi panel to determine consultation competencies between mainstream education teachers and special education teachers, J. F. West and G. S. Cannon (1988) indicated that "the essential competencies gleaned from this study have been used as the basis for the development of the Curriculum for Preservice and Inservice Preparation of Classroom and Special Education Teachers in Collaborative Consultation" (pp. 62-63). M. T. Miller and Husmann (1991) undertook a Delphi study of "vocational teacher educators in Nebraska higher education institutions" (pp. 4-5) in order "to establish a priority listing of reading materials for students preparing for careers as secondary vocational education teachers" (p. 2). The top three ranked readings were 1) *Carl Perkins Legislation of 1990*, 2) *AVA Journal*, and 3) *Unfinished Agenda: The Forgotten Half.*

The Delphi Technique or a modified Delphi Technique has been employed in other studies involving a secondary level course on learning strategies/study skills (J. E. Wilson & Weinstein, 1989); skills and knowledge areas of an educational research graduate course (Todd & Reece, 1989); and an electronic engineering technology curriculum (P. L. Reilly, 1986).

Applications of Ratings or Rankings

A wide range of studies has involved ratings or rankings with several notable research areas evident in the literature. These research areas include general school subjects, esoteric topics, and workshops, seminars, or inservices.

Ratings or rankings involving general school subjects. To date, ratings or rankings involving general school subjects have not been reported in a published study of lifelong adaptability from a cultural literacy perspective, but ratings or rankings involving general school subjects have appeared in published studies of other noteworthy topics.

Some informative relatively larger studies are available. For example, an international preprimary education study "interviewing parents and teachers of 4-year-olds" (Olmsted et al., 1995, p. 1) revealed that language skills was ranked either first or second in importance in the United States, Hong Kong, and Nigeria by both parents and teachers. Conducting a telephone survey of 866 Nevada registered voters, Survey Research Systems (1990) asked, among other questions, "If you were to choose the subjects offered, how would you rate the following [eleven general school subjects] in terms of importance for *all* students?" (p. ii). Arranging the eleven general school subjects in descending order by percentage of the highest available respondent rating (i.e., "very important") generated the following rankings:

Rank	General School Subject
1	English grammar and composition
2	mathematics
3	computer technology
4	science
5	civics and history
6	occupational education
7	Nevada government

8	foreign language
9	physical education
10	art
11	music

More complex results were published by Gallup (1981), who wrote, "The public believes the high schools do a better job preparing students for further academic experience than for the world of work" (p. 5). He then made this pragmatic remark:

> When people are consulted about the courses they believe should be required in high schools, the special areas of instruction they think are important, and the educational objectives they believe should be given greater attention, their requirements are far too extensive to be accommodated in the present school schedule. (p. 7)

In Gallup's (1981) study, respondents were asked to indicate which of 11 courses ought to be required for college-bound public high school students and for noncollege-bound public high school students. The following ranks were calculated based upon the percentage of respondents requiring the respective courses:

Rank	For College-bound Students	For Noncollege-bound Students
1	mathematics	mathematics
2	English	English
3	history/U.S. government	business
4	science	history/U.S. government
5	business	industrial arts/homemaking
6	foreign language	science
7	health education	health education
8	physical education	physical education
9	industrial arts/homemaking	foreign language
10	art	art (tied with music)

11	music	music (tied with art)

Respondents were also asked to indicate which of five instructional areas beyond regular coursework ought to be required for all high school students. The following ranks were calculated based upon the percentage of respondents requiring the respective instructional areas: 1) drug abuse, 2) alcohol abuse, 3) driver education, 4) parenting/parent training, and 5) computer training. Identical ranks materialized by limiting respondents to public school parents only.

In the same year as Gallup's (1981) study, Educational Communications, Inc. (1981) published results of survey data from high-achieving 11th graders and 12th graders of whom "three-quarters think sex education should be taught in the schools" ("Summary of Results," p. 2) and of whom "a little more than half (51%) think American students should be required to take a foreign language in high school" ("Summary of Results," p. 2). Moreover, "the teens also favor bilingual education in American schools (59%)" ("Summary of Results," p. 2).

Addressing a specific discipline, industrial arts, Bonfadini (1982) detailed research intended "to establish a data base from which future curriculum materials could be developed and implemented, thus ensuring a quality industrial arts program in urban, rural, and suburban areas of the state of Virginia" (p. 2). The study incorporated a survey form consisting of "six industrial arts objectives and their associated [48] elements" (p. 27) along with question items. Respondents included 57 schools; 883 parents; 1,662 students; 275 industrial arts teachers; and "a majority of industrial arts supervisors and teacher educators in Virginia" (p. 24) whose survey data led to this interpretation:

> Summarizing the objective rankings, students agree that teachers emphasize and teach the items students think are the most important. These items center on the safe use of tools and machines and occupational information. The parents of

> these students also agree with the teachers' and students' priorities. Supervisors show some preference to emphasizing elements closely associated with teaching technology and culture related concepts. Major differences in objective ranking occur when teacher educators prioritized the six industrial arts objectives and their associated elements. A high degree of emphasis is placed on technical literacy at the expense of occupational information and practical use of tools and machines. These results may highlight an existing problem illustrating the major philosophical differences facing the profession. (pp. 26-27)

Three other findings were of interest. First, "there was no significant difference in the rating of male and female respondents" (p. 33). Second, "an analysis of the data showed that 59% of the students and 73% of the parents responded positively to requiring industrial arts at some secondary level" (p. 35). Third, "although numerous efforts have been expended to promote technology as a part of industrial arts, it appears that traditional industrial arts values still remain dominant" (p. 40).

In a similar Florida study concerning home economics, Crabtree and Baum (1990) indicated that in Phase I "seventeen respondents from urban, suburban, and rural communities were identified for a sample total of fifty-one" (p. 3) such that "each community group consisted of eleven high school teachers of Home Economics, four junior/middle school teachers of Home Economics, and two Home Economics county supervisors" (p. 3). The researchers identified "the ten problems/concerns with the highest mean [rating] scores" (p. 3) and reported them to be "Single Parent Families, Separation and Divorce, Stepfamilies, Child Care, Teenage Parents, Balancing Home & Work Roles, Families in Economic Stress, Problems of Self Esteem, Parenting, and Substance Abuse" (p. 3). Phase II of their study addressed prevention or intervention strategies for the above 10 identified areas.

Describing more extensive research incorporating 99,625 adult resident respondents and 3,941 high school student respondents in the Delaware Valley SchoolVote, D. Ward (1985) reported that adult residents as a group and high school students as a group assigned a first school priority to helping students learn "to read, write and use mathematics for everyday problems" (p. 28). Adult residents overall assigned a second school priority to helping students learn "up to their full potential, including those with disabilities" (p. 28) while high school students overall assigned a second school priority to helping students learn "to deal with adult responsibilities and problems" (p. 28).

Los Angeles Unified School District (1979) conducted a study in which "two weeks before the June 1978 graduation, 21,225 students in the graduating class completed a two-part questionnaire about their plans after graduation and their opinions about their senior high school programs" (p. 1). Student ratings provided insightful data regarding general school subjects:

> Respondents agreed that they learned sufficient mathematical skills to work out the practical problems of everyday life . . . and that their high school course in United States Government helped them understand how the national, state and local governments function. . . . Classes in art, history, music, vocational skills and composition also received positive ratings. . . . There was a consensus among all groups of respondents [i.e., white, Hispanic, male, female, administrative area, etc.] that the school counselors did not seem to have sufficient time allocated for meaningful discussions about school and personal problems of the students . . . or for career counseling. (p. 4)

Focusing on broader curricular tracks, Riesenberg and Stenberg (1990) summarized responses which were received from high school graduates in Idaho:

> To the question, "If you had it to do over, what type of curriculum would you choose today", both vocational and non-vocational concentrators indicated they favored a college preparation curriculum. A vocational education curriculum was the second preference for both groups of graduates. The graduates seemed least enthused about a general education curriculum. (p. 6)

In addition, Idaho employers' responses provided insight into workplace performance of the graduates:

> Employers were . . . asked to rate how well the graduates were prepared for the job for which they were hired. . . . Employers rated both groups [i.e., vocational and

> non-vocational concentrators] highest on attendance, cooperativeness, quality of work and dependability while rating both groups lowest on the job preparedness aspects of appearance, safety practices, selection and care of space, materials and supplies and job know-how. (p. 9)

and

> Non-vocational and vocational concentrators received equal ratings from their employers on selected work habits and characteristics and they were rated the highest on integrity, courtesy, responsibility and dependability. Both groups were rated the lowest on personal appearance, attitude toward work, emotional stability and leadership. (p. 9)

Investigating alumni ratings of various college majors, S. W. Graham and Cockriel (1990) detailed research conducted "at 172 colleges and universities throughout 42 states" (p. 6). Alumni responded to a total of three research items:

> In regard to the first question measuring the ultimate perceived utility of various college majors, the analysis focused on the question "If you could start college over, would you choose to graduate with the same major?" The subjects responded to a five point scale ranging from "definitely yes" to "definitely no". (p. 8)

It was found that "those who majored in computer science indicated the greatest degree of satisfaction with their major responding 'definitely yes' 59.4% of the time followed by those in engineering (40.9%), fine arts (40%), and health related professions (37.4%)" (p. 9). A second research item posed "the question 'How closely related is your current occupation to your major at this college?'. . . . In general, respondents seemed to indicate that their current work was related to their academic preparation" (p. 10). Specifically, "those major areas where respondents reported the highest levels of congruency or that the occupation and college major were 'highly related' included: health related professions (84%); computer science (73.1%); and education (62.4%)" (p. 10). A final research item "related to the overall assessment of academic career preparation, or how well the college experience prepared alumni for their present occupations" (p. 11). It was concluded that "essentially health-related professions and computer science majors were more likely to respond that their college prepared them 'very well' for their present occupations (48.8% and 39.7%, respectively)" (p. 11).

Some informative relatively smaller studies are available. For instance, enlisting fifty Georgia eighth graders, Corbitt (1984) found that "the [school] subjects were ranked by the students in terms of decreasing importance, as follows: mathematics, English, social studies, science, and physical education" (p. 16). In a study by Mandes, F. M. Page, J. A. Page, and Tremble (1986), "seventeen curricular subjects were listed with the perceived ten most important to be ranked in descending order" (p. 2) by parents of students enrolled at Marvin Pittman Laboratory School. "Curriculum subjects receiving the highest rankings included reading, arithmetic, grammar, and spelling" (p. 2), whereas "curriculum subjects receiving the lowest rankings included French, industrial arts, home economics, and typing" (p. 2).

In research pertaining to the National Writing Project in Tennessee's Oak Ridge Schools, Krendl and Dodd (1987) indicated that "at the outset, students already considered writing and its related skills as an important part of their education in preparing them for future jobs" (p. 4). A comparison of teachers' and parents' language arts priorities revealed that teachers ranked composition first, whereas parents ranked grammar first. Using a computer was ranked higher by parents than by teachers.

An interesting study by S. Gross (1985) sampled high school seniors in Montgomery County Public Schools of Maryland. Student ratings of course quality revealed that "the students gave slightly higher ratings to vocational and elective courses than to academic courses" (p. 4). Specifically, "among the academic areas the students rated social studies and English the highest, and rated mathematics and foreign language the lowest" (p. 4). From a gender perspective, "male and female students rated their overall academic course offerings and their PE/electives similarly. However, ratings of vocational courses were dramatically different for males and females, with females giving significantly higher ratings than males" (p. 5). Gender differences in course ratings may have been related to the fact that "males took more courses in math, science, or trade/technical areas . . . [, but] females took more social studies, foreign language, business, and occupational home economics courses" (p. 4). From an academic achievement perspective, "a strong positive relationship was observed between GPA and course rating, with students who received the higher grades rating the courses more favorably and vice versa" (p. 5). Overall, student ratings resulted in the following highest-to-lowest rank ordering of courses: cooperative education, driver education, trade/technical education, music, health/physical education, social studies, English, art, business education, occupational home economics, science, mathematics, and foreign language.

Earlier research by S. Gross and Frechtling (1983) in Montgomery County Public Schools of Maryland surveyed 1981 graduates, who "were asked to rate the quality of instruction provided in academic and vocational courses and other electives using a 1 to 4 scale, with 1 being 'very poor' and 4 being 'very good'" (p. E-5). Their ratings begot these summaries:

> Overall, the responses show that with the exception of foreign languages and mathematics, courses were rated as "good" or "very good" by over 80 percent of the students responding; and on the average, courses were given a "good" rating. . . . In addition, foreign languages received a "good" or "very good" rating from 68 percent of the respondents; the comparable figure for mathematics was 76 percent. (p. E-5)

and

> Further, despite the overall favorable ratings, it was clear that at least some students saw room for improvement in the major subject areas. The area mentioned

> as most in need of improvement was English, cited by 22 percent of the respondents. Mathematics was cited next most frequently, with 15 percent of the students indicating that it was in need of improvement. (p. E-5)

Student gender played a role in student ratings of specific courses. Those academic or vocational courses receiving “good” or “very good” ratings from significantly more females included business education, occupational home economics, cooperative education, art, and music. Those academic or vocational courses receiving “good” or “very good” ratings from significantly more males included mathematics and trade/industry. Those academic or vocational courses receiving “good” or “very good” ratings with no significant gender differences included English, social studies, foreign language, science, and health/physical education/driver education. A final pertinent comment about the respondents was “39 percent said that they would make changes in their course of study, if they had it to do over. They indicated that they would take more math, science, foreign languages, business, and advanced placement classes” (p. 23).

In a single-school study by Power and Dolly (1990), alumni of the highly structured, academic University of Hawaii Laboratory High School (ULS) supplied questionnaire data on various aspects and effects of ULS. It was discovered that “most of the graduates (84.3%) support the idea of a ‘core curriculum’ in which there is no choice of academic courses to take” (p. 5). Ironically, “in ratings on the academic programs such as mathematics, English, science, and social studies, high achievers rated these programs relatively low compared to low achievers” (p. 6). Respondents’ mean curricular ratings on a 5-point scale resulted in the following high-to-low ranking of content areas: art/technology, music, mathematics, English, social studies, physical education, science, second language, drama, and electives.

Other research results, although appearing less directly applicable to the present study of lifelong adaptability from a cultural literacy perspective, nonetheless proved informative. For instance, assessing Hirschian cultural literacy of 100 University of Kansas Medical Center School of Medicine fourth-year medical students, C. R. King (1988) wrote, "The students in the top quarter of the class averaged 23.4 percent correct responses, while the students in the lowest quarter of the class correctly identified 45.1 percent of the cultural items" (p. 920). Furthermore, "this difference is statistically significant (*p* < .001) and was not explained by undergraduate major, undergraduate GPA, sex, age, or other demographic factor" (p. 920). C. R. King (1988) offered an explanation:

> The significant performance difference between students in the lowest and top quarters of the class may represent a difference in academic focus. . . . A narrow focus [of top quarter students] would prevent exposure and participation in many cultural and nonscience activities that expand cultural literacy. (p. 920)

But the finding most relevant to the current study was the following:

> Twice as many students (36 percent versus 71 percent) in the lowest quarter of the class also suggested cultural additions to the curriculum at the undergraduate or graduate level as did students in the top quarter. The most frequently suggested additions concerned the humanities (that is, art, literature, philosophy, or history) and the social sciences (that is, anthropology, psychology, or sociology). (p. 921)

In other words, C. R. King's (1988) research seemed to hint that student curricular preferences for cultural disciplines may be positively related to student cultural literacy.

With respect to foreign language learning at John Hersey High School in Arlington Heights, Illinois, Zamir (1981) offered several interesting comments. To begin, it was mentioned that "contrary to one's expectation, there was no direct correlation between the parents' educational background [i.e., level] and the students' consideration of the importance [ratings] of . . . [foreign languages]" (p. 66). Furthermore, self-reported student grades revealed that "females in all three languages [i.e., French, Spanish, and German] perform . . . better than males (even though males perform slightly better than females in their overall grade point average)" (p. 58). Finally, the author offered this comment:

> In contrast to some educators['] emphasis on "culture" of a FL [foreign language] and somewhat to our surprise only 8% of the students regard culture as the most important aspect of learning a FL. Eighty-eight percent considered the linguistic aspects of a FL as the most important. (p. 56)

In conclusion, it was observed that "the fundamental rationale for foreign language education which is based on cross-cultural understanding has apparently not been grasped [by these student respondents]" (p. 68). In other words, Zamir's (1981) research seemed to hint that student foreign language ratings may not be related to parental educational level and that student regard for the cultural literacy of foreign languages may be lacking.

Two science attitude scales, *Confidence in Teaching Science* and *Effectance Motivation* (measuring liking of science), were administered by J. Levin and C. Jones (1983) to preservice elementary teachers and to inservice elementary teachers. It was found that "males had a significantly more positive attitude in *Confidence in Teaching Science*" (p. 9), whereas "females who ranked science as a low instructional priority had the least positive attitude toward *Confidence in Teaching Science* and *Effectance Motivation* (liking) and were significantly different from the other . . . teachers on these attitude scales" (p. 9). Overall, "both male and female teachers recognized the usefulness of science for their students, did not stereotype science as a male domain, and somewhat 'like' science, but females felt less confident in teaching science" (p. 12). The researchers also noted a possible exposure effect:

> The present study . . . showed that forty-nine per cent (49%) of the teachers who had three or more science courses ranked science as a high instructional priority. The same figures for teachers with one or two courses and zero courses were thirty-one per cent (31%) and twenty-six per cent (26%), respectively. (p. 11)

In other words, J. Levin et al.'s (1983) research seemed to hint that teacher curricular preferences for scientific disciplines may be related to teacher gender and may be positively related to teacher confidence in teaching science, teacher liking of science, or teacher exposure to science.

Still other research results, even less directly applicable to the present study, suggested engaging research possibilities. For example, in a study which involved rating a computer literacy course, prospective elementary teachers indicated that they "saw the course as heavy and were of varied opinion of the degree this was reflected in their course mark [i.e., grade]. At the same time, they felt they had accomplished a great deal in terms of understanding and the implications of the area for the schools and their specialization" (D. B. Black, 1985, p. 12). In other words, D. B. Black's (1985) study inspired the question of whether student curricular appreciation or preferences may be positively related to perceived course difficulty.

Investigating the application of mathematics in three occupations, K. J. Roberts (1981) undertook "a study . . . to determine what mathematics skills were needed for Dental Laboratory Technology, Medical Laboratory Technology, and Respiratory Therapy" (p. 1) in which "a seventy-nine item mathematics skill questionnaire . . . was administered to employers, employees, technical instructors, licensing bodies, and mathematics instructors" (p. 2). Results precipitated the following conclusion:

> This study has found that the mathematics needed by dental laboratory technicians is different from the mathematics needed by other health technicians. There is, therefore, a common core of mathematics needed by respiratory therapists and medical laboratory technicians which is different from the mathematics needed by dental laboratory technicians. (p. 8)

In other words, K. J. Roberts's (1981) study inspired the question of whether student curricular preferences may be related to highly specific career goals.

Ratings or rankings involving general school subjects are present in other studies concerning the importance of social issues and their inclusion in curricula (Huber, 1984); employers' opinions on vocational education for Pennsylvania (Wade, 1984); small business management curricular topics (Herbert, 1989); and home economics concepts (Northern Illinois University, 1990).

Ratings or rankings involving esoteric topics. The research literature testifies to the popularity of ratings or rankings across a myriad of esoteric topics. Such widespread popularity consequently frustrates a tidy literature review attempting to accommodate a multitude of diverse studies. Nonetheless, a relaxed clustering of studies appears possible and informative.

• Ratings or rankings are evident within medicine and related fields. Investigating problem-based learning (PBL) curricula at Manoa's University of Hawaii John A. Burns School of Medicine, Brandon, Lindberg, A. S. Anderson, and Gerhard (1992) reported that basic science faculty, clinical faculty, and students who rated PBL program topics assigned the highest rating to self-directed, lifelong learning. In a study of South Carolina pediatricians, psychiatrists, and family physicians providing ratings for a behavioral science curriculum, Holmes, Burch, Wright, Chestnut, and Butterfield (1986) discovered "that the item with the greatest mean clinical relevancy rating was the item dealing with the diagnosis and evaluation of suicide risk" (p. 231).

Hawaii State Board for Vocational Education's (1992) report on "Health Services and, more specifically, the occupation of Nurse's Aide" (p. 4) revealed that health services respondents determined "the individual criteria [*sic*] of 'honesty' had the highest overall rating of all of the 94 criteria covered in the inventory" (p. 9) and "[the general category of] 'safety' had the highest aggregate assessment" (p. 9). Researching community dentistry, Cunningham (1987) reported that, of 32 items, 4 dentistry content items were rated most important by faculty: dental disease epidemiology, dental utilization factors, financial reimbursement mechanisms, and major modes of delivery.

• Ratings or rankings are evident within the broad field of education. An engaging study conducted in Florida by Lavely, Berger, Blackman, Bullock, Follman, and Kromrey (1990) recounted research in which "elementary school teachers rated knowledge and skills' statements twice, once for possible inclusion in an initial certification test for teaching in elementary school and also once for possible inclusion in a career achievement test" (p. 1296). Employing 5-point Likert scales, Lavely et al. (1990) produced two insightful findings:

> The skills which were rated as significantly more important in career achievement than in initial certification occurred primarily in the areas of curriculum and instruction, in tests and measures, and in teachers' professionalism. It is concluded that these skills reflect teaching activities which develop with increasing experience as a teacher, especially after the more immediate, basic responsibilities of classroom control and routines have been established. (pp. 1297-1298)

and

> Notably lacking in differentiation of the [initial certification or career achievement] applications are skills associated with content knowledge. Of the eight curricular areas represented on the survey (language arts, mathematics, science/health, social studies, art, music, physical education, and computer education), only computer applications were rated more important in career achievement. (p. 1297)

The National Teacher Examinations Commons Revision Survey of 3,000 professionals and citizens was detailed by Rosner and Grandy (1982), who wrote, "The Commons Revision Survey was designed to tap varying perspectives on the proposed test content and its relationship to both teacher education curricula and existing requirements for entry-level teaching positions" (p. 1) and "It is interesting to observe that across all samples surveyed, high ratings were given to the three communication skill areas, particularly writing competency" (p. 13). R. Drummond and Stoddard (1990) described a study in which "teachers in a suburban Florida school district were asked to rate the [professional pre-service teacher examination] generic teacher competencies" (p. 66):

> Of the 27 competencies, teachers rated oral communication skills as number 1 in importance and knowledge of physical, social, and academic patterns lowest in importance. Second in importance was the teachers' ability to present instructions for classroom activities and third, written communication skills. Enhancing students' feeling of dignity and self worth fell in the middle of the distribution. (p. 66)

In related research, "principals rated the competencies of University of North Florida beginning teachers" (R. J. Drummond, 1990, p. 3) and revealed "some degree of consistency in the competencies that are ranked high" (p. 7): communication skills, enhancing student self-worth, and physical environment management and arrangement.

In other research examining 17 teaching competencies from recent graduates' perspectives, C. R. Benz and I. Newman (1985) learned that "on 'subject matter knowledge' and 'writing lesson plans,' first-year teachers feel well prepared compared to other areas" (pp. 13-14). P. Chapman (1990a) reported a Colorado study in which first-year and third-year "teachers rated areas of their preparation programs on a 5-point scale with regard to their importance for effective teaching and adequacy of preparation" (p. 1). Responses indicated "that statewide, teachers rated each of the domains as 'highly important' for effective teaching with two exceptions. Classroom management and communication and relationships with students were rated as 'critical' [i.e., the highest rating] to effective teaching" (p. 8). Interestingly, "with regard to the adequacy of their preparation" (p. 8), it was indicated that "forty percent of teachers rated the coverage of classroom management as inadequate, and 48 percent felt that communication and cooperation with parents and office staff was inadequately covered" (p. 8). Furthermore, "supervisors rated teacher preparation and performance relative to requirements of the district's standards" (p. 1), thereby revealing the following:

> Over 90 percent of teachers were rated by their supervisors as meeting district standards in each of the domains with the exception of management of the classroom climate. Eighty-six percent of teachers were rated by their supervisors as meeting the district standards in this area. (p. 8)

Research on school administrator preparation programs was also conducted by P. Chapman (1990b).

Ratings or rankings have also appeared in postsecondary studies. The University of Tennessee at Knoxville's College of Education was the site of research on graduate student concerns by Roney, F. C. Fowler, and Gettys (1990), who found that "the most positive ratings were given to the faculty area" (p. 24) with *advisor's knowledge of field* receiving the highest mean rating. Furthermore, the second most positive ratings were given to the curriculum area. Finally, these University of Tennessee at Knoxville graduate students in the College of Education "were not pleased with parking and financial aid" (p. 25). In a more narrowly focused study of library science competencies as rated by Kent State University Library Science program alumni, Buttlar and Du Mont (1989) identified the following top five rated competencies: 1) knowledge of bibliographic tools, 2) interpersonal skills with patrons, 3) selection and evaluation, 4) conducting reference interview, and 5) reader guidance. They added that their overall "findings suggest that the type of library in which a librarian works has a major impact on the perception of competencies needed for professional work" (p. 16).

Psychology alumni were respondents in a skills study by M. J. Allen and Scrams (1991):

> What skills have the alumni found important in their careers? On a 4-point scale, the seven examined skills averaged from 2.80 ("somewhat important") to

> 3.90 ("very important"). Interpersonal skills are rated the highest. High ratings were also given to basic skills (reading, writing, and logical reasoning) and people management skills; and lower, but still reasonably high ratings were given to statistics and/or mathematical skills and computer use. Results suggest that psychology departments should offer a curriculum that covers these skills for all undergraduate majors. (p. 9)

Practicing school psychologists provided importance ratings of 56 professional courses in research by Copeland and L. F. Miller (1985). Each course was rated twice, once for present importance and once for future importance. It was learned that "55 of the 56 courses rated achieved a higher future [mean] . . . than present [mean] . . . rating" (p. 249). The data specifically produced this interesting result:

> Intellectual assessment and psychological tests and measurement maintain the top positions in both present and future rankings. The two courses demonstrating the greatest increase [from present ratings to future ratings] in the top 20 rankings were consultation courses: consultation methods and theory, and parenting theory and consultation. (p. 249)

The authors added, "Those [courses of all 56 courses] demonstrating the greatest change [from present ratings to future ratings] are computer courses: computer programming and computerized assessment. Neuropsychological assessment and [i]nfant and preschool assessment also show great increases in their future ratings" (p. 250).

With psychologists as respondents, Birk and L. Brooks (1986) discovered the following in related research at the doctoral training level:

> Traditional skill areas appeared to be strong both in terms of job importance and adequacy of training. Competencies that seemed discrepant in adequacy of training and job importance were those that have acquired a relevance for counseling psychology in recent times, such as consultation, program development, and special populations. Without jeopardizing effectiveness in traditional curriculum areas, training efforts need to extend toward competency building in the less traditional areas. (p. 325)

Addressing another discipline, Townsend and M. Wiese (1990) found that the two most valued courses for a higher education doctorate were "Budgeting and Finance in Higher Education" (p. 9) and "Organization and Governance in Higher Education" (p. 9).

Hartley, Brookhart, and G. P. Smith (1990) learned the following about vocational education professional development needs by surveying Colorado vocational educators:

> When all professional development needs categories [curriculum, teaching strategies, etc.] are examined simultaneously, the areas of greatest perceived need were:
>
> - keeping abreast of new technology;
> - computer managed instruction;
> - computer assisted instruction;
> - motivating students;
> - writing proposals for funding; and
> - developing critical thinking skills. (p. vii)

Silva-Guerrero and Sutphin (1990) reported a study intended to "identify and categorize high priority research topics in agricultural education" (p. 2) by selecting "agricultural education department heads and research experts . . . to prioritize the topics and categories" (p. 3). The highest four priority research areas were determined to be "new and emerging skills in biotechnology, high technology, and agribusiness; curriculum for [secondary] agricultural education; the long-term impact of [secondary] agricultural education on graduates[;] and the cost/benefit of vocational agriculture" (p. 4).

Regarding entry-level computer literacy course content, Tortorelli (1984) detailed a study conducted at Pennsylvania community colleges in which faculty members ranked the top three content items as 1) "recognize that computer hardware refers to the physical components of computer systems" (p. 15); 2) "recognize that computers and computer-supported applications are used in a wide variety of ways to assist individuals, groups and institutions" (p. 15); and 3) "recognize that computers are generally useful for information-processing tasks which require. . . . [r]epetition" (p. 15). A computer software development study by Collin County Community College

(1988) concluded, "It appears companies want employees to emerge from a program with a mix of fundamental, theoretical and applied skills related to day to day work" (Chapter 1, p. 6).

A study of ethical issues among business students, business practitioners, and business faculty (DuFrene, Elliott-Howard, & L. G. Daniel, 1992) revealed that across all respondent groups the top three ethical issues were hazardous waste disposal, air and water pollution, and protection of natural resources. Previously, the same researchers (DuFrene, Elliott-Howard, & L. G. Daniel, 1990) had identified "a set of ethical issues that business faculty and business practitioners feel are important to the business community and therefore to the business classroom" (p. 58) with the conclusion "that issues relating to the environment, employment, and corporate/individual integrity are considered important by the business community" (p. 59). A trend toward environmental concerns for the 1990s appears to have been evolving between the DuFrene et al. (1990) study and the DuFrene et al. (1992) study.

Conducting research at a younger educational level, B. Harrington, J. Harrington, and Stolow (1986) used course preference rankings provided by a mixed-gender sample of fourth graders, fifth graders, and sixth graders with a minimum IQ of 125. They learned "that the following courses are excellent enrichment offerings" (p. 175) specific to one gender or common to both genders: cartooning (male), chemistry (male), rocketry (male), small engine repair (male), city desk: newspaper (female), sign language (female), mime (female), radio broadcasting (male and female), architecture (male and female), and magic (male and female). Also at a younger educational level, Stoneberg (1985) presented "findings of an evaluation of computer assisted instruction in mathematics as delivered by the WICAT System 300 installed at Periwinkle Elementary School in the Greater Albany Public School District 8J [in

Oregon]" (p. 1):

> Students gave high ratings to computer assisted instruction both in 1984 before using WICAT and in 1985 after a year of experience on the system. Primary students modified their ratings downward after using the system; intermediate students remained the same after using the system. (p. 1)

and

> Parents and staff, while acknowledging the cost of implementing the program, gave favorable ratings to the importance and productivity of computer assisted instruction, both in 1984 before WICAT was operational and in 1985 after a year of experience with the system. (p. 1)

Concerning the more social issue of substance abuse education, Center for Education Statistics (OERI/ED) (1987) issued this finding:

> Most local school districts take an active role in substance abuse education. . . . Districts perform a wide range of activities directed towards lessening student substance abuse. Of these, the three that district officials consider most effective are: improving student self-esteem, teaching the causes and effects of substance abuse, and developing student skills to resist peer pressure. (p. 1)

Regarding a planning guide, A. Hunter and Hamar (1981) explained do-it-yourself guidelines for "identifying and rank-ordering the specific independent living skills that are most essential to your youth" (p. 2) prior to "developing your own curriculum packages that contain learning activities to develop those skills" (p. 2). Another planning guide for instructional computing was made available by Cutts (1982).

• Ratings or rankings are evident within the field of career education or job training. For example, in a study by Mississippi Gulf Coast Junior College (1981), it was "noted that the [t]echnical students rate their training a bit higher [on usefulness] than academic [students] and vocational [students]. Average score in the college was 4.08 [on a 1-to-5 scale]" (p. 10). Additionally, 87% of technical students, 85% of vocational students, 50% of academic students, and 80% college-wide "said their courses helped them in their world of work" (p. 10). Yao (1991) presented a report "designed to explore the factors that affected former students' [i.e., discontinuants'] decision to withdraw from . . . occupational programs" (p. 1) offered by Vancouver Community College. Overall, "only about forty-one percent of the 1989-1990 discontinuants felt that their training at the College was definitely worthwhile. In comparison, as high as seventy-two percent of the 1989-1990 graduates held the same opinion" (p. 12).

Using questionnaire ratings in a study of another aspect of career education, Wilgosh, C. French, and Barry (1985) indicated that "parents', teachers', and employers' perceptions of the goals, objectives and content of a [trainable mentally handicapped] career education program were generally consistent. Parents, however, more strongly supported the teaching of academic skills than did teachers or employers" (p. 8). In addition, Mueller and Wilgosh (1991) published findings applicable to job training for mentally disabled individuals:

> Employers generally viewed employee deficits in the Affective Response, Safety, and Self-Control skill clusters as being most serious, (e.g., distruptive [*sic*] outbursts or unsafe work habits), showing low tolerance for such occurrences, which occur relatively infrequently in new employees. (p. 225)

Of deficits in 13 skill clusters, deficits in Adaptability were surprisingly considered least serious by employer respondents.

E. K. McConaughy, Stowitschek, Salzberg, and Peatross (1989) asked a sample of "front-line supervisors in [Utah] businesses that employed eight or more unskilled workers" (p. 5) to rate 37 items for job importance. The top three rated items were 1) following instructions requiring instant attention, 2) responding to emergencies, and 3) using social amenities. Conducting a similar study involving Kansas City metropolitan area employers' ratings of the importance of skills for entry-level positions, W. J. White (1983) stated, "Examination of these [skill] subdomains reveals that all represent basic skills required of *any* employee, entry level or higher (e.g., following instructions, appropriate behavior, goal-setting)" (p. 56).

In a study of Baltimore metropolitan area training programs, P. E. Jones and Wall (1987) found that of 29 skills rated for importance by program directors the top 5 ranked items dealt with pressure of deadlines, teamwork, minimal supervision, problem solving, and interpersonal communication. They added, "Computer programming . . . and designing computer-based instruction . . . were ranked surprisingly low, given the current popularity and attention which is accorded this 'new' technology" (p. 12). Likewise, examining instructional developers' required entry-level competencies, Trimby (1982) discovered that "the highest ranked competencies dealt with interpersonal communication type skills" (p. 5) but that computer programming was among the lowest ranked competencies. In a specific trade-related study, according to Booker, Catlin, and Weiss (1991), an Alaskan asbestos training program's "eight job components were rated on a four-point scale" (p. 19) and "in the overall estimation of workers, the training was well suited for the work they do" (p. 20).

Ratings or rankings have appeared in other studies of esoteric topics involving skills and competencies for computer science teacher certification (Hynes & Dziuban, 1988); Travis Unified School District Priority Survey of programs and services (Frantz (J. D.) Research, 1984); the University of Central Florida Learning Institute for Elders (LIFE) (Haskins, 1992); alumni evaluation of the M.Ed. in Reading Program at William Paterson College (Comstock & Feeley, 1988); trends in science program recommendations by science teachers (Stronck, 1986); mainstream doctoral program nontraditional students (Lacefield & Mahan, 1988); baccalaureate degree graduates of Indiana University's Health Occupations Education program (Pittman, 1984); needed competencies of agricultural alumni (Wheelock & Zekeri, 1988); business and office education generic math skills (Redmann, 1988); electronics knowledge necessary for various vocations (G. Mitchell & Carlson, 1984); gender perceptions of general school subjects (Archer & Macrae, 1991); diabetic education (Duchin & S. A. Brown, 1990); business education's major challenges (Dauwalder, 1985); trainable mentally handicapped career education (C. French & Wilgosh, 1984); kindergarten curricula priorities (Knudsen-Lindauer & K. Harris, 1989); cross-cultural counseling in rehabilitation counselor education (A. L. Watson, 1983, 1988); core courses for preparing physical education administrators in higher education (A. W. Miller, 1983); the Tennessee Technological University bachelor degree teacher preparation programs (Ayers, 1989); ESL needs of Chinese students and scholars at a Canadian university (Sun, 1989); training professionals' necessary competencies (T. M. Palmer, 1987); vocational education student organizations (Kantner, 1985); psychiatry in general practitioners' medical curriculum (Ney & L. S. Jones, 1985); Miami-Dade Community College occupational programs (Baldwin, 1983); community counselor education (DeRidder, Stephens, English, & Watkins, 1983); marketing education (Littman, 1988); instructional systems doctoral competencies (Redfield & Dick, 1984); cross-cultural training in business (Broadbooks, 1986); Roger Williams College business administration core curriculum courses (Cedergren, 1986); important skills in meeting planning (Walk, 1985); University of Wisconsin-Oshkosh mathematics education courses (Schmelter, 1985); motivational factors in Adult Basic Education (Valentine, 1990); teacher certification subject matter tests (Lavely, Berger, Blackman, Follman, & Kromrey, 1992); Tennessee beginning vocational agriculture teachers' professional education competencies (Lamberth, 1982); Texas industrial arts consumer education modules (G. E. Baker, Sharpe, & Renzelman, 1981); the Career

Planning System, Microcomputer Version (J. P. Long & Neuman, 1983); pilot of Norwich Regional Vocational Technical School course Mind Your Own Business (Rooke, 1981); educational measurement courses (Gullickson, 1984); speech communication instruction for vocational-technical students (Mester & Tauber, 1990); critical issues of the Chapter 1 Preschool Program in North Carolina's Charlotte-Mecklenburg Schools (Coppola, 1991); agricultural extension employees' competencies needed in urban Ohio counties (Ritsos & L. E. Miller, 1985); Adult Basic Education instructor training (Nunes & Halloran, 1987); high technology program quality indicators (W. L. Ashley, Fields, & Boylson, 1987); beginning teachers' testing and evaluation needs and beginning teachers' testing and evaluation proficiencies (Marso & Pigge, 1987); reading education literature core citations (Manzo, 1983); The University of Texas at Austin College of Education elementary teacher education program (S. H. Evans & Bethel, 1984); natural science core courses' applicability to needs of education majors (Gifford & Bellipanni, 1990); science components of Colorado secondary vocational programs (B. H. Anderson & Boddy, 1985); vocational educators' competencies for microcomputer applications in their programs (Tesolowski & Roth, 1985); adult speech communication needs (Wolvin, 1984); special education teacher training curricular content (Gable, C. C. Young, & Hendrickson, 1987); California attorneys' recommendations of undergraduate communication courses (Gadke & Salter, 1985); entry-level accounting activities (J. King & D. T. Adams, 1980); soil science core courses (Montagne, 1987); corporate expectations of fitness/wellness specialists versus university preparation of fitness/wellness specialists (J. L. Webb, 1987); certified rehabilitation counselor job tasks (Rubin, Matkin, J. Ashley, Beardsley, V. R. May, Onstott, & Puckett, 1984); occupational investigation curricula objectives (Hollenback, 1980); required entry-level competencies of auto body workers (Borremans, 1985); John Abbott College nursing program needed improvements (Iton & Sabiston, 1989); priority job skills in powdered metals manufacturing (Immel & Geroy, 1987); content areas for a National 4-H Executive Development Institute curriculum (Pettitt, Liles, & Mustian, 1987); a junior high school drug education course (Schaps, Moskowitz, Condon, & Malvin, 1981); at-risk student programs' activities and adaptations (Telfer, Jennings, McNinch, & R. R. Mottley, 1990; Telfer, Jennings, & R. Mottley, 1991); the principal's role in Indiana schools (Gousha, 1986); parent education curricular topics (Strom, 1985); and educational goals of mental health training (Pang, Hausman, & Garrard, 1987).

Ratings or rankings involving workshops, seminars, or inservices. A final area of the research literature featuring ratings or rankings is the more narrow area of workshops, seminars, or inservices. For instance, reporting an interesting study which incorporated ratings and which addressed why employee training is not always effective, Duffy (1990) noted that "the workshop the employees [of Organization A and of Organization B] attended was a twelve-hour seminar entitled 'Introduction to Microcomputers'" (p. 7) and that "the evaluation instrument . . . was an eight question Likert-scaled form [which employees completed]" (p. 7). It was discovered that "the mean responses [i.e., ratings] on the 'Content' items [of the questionnaire] . . . are significantly higher for Organization B, despite the same instructional techniques and the same course content [in the microcomputer workshop]" (p. 9). It was concluded that "the difference lies in the organizational value systems or 'corporate culture' as it applies to education and in-service training" (p. 10). More specifically, Duffy (1990) offered the following explanation:

> Education is viewed by this organization [i.e., Organization B] as an end in itself, a means of self-improvement. . . . Even though the computer training was not linked to some reward structure, the employees of Organization B, having internalized the

> organization's attitude regarding the worth of education, displayed distinctly higher self-evaluations of learning [i.e., higher questionnaire ratings]. (p. 11)

Greener and Thurlow (1982) detailed a study involving teachers from a Minnesota school district who attended a workshop and responded to "a one-page survey . . . developed to collect information on teachers' opinions about the education programs in which they were trained, with some questions related to their preparation for recognizing and dealing with special problems in the classroom" (p. 4). The authors concluded, "The results of the present study confirm that teachers currently working in schools believe that they have not been adequately prepared to deal with the special needs of many students now placed within their classes" (p. 11). They then added, "This situation must be addressed now" (p. 11) and prescribed a twofold remedy:

> One approach to alleviating the current situation is to organize appropriate inservice programs for teachers currently in classrooms, while at the same time continuing to move state certification departments in the direction of some minimum requirement of competency in exceptionality. (p. 11)

Ratings or rankings have surfaced in other workshop, seminar, or inservice studies pertaining to The New York City Staff Development Program for Bilingual Early Childhood Teachers (New York City Board of Education, 1986); military supervisors' burnout control in-house training (Torbert, 1987); administrators' preferred inservice topics concerning the behaviorally impaired (Grosenick & Huntze, 1983); and cross-cultural workshops for educators (McGroarty, 1984).

Summary

By definition, the future cannot be historically studied because it has yet to occur. Nonetheless, the future can be reasonably anticipated from extensive research on trends already evident in the present (Naisbitt, 1984; Naisbitt et al., 1990). This approach allows a degree of planning for an otherwise amorphous tomorrow. The future's unpredictability seems to be increased dynamically by a long-anticipated rapid rate of change (Toffler, 1970), especially within the workplace (Boyett et al., 1991; C. A. Couch, 1991; Gerber et al., 1989; Hellawell, 1996). An overarching trend across that changing workplace is technology (Carnevale, 1991b; T. Keller et al., 1983; Lenaghan, 1995; R. W. Smith, 1995), which is also experiencing substantial change (Hirsch, 1987; Mayo, 1988). Consequently, it is not surprising to envision that future employee rewards in a technological workplace will be related to employee education (Carnevale, 1991a).

If education seeks to prepare today's students for an ill-defined future, especially of concern in this lifelong adaptability study was the researcher's assumption that, with the decline of traditional industrial jobs (Carnevale, 1991a; Toffler, 1990), unprepared or underprepared workers will find themselves thrust into an unforgiving workplace of the Information Age (Carnevale, 1991b; T. Keller et al., 1983). It appears that one of the basic attributes of Information Age employees will be effective communication skills (Betts, 1994; Carnevale, 1991a, 1991b; Illinois University Department of Vocational and Technical Education, 1989), and it appears likely that communication in the Information Age will be universally conducted in English (Naisbitt et al., 1990). Therefore, to experience lifelong adaptability within the workplace, it seems that employees must be fluent in the nuances and allusions of the English language. A formal version of such fluency, capable of being taught through America's educational system, was popularized by Hirsch (1987) as *cultural literacy*.

Although the term itself was not coined until 1965 by H. B. Wilson (Paulsen et al., 1973), cultural literacy had long existed in the Western educational tradition beginning in ancient Greece and Rome. Research on this yet unnamed cultural literacy was being conducted as early as 1923 by Washburne. In 1987, Hirsch's longstanding cultural literacy campaign revealed friends and foes with his publication of *Cultural*

Literacy: What Every American Needs to Know. Basically, his controversial book was an expanded compilation of his previous research and theorizing.

The Hirschian cultural literacy camp consisted of apparently disparate factions which, over the years, collectively contributed a favorable backdrop to Hirsch's (1987) cultural literacy concept (W. J. Bennett, 1986; A. Bloom, 1987; Boyer, 1983; C. E. Finn et al., 1988; Patrick, 1988b; Purves, 1988; Ravitch, 1987; Steffensen et al., 1979; D. Zahler et al., 1988). Like the Hirschian cultural literacy camp, the opposing camp also comprised itself of seemingly discordant parties which, over time, synthesized a challenge to the cultural literacy movement (P. M. Anderson, 1989; Aronowitz et al., 1988; Arvizu et al., 1990; L. Z. Bloom, 1988; Christenbury, 1989; Crowley, 1991; Damon, 1990; Estes et al., 1988; Grant, 1994; Hallpike et al., 1994; Harper, 1990; Hepburn, 1988; M. L. Johnson, 1988; Mullican, 1991; Ohanian, 1990; Orwin et al., 1994; Pattison, 1988; Ross, 1989; Schear, 1992; A. E. Sledd et al., 1989; J. Sledd, 1988; Trimbur, 1987; Villanueva, 1993). Some members of the Hirschian cultural literacy camp, including Hirsch himself (W. J. Bennett, 1989; Bolter, 1991; Frazee, 1993; Hirsch, 1992c; Shanker, 1991), came to its defense when critics began their attacks on the cultural literacy movement.

Generally, implied or stated definitions of cultural literacy range from those of the classical camp (A. Bloom, 1987; W. J. Bennett, 1989) to those of the participant-centered camp (E. Greene, 1988, November 16; Kaufer, 1989; Law, 1988; Tchudi, 1988b; Winterowd, 1987) to those of the existential camp (Bowers, 1974; Schuster, 1989). Some definitions defy easy classification into these conventional camps (Levesque, 1989).

A miscellany of tangential camps developed out of some theorists' or practitioners' invocation of cultural literacy to promote their particular disciplines or agendas such as geography (P. S. Anderson, 1989); technology education (Pucel, 1992); music (Ball, 1991; G. E. Clarke, 1990; Levinson, 1990); literature assessment (P. Brody et al., 1989); law (Bolton, 1989); dance (Sparshott, 1990); historic preservation (Patrick, 1988a); history (Cheney, 1989; D. W. Moore, 1989); science and technology (Yager, 1989); world civilizations and related disciplines (Sjoquist, 1993); theater (Gillespie, 1990); values (W. B. Martin, 1985); basic speech (M. D. Jensen, 1989); the school library (K. Harris et al., 1989); and the visual arts (Richardson, 1990).

Besides the cultural literacy camps, there emerged a multicultural literacy camp (G. Anderson et al., 1989; Cortés, 1978; Simonson et al., 1988) and a cross-cultural literacy camp (Arvizu et al., 1990; Bowers, 1974; Cummins et al., 1995). Even with these alternative camps, it seems virtually impossible to pigeonhole some theorists' or practitioners' nonstandardized cultural literacy ideologies (Melenchuk et al., 1987). For the sake of defining cultural literacy as unambiguously as possible, the present study employed Hirsch's (1987) cultural literacy concept as operationalized by the now out-of-print *Cultural Literacy Test* (Riverside Publishing Company, 1989).

Cultural literacy entails achieving basic cultural information (Hirsch, 1987) which can be successfully taught to students (M. S. Smith et al., 1990) and for which there existed an achievement test (Riverside Publishing Company, 1989). In other words, cultural literacy's reliance on acquiring learnable information or knowledge, which can be assessed, seems to place cultural literacy in the achievement domain.

Due to cultural literacy being an achievement subdomain, the current research also examined the relationship of intelligence to cultural literacy. Although conspicuously limited research is available on the intelligence-cultural literacy relationship, a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990). In addition, an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kundert et al., 1995; Kuusinen et al., 1988; Lassiter et al., 1995; D. S. Watts et al., 1991). Intelligence has also been reported as an effective covariate (Creemers et al., 1996).

Likewise due to cultural literacy being an achievement subdomain, the present study permitted an expanded demographic literature review that encompassed the broader achievement domain. Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al.,

1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987; Xie et al., 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

Furthermore, the research literature reports interaction effects involving these demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Bronstein et al., 1993; Ensminger et al., 1992; Feldman et al., 1993;

Gringlas et al., 1995; Kaiser, 1994; Å. Murray et al., 1990; Teachman, 1987; Zimiles et al., 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (Cherian, 1994; S. M. Dornbusch et al., 1987; S. M. Dornbusch et al., 1991; Ensminger et al., 1992; Entwisle et al., 1995; J. D. Finn et al., 1994; Gringlas et al., 1995; J. D. House, 1996; J. D. House et al., 1989; T. E. Smith, 1992; Spencer et al., 1993). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus et al., 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink et al., 1989; Thomson et al., 1994) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Kundert et al., 1995; Lutzer, 1986; C. J. Patterson et al., 1990). Nevertheless, sound research practice dictated that interaction be considered in the present study in order to detect possible attenuation of main effects.

Finally, the present study utilized two basic data-related components evident in the research literature. The first basic component, ratings or rankings, has enjoyed popularity among researchers who collectively have written on numerous topics with several notable research areas evident in the literature. These research areas include general school subjects (Corbitt, 1984; S. W. Graham et al., 1990; S. Gross, 1985; C. R. King, 1988; Mandes et al., 1986; Power et al., 1990; Riesenberg et al., 1990; Survey Research Systems, 1990), esoteric topics (M. J. Allen et al., 1991; Booker et al., 1991; Brandon et al., 1992; P. Chapman, 1990a; Copeland et al., 1985; Cunningham, 1987; R. Drummond et al., 1990; DuFrene et al., 1992; B. Harrington et al., 1986; Hartley et al., 1990; Hawaii State Board for Vocational Education, 1992; P. E. Jones et al., 1987; Lavely et al., 1990; E. K. McConaughy et al., 1989; Mueller et al., 1991; Roney et al., 1990; Silva-Guerrero et al., 1990; Townsend et al., 1990; Yao, 1991), and workshops, seminars, or inservices (Duffy, 1990; Greener et al., 1982; New York City Board of Education, 1986; Torbert, 1987). The second basic component, four respondent groups (parents, teachers, administrators, and students), has collectively surfaced in the research literature incorporating or recommending respondent groups comprised of at least students (J. A. Johnson, 1981); teachers (Louisiana State Department of Education Division of Vocational Education, 1982); students and parents (Sullivan, 1983); teachers and administrators (J. A. Williams et al., 1991); parents and teachers (Olmsted et al., 1995); parents, teachers, and students (Halasa et al., 1983; Overman, 1980); and parents, teachers, administrators, and students (Bailey, 1982; Kettle, 1983).

In conclusion, the research literature suggested the integration of cultural literacy, intelligence, demography (family structure, parental age, parental educational level, and student gender), ratings or rankings, and four respondent groups (parents, teachers, administrators, and students) in the present curricular study of lifelong adaptability.

CHAPTER III

PROCEDURES

Research Design

This study was motivated by a need to prepare today's students for future change, especially within the workplace of the 21st century. It sought to identify a commonly acceptable curricular direction for educationally promoting lifelong adaptability from a cultural literacy perspective. Students' lifelong adaptability ratings of general school subjects were examined as they related to cultural literacy and demography in order to suggest helpful curricular revision to enhance student lifelong adaptability. Parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects were then inspected for possible consensus with specific interest in culturally literate students' responses.

Charles (1988) noted that "the main purpose of correlational research is to explore relationships between variables in order to understand them better and use them to make predictions" (p. 114). Within the present research, possible influences of student cultural literacy and demography were investigated to predict students' lifelong adaptability ratings of general school subjects. This investigation dictated a correlational (ex post facto) design as defined by Kerlinger (1973):

> Ex post facto research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables. (p. 379)

Three intrinsic deficiencies exist within ex post facto research: "(1) the inability to manipulate independent variables, (2) the lack of power to randomize, and (3) the risk of improper interpretation" (Kerlinger, 1973, p. 390). These inherent weaknesses were sufficiently addressed in the current study as documented under "Sampling Procedures" within this chapter.

An ex post facto design was selected precisely because of inability to control this study's independent variables. These variables included family structure, parental age, parental educational level, student cultural literacy, student gender, and student intelligence. It would have been unprincipled, if not impossible, to manipulate the aforementioned variables. Similarly, this study's covariate of student intelligence was beyond manipulation. "Therefore, the researcher can either decide to do ex post facto research or no research at all" (I. Newman & C. Newman, 1992, p. 116). For ethical and logistical reasons, this investigator understandably chose an ex post facto research design.

W. R. Borg and Gall (1989) defined ex post facto research in this manner:

> The causal-comparative method is aimed at the discovery of *possible* [italics added] causes and effects of a behavior pattern or personal characteristic by comparing subjects in whom this pattern or characteristic is present with similar subjects in which it is absent or present to a lesser degree. . . . This method is sometimes called ex post facto research, because causes are studied after they *presumably* [italics added] have exerted their effect on another variable. (p. 537)

They added, "A disadvantage of the causal-comparative method is that it is difficult to establish causality on the basis of the collected data" (p. 538). Furthermore, "An observed relationship between variables *A* and *B* can mean that *A* causes *B*, *B* causes *A*, or a third variable *C* causes both *A* and *B*" (p. 540). Tuckman (1978) cautioned that because in ex post facto studies "the treatment is included by selection rather than manipulation" (p. 147), "it is not always possible to assume a simple causative relation between independent and dependent variables" (p. 147). Additionally, "if the predicted relationship *is* obtained, this does not necessarily mean that the variables studied are causally related" (pp. 147-148). As I. Newman et al. (1992) unequivocally stated, "when one does correlational (ex post facto) research, causation cannot be inferred" (p. 114). Therefore, the present study's interpretation of results was limited to *noncausal* relationships among student cultural literacy, demography, and students' lifelong adaptability ratings of general school subjects. Causation could not be established in the present study, which investigated *relationships* of unmanipulable independent variables, thereby warranting the chosen ex post facto design.

Ex post facto studies offer three major research designs: "without hypotheses, with hypotheses, and with hypotheses and tests of alternative hypotheses" (I. Newman et al., 1992, p. 116). According to Kerlinger (1964), alternative hypotheses are especially applicable to ex post facto research:

> The method of testing alternative hypotheses, though important in all research, is particularly important in ex post facto studies, because it is one of the only ways to "control" the independent variables of such research. Lacking the possibility of randomization and manipulation, ex post facto researchers, perhaps more so than experimentalists, must be very sensitive to alternative hypothesis-testing possibilities. (p. 371)

The present study employed this more stringent ex post facto design incorporating hypotheses and alternative hypotheses.

Derivation of Hypotheses and Hypotheses

To prepare today's students for persistent future change, especially in the workplace, lifelong adaptability is a necessity. Cultural literacy (Hirsch, 1987) is a proposed component of lifelong adaptability because of cultural literacy's inextricable link with language, which in turn is linked with communication, which ultimately is linked with lifelong adaptability (see Figure 1) within an emerging global network tending toward English as its universal language (Naisbitt et al., 1990). This study sought to identify significant relationships among student cultural literacy, demography, and lifelong adaptability ratings of general school subjects.

Of particular research interest were two elements: 1) a possible additive effect or interaction between demography and student cultural literacy in predicting lifelong adaptability ratings of general school subjects and 2) possible consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects with special consideration of the ratings of those students identified as culturally literate. These two areas of interest respectively lend themselves 1) to directing curricular revision for promoting lifelong adaptability and 2) to expediting politically such revision through shared respondent lifelong adaptability ratings of general school subjects.

The present study's operationally defined independent/predictor variables, dependent/criterion variables, and covariate are listed below. An independent/predictor variable (e.g., student cultural literacy or student intelligence) in a given general hypothesis may have served as a dependent/criterion variable or as a covariate in other general hypotheses.

Independent/Predictor Variables

1. family structure: Section 1 of Lifelong Adaptability Survey (Parent)

where

a. 1 = female only parent/stepparent/guardian/foster parent/etc.

b. 2 = male only parent/stepparent/guardian/foster parent/etc.

c. 3 = both female and male parents/stepparents/guardians/foster parents/etc.

d. 4 = other (multiple-guardian group home, foster home, etc.)

2. parental age: Section 1 of Lifelong Adaptability Survey (Parent) where

a. 1 = 20-29 years of age

b. 2 = 30-39 years of age

c. 3 = 40-49 years of age

d. 4 = 50-59 years of age

e. 5 = 60-69 years of age

f. 6 = 70-79 years of age

g. 7 = 80-89 years of age

h. 8 = 90-100 years of age

3. parental educational level: Section 1 of Lifelong Adaptability Survey (Parent) where

a. 1 = elementary, junior high, or senior high school but no high school diploma

b. 2 = high school diploma or its equivalent (G.E.D., etc.)

c. 3 = adult vocational school degree after high school diploma

d. 4 = college or university associate degree

e. 5 = bachelor's degree

f. 6 = master's degree

g. 7 = law degree

h. 8 = earned doctorate (M.D., D.D.S., Ph.D., J.D., Ed.D., etc.)

4. student cultural literacy: now out-of-print *Cultural Literacy Test* composite raw score

5. student gender: Millcreek Township School District student *Differential Aptitude Tests (DAT)* records or, if unavailable, other student records where

a. 1 = female

b. 2 = male

6. student intelligence: *DAT* Verbal Reasoning + Numerical Ability (VR + NA) composite raw score as intelligence proxy; "the usefulness of the VR + NA composite score as an indicator of general ability is well-established" (Sander, 1985, p. 506)

Dependent/Criterion Variables

1-15. parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects: respectively, Lifelong Adaptability Survey (Parent) numerical ratings, Lifelong Adaptability Survey (Teacher) numerical ratings, Lifelong Adaptability Survey (Administrator) numerical ratings, and Lifelong Adaptability Survey (Student) numerical ratings of 15 general school subjects (art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical)

16. student cultural literacy: now out-of-print *Cultural Literacy Test* composite raw score

Covariate

1. student intelligence: *DAT* Verbal Reasoning + Numerical Ability (VR + NA) composite raw score as intelligence proxy; "the usefulness of the VR + NA composite score as an indicator of general ability is well-established" (Sander, 1985, p. 506)

Of note are two errors in the Lifelong Adaptability Survey. One of the vocational-technical descriptors was misspelled in each version of the survey; *tool and dye* ought to have been spelled *tool and die*. In the Lifelong Adaptability Survey (Parent)'s demography section, formal education's highest option was listed as "8.

earned doctorate (M.D., D.D.S., Ph.D., J.D., Ed.D., etc.)"; *J.D.* (Juris Doctor, which is equivalent to a bachelor of laws degree) ought to have been *S.J.D.* (Doctor of Juridical Science, which is an earned doctorate in law).

Derivation of General Hypothesis 1 (H_{G1})

Reporting on urban fifth graders in Kosmoski's (1989) dissertation study, Kosmoski et al. (1990) explained a researcher-developed Cultural Literacy Assessment Test (CLAT), which was "an orally administered, multiple-choice instrument developed from items randomly selected from Hirsch's list of cultural literacy terms" (p. 266). They found that "the correlation between IQ and CLAT scores was .82" (p. 267) leading them to the following conclusion:

> The high correlation between IQ and CLAT scores suggested two major implications. First, the CLAT may serve as a viable proxy for existing group IQ measures. Second, the strong relationship between scores on the CSI [Cognitive Skills Inventory of the *CAT* (*California Achievement Tests*) (G. J. Kosmoski, personal communication, February 7, 2011)] and the CLAT may indicate that this IQ test is heavily influenced by cultural literacy or may be a measure of cultural literacy itself. (pp. 269-270)

With high school seniors as subjects, the present study undertook to predict cultural literacy data from intelligence data in order to begin to explore the suggestion that measures of cultural literacy and measures of intelligence are actually both measuring cultural literacy. In the current research, it was not assumed that this study's *Cultural Literacy Test* and *DAT* correlated respectively with Kosmoski et al.'s (1990) CLAT and CSI. Therefore, any implications of the present research cannot be statistically correlated with Kosmoski et al.'s (1990) implications.

In addition to results reported by Kosmoski (1989) and Kosmoski et al. (1990), an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kundert et al., 1995; Kuusinen et al., 1988; Lassiter et al., 1995; D. S. Watts et al., 1991).

The present study precipitated the research paradigm illustrated in Figure 2 and its concomitant general hypothesis.

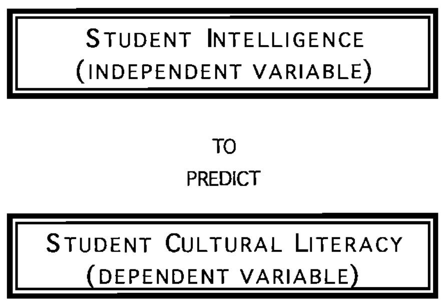

Figure 2. Prediction of student cultural literacy from student intelligence.

General Hypothesis 1 (H_{G1}).

H_{G1}: Student intelligence significantly predicts student cultural literacy.

Derivation of General Hypothesis 2 (H_{G2})

General school subjects contained in all four respondent (parent, teacher, administrator, and student) versions of the Lifelong Adaptability Survey were selected by determining regionally common required or elected content offerings in Grade 9, 10, 11, or 12. A researcher-constructed table based on Northwest Tri-County Intermediate Unit 5 (1989) unpublished raw data appears in Appendix 1. Selection of 15 general school subjects for all versions of the Lifelong Adaptability Survey is detailed below under "Instrumentation" within this chapter.

Controlling for student intelligence in a general hypothesis involving cultural literacy was suggested by the intelligence-cultural literacy relationship in which a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990). In addition, an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kundert et al., 1995; Kuusinen et al., 1988; Lassiter et al., 1995; D. S. Watts et al., 1991). Intelligence has also been reported as an effective covariate (Creemers et al., 1996).

Kosmoski (1989) documented a significant relationship between student cultural literacy and academic achievement among fifth graders. It had yet to be demonstrated if, among high school seniors, any relationship exists between student cultural literacy and students' lifelong adaptability ratings of general school subjects. Incorporated into the current research were high school seniors' lifelong adaptability ratings of general school subjects. From a cultural literacy perspective, valid direction for curricular revision to enhance lifelong adaptability can be gained through significant prediction of students' lifelong adaptability ratings of general school subjects from student cultural literacy. Student intelligence was covaried with student cultural literacy.

Thus were generated the research paradigm presented in Figure 3, its general hypothesis, and its attendant specific regressions.

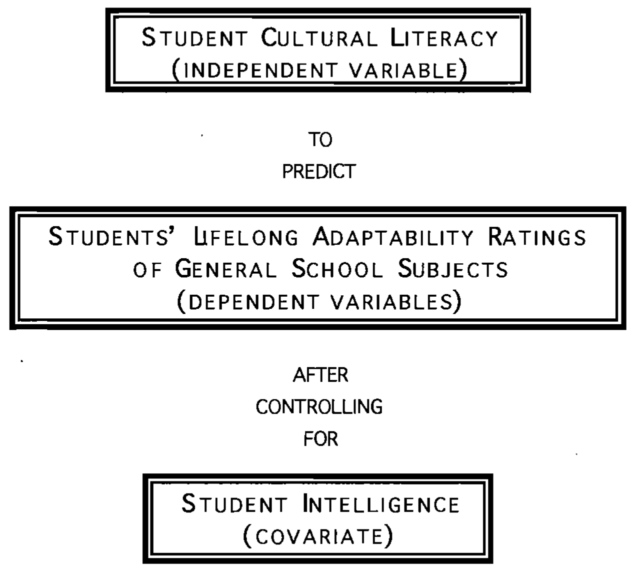

Figure 3. Prediction of students' lifelong adaptability ratings of general school subjects from student cultural literacy with student intelligence covaried.

General Hypothesis 2 (H_{G2}).

H_{G2}: Student cultural literacy significantly predicts students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

Initial specific regressions testing for main effect of student cultural literacy with subsequent specific full and restricted regression model pairs testing for covariate effect of student intelligence if needed (R_1 - R_{15}).

R_1 - R_{15}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of . . .

R_1 . . . art.

R_2 . . . business.

R_3 . . . computer technology.

R_4 . . . driver education.

R_5 . . . English.

R_6 . . . foreign language.

R_7 . . . health.

R_8 . . . home economics.

R_9 . . . industrial technology.

R_{10} . . . mathematics.

R_{11} . . . music.

R_{12} . . . physical education.

R_{13} . . . science.

R_{14} . . . social studies.

R_{15} . . . vocational-technical.

Derivation of General Hypothesis 3 (H_{G3})

Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987; Xie et al., 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

Because variables in real life seldom act in isolation, the current study attempted to reveal an additive effect of student cultural literacy and demography in predicting students' lifelong adaptability ratings of general school subjects. This investigation required the research paradigm depicted in Figure 4, its general hypothesis, and its accompanying specific regressions.

STUDENT CULTURAL LITERACY + FAMILY STRUCTURE + PARENTAL AGE + PARENTAL EDUCATIONAL LEVEL + STUDENT GENDER
(ADDITIVE INDEPENDENT VARIABLES)

TO
PREDICT

STUDENTS' LIFELONG ADAPTABILITY RATINGS OF GENERAL SCHOOL SUBJECTS
(DEPENDENT VARIABLES)

Figure 4. Prediction of students' lifelong adaptability ratings of general school subjects from additive independent variables.

General Hypothesis 3 (H_{G3}).

H_{G3}: There is a significant addition of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific regressions (R_{16} - R_{30}).

R_{16} - R_{30}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{16} . . . art.

R_{17} . . . business.

R_{18} . . . computer technology.

R_{19} . . . driver education.

R_{20} . . . English.

R_{21} . . . foreign language.

R_{22} . . . health.

R_{23} . . . home economics.

R_{24} . . . industrial technology.

R_{25} . . . mathematics.

R_{26} . . . music.

R_{27} . . . physical education.

R_{28} . . . science.

R_{29} . . . social studies.

R_{30} . . . vocational-technical.

Derivation of General Hypothesis 4 (H_{G4})

Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987; Xie et al., 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

The research literature reports interaction effects involving the present study's demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Bronstein et al., 1993; Ensminger et al., 1992; Feldman et al., 1993; Gringlas et al., 1995; Kaiser, 1994; Å. Murray et al., 1990; Teachman, 1987; Zimiles et al., 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (Cherian, 1994; S. M. Dornbusch et al., 1987; S. M. Dornbusch et al., 1991; Ensminger et al., 1992; Entwisle et al., 1995; J. D. Finn et al., 1994; Gringlas et al., 1995; J. D. House, 1996; J. D. House et al., 1989; T. E. Smith, 1992; Spencer et al., 1993). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus et al., 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink et al., 1989; Thomson et al., 1994) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Kundert et al., 1995; Lutzer, 1986; C. J. Patterson et al., 1990).

Of concern in the current study was demonstration of possible two-way interactions among student cultural literacy and demography in predicting students' lifelong adaptability ratings of general school subjects. The demographic variables included in General Hypothesis 4 were the same as those demographic variables (family structure, parental age, parental educational level, and student gender) included in General Hypothesis 3. Both main effects and interaction effects were examined. Such an inquiry necessitated the research paradigms represented in Figures 5 and 6, their general hypotheses, and their appropriate specific regressions.

STUDENT CULTURAL LITERACY, FAMILY STRUCTURE, PARENTAL AGE, PARENTAL EDUCATIONAL LEVEL, STUDENT GENDER (MAIN EFFECT INDEPENDENT VARIABLES)

TO
PREDICT

STUDENTS' LIFELONG ADAPTABILITY RATINGS OF GENERAL SCHOOL SUBJECTS (DEPENDENT VARIABLES)

Figure 5. Prediction of students' lifelong adaptability ratings of general school subjects from main effect independent variables.

General Hypothesis 4A (H_{G4A}).

H_{G4A}: There are significant main effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific regressions (R_{31} - R_{105}).

R_{31} - R_{45}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{31} . . . art.

R_{32} . . . business.

R_{33} . . . computer technology.

R_{34} . . . driver education.

R_{35} . . . English.

R_{36} . . . foreign language.

R_{37} . . . health.

R_{38} . . . home economics.

R_{39} . . . industrial technology.

R_{40} . . . mathematics.

R_{41} . . . music.

R_{42} . . . physical education.

R_{43} . . . science.

R_{44} . . . social studies.

R_{45} . . . vocational-technical.

R_{46} - R_{60}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{46} . . . art.

R_{47} . . . business.

R_{48} . . . computer technology.

R_{49} . . . driver education.

R_{50} . . . English.

R_{51} . . . foreign language.

R_{52} . . . health.

R_{53} . . . home economics.

R_{54} . . . industrial technology.

R_{55} . . . mathematics.

R_{56} . . . music.

R_{57} . . . physical education.

R_{58} . . . science.

R_{59} . . . social studies.

R_{60} . . . vocational-technical.

R_{61} - R_{75}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{61} . . . art.

R_{62} . . . business.

R_{63} . . . computer technology.

R_{64} . . . driver education.

R_{65} . . . English.

R_{66} . . . foreign language.

R_{67} . . . health.

R_{68} . . . home economics.

R_{69} . . . industrial technology.

R_{70} . . . mathematics.

R_{71} . . . music.

R_{72} . . . physical education.

R_{73} . . . science.

R_{74} . . . social studies.

R_{75} . . . vocational-technical.

R_{76} - R_{90}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{76} . . . art.

R_{77} . . . business.

R_{78} . . . computer technology.

R_{79} . . . driver education.

R_{80} . . . English.

R_{81} . . . foreign language.

R_{82} . . . health.

R_{83} . . . home economics.

R_{84} . . . industrial technology.

R_{85} . . . mathematics.

R_{86} . . . music.

R_{87} . . . physical education.

R_{88} . . . science.

R_{89} . . . social studies.

R_{90} . . . vocational-technical.

R_{91} - R_{105}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{91} . . . art.

R_{92} . . . business.

R_{93} . . . computer technology.

R_{94} . . . driver education.

R_{95} . . . English.

R_{96} . . . foreign language.

R_{97} . . . health.

R_{98} . . . home economics.

R_{99} . . . industrial technology.

R_{100} . . . mathematics.

R_{101} . . . music.

R_{102} . . . physical education.

R_{103} . . . science.

R_{104} . . . social studies.

R_{105} . . . vocational-technical.

STUDENT CULTURAL LITERACY, FAMILY STRUCTURE, PARENTAL AGE, PARENTAL EDUCATIONAL LEVEL, STUDENT GENDER (TWO-WAY INTERACTIVE INDEPENDENT VARIABLES)

TO
PREDICT

STUDENTS' LIFELONG ADAPTABILITY RATINGS OF GENERAL SCHOOL SUBJECTS (DEPENDENT VARIABLES)

Figure 6. Prediction of students' lifelong adaptability ratings of general school subjects from two-way interactive independent variables.

General Hypothesis 4B (H_{G4B}).

H_{G4B}: There are significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific full and restricted regression model pairs (R_{106} - R_{255}).

R_{106} - R_{120}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{106} . . . art.

R_{107} . . . business.

R_{108} . . . computer technology.

R_{109} . . . driver education.

R_{110} . . . English.

R_{111} . . . foreign language.

R_{112} . . . health.

R_{113} . . . home economics.

R_{114} . . . industrial technology.

R_{115} . . . mathematics.

R_{116} . . . music.

R_{117} . . . physical education.

R_{118} . . . science.

R_{119} . . . social studies.

R_{120} . . . vocational-technical.

R_{121} - R_{135}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{121} . . . art.

R_{122} . . . business.

R_{123} . . . computer technology.

R_{124} . . . driver education.

R_{125} . . . English.

R_{126} . . . foreign language.

R_{127} . . . health.

R_{128} . . . home economics.

R_{129} . . . industrial technology.

R_{130} . . . mathematics.

R_{131} . . . music.

R_{132} . . . physical education.

R_{133} . . . science.

R_{134} . . . social studies.

R_{135} . . . vocational-technical.

R_{136} - R_{150}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{136} . . . art.

R_{137} . . . business.

R_{138} . . . computer technology.

R_{139} . . . driver education.

R_{140} . . . English.

R_{141} . . . foreign language.

R_{142} . . . health.

R_{143} . . . home economics.

R_{144} . . . industrial technology.

R_{145} . . . mathematics.

R_{146} . . . music.

R_{147} . . . physical education.

R_{148} . . . science.

R_{149} . . . social studies.

R_{150} . . . vocational-technical.

R_{151} - R_{165}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{151} . . . art.

R_{152} . . . business.

R_{153} . . . computer technology.

R_{154} . . . driver education.

R_{155} . . . English.

R_{156} . . . foreign language.

R_{157} . . . health.

R_{158} . . . home economics.

R_{159} . . . industrial technology.

R_{160} . . . mathematics.

R_{161} . . . music.

R_{162} . . . physical education.

R_{163} . . . science.

R_{164} . . . social studies.

R_{165} . . . vocational-technical.

R_{166} - R_{180}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{166} . . . art.

R_{167} . . . business.

R_{168} . . . computer technology.

R_{169} . . . driver education.

R_{170} . . . English.

R_{171} . . . foreign language.

R_{172} . . . health.

R_{173} . . . home economics.

R_{174} . . . industrial technology.

R_{175} . . . mathematics.

R_{176} . . . music.

R_{177} . . . physical education.

R_{178} . . . science.

R_{179} . . . social studies.

R_{180} . . . vocational-technical.

R_{181} - R_{195}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{181} . . . art.

R_{182} . . . business.

R_{183} . . . computer technology.

R_{184} . . . driver education.

R_{185} . . . English.

R_{186} . . . foreign language.

R_{187} . . . health.

R_{188} . . . home economics.

R_{189} . . . industrial technology.

R_{190} . . . mathematics.

R_{191} . . . music.

R_{192} . . . physical education.

R_{193} . . . science.

R_{194} . . . social studies.

R_{195} . . . vocational-technical.

R_{196} - R_{210}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{196} . . . art.

R_{197} . . . business.

R_{198} . . . computer technology.

R_{199} . . . driver education.

R_{200} . . . English.

R_{201} . . . foreign language.

R_{202} . . . health.

R_{203} . . . home economics.

R_{204} . . . industrial technology.

R_{205} . . . mathematics.

R_{206} . . . music.

R_{207} . . . physical education.

R_{208} . . . science.

R_{209} . . . social studies.

R_{210} . . . vocational-technical.

R_{211} - R_{225}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{211} . . . art.

R_{212} . . . business.

R_{213} . . . computer technology.

R_{214} . . . driver education.

R_{215} . . . English.

R_{216} . . . foreign language.

R_{217} . . . health.

R_{218} . . . home economics.

R_{219} . . . industrial technology.

R_{220} . . . mathematics.

R_{221} . . . music.

R_{222} . . . physical education.

R_{223} . . . science.

R_{224} . . . social studies.

R_{225} . . . vocational-technical.

R_{226} - R_{240}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{226} . . . art.

R_{227} . . . business.

R_{228} . . . computer technology.

R_{229} . . . driver education.

R_{230} . . . English.

R_{231} . . . foreign language.

R_{232} . . . health.

R_{233} . . . home economics.

R_{234} . . . industrial technology.

R_{235} . . . mathematics.

R_{236} . . . music.

R_{237} . . . physical education.

R_{238} . . . science.

R_{239} . . . social studies.

R_{240} . . . vocational-technical.

R_{241} - R_{255}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{241} . . . art.

R_{242} . . . business.

R_{243} . . . computer technology.

R_{244} . . . driver education.

R_{245} . . . English.

R_{246} . . . foreign language.

R_{247} . . . health.

R_{248} . . . home economics.

R_{249} . . . industrial technology.

R_{250} . . . mathematics.

R_{251} . . . music.

R_{252} . . . physical education.

R_{253} . . . science.

R_{254} . . . social studies.

R_{255} . . . vocational-technical.

Derivation of General Hypothesis 5 (H_{G5})

A final hypothetical purpose of this research was to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects.

Of general interest was whether overall respondent agreement exists across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. Possible consensus was investigated by ranking these respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Such an inquiry necessitated the research paradigm represented in Figure 7 and its general hypothesis.

PARENTS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
RANKED BY THEIR MEANS

IN COMPARISON WITH

TEACHERS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
RANKED BY THEIR MEANS

IN COMPARISON WITH

ADMINISTRATORS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
RANKED BY THEIR MEANS

IN COMPARISON WITH

ALL STUDENTS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
RANKED BY THEIR MEANS

Figure 7. Comparison of parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects ranked by their means.

General Hypothesis 5A (H_{G5A}).

H_{G5A}: There is consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects.

Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and *culturally literate* students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test.* This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Possible consensus was investigated by ranking the respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Such an inquiry necessitated the research paradigm represented in Figure 8 and its general hypothesis.

Parents' Lifelong Adaptability Ratings
of General School Subjects
Ranked by Their Means

in comparison with

Teachers' Lifelong Adaptability Ratings
of General School Subjects
Ranked by Their Means

in comparison with

Administrators' Lifelong Adaptability Ratings
of General School Subjects
Ranked by Their Means

in comparison with

Culturally Literate Students' Lifelong
Adaptability Ratings of General School
Subjects Ranked by Their Means

Figure 8. Comparison of parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects ranked by their means.

General Hypothesis 5B (H_{G5B}).

H_{G5B}: There is consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects.

Parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick and Fidell, 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations. Such an inquiry necessitated the research paradigm illustrated in Figure 9 and its general hypothesis.

PARENTS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(FACTOR SOLUTIONS)

IN COMPARISON WITH

TEACHERS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(FACTOR SOLUTIONS)

IN COMPARISON WITH

ALL STUDENTS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(FACTOR SOLUTIONS)

AND ALL THREE OF THE ABOVE GROUPS' MEANS AND STANDARD DEVIATIONS COMPARED WITH

ADMINISTRATORS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(MEANS AND STANDARD DEVIATIONS)

Figure 9. Comparison of factor solutions for parents', teachers', and all students' lifelong adaptability ratings of general school subjects and comparison of all groups' means and standard deviations of lifelong adaptability ratings of general school subjects.

General Hypothesis 5C (H_{G5C}).

H_{G5C}: There are common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects.

Parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. The existence of common underlying factors would politically expedite curricular revision from a cultural literacy perspective.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5D, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If common underlying factors exist, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations. Such an inquiry necessitated the research paradigm illustrated in Figure 10 and its general

PARENTS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(FACTOR SOLUTIONS)

IN COMPARISON WITH

TEACHERS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(FACTOR SOLUTIONS)

IN COMPARISON WITH

CULTURALLY LITERATE STUDENTS' LIFELONG
ADAPTABILITY RATINGS OF GENERAL SCHOOL
SUBJECTS (FACTOR SOLUTIONS)

AND ALL THREE OF THE ABOVE GROUPS' MEANS AND STANDARD DEVIATIONS COMPARED WITH

ADMINISTRATORS' LIFELONG ADAPTABILITY RATINGS
OF GENERAL SCHOOL SUBJECTS
(MEANS AND STANDARD DEVIATIONS)

Figure 10. Comparison of factor solutions for parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects and comparison of all groups' means and standard deviations of lifelong adaptability ratings of general school subjects.

hypothesis.

General Hypothesis 5D (H_{G5D}).

H_{G5D}: There are common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects.

Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for a common factor model. The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy*

Test. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model involving culturally literate students exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

Initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model. Such an inquiry necessitated the research paradigm illustrated in Figure 11 and its general hypothesis.

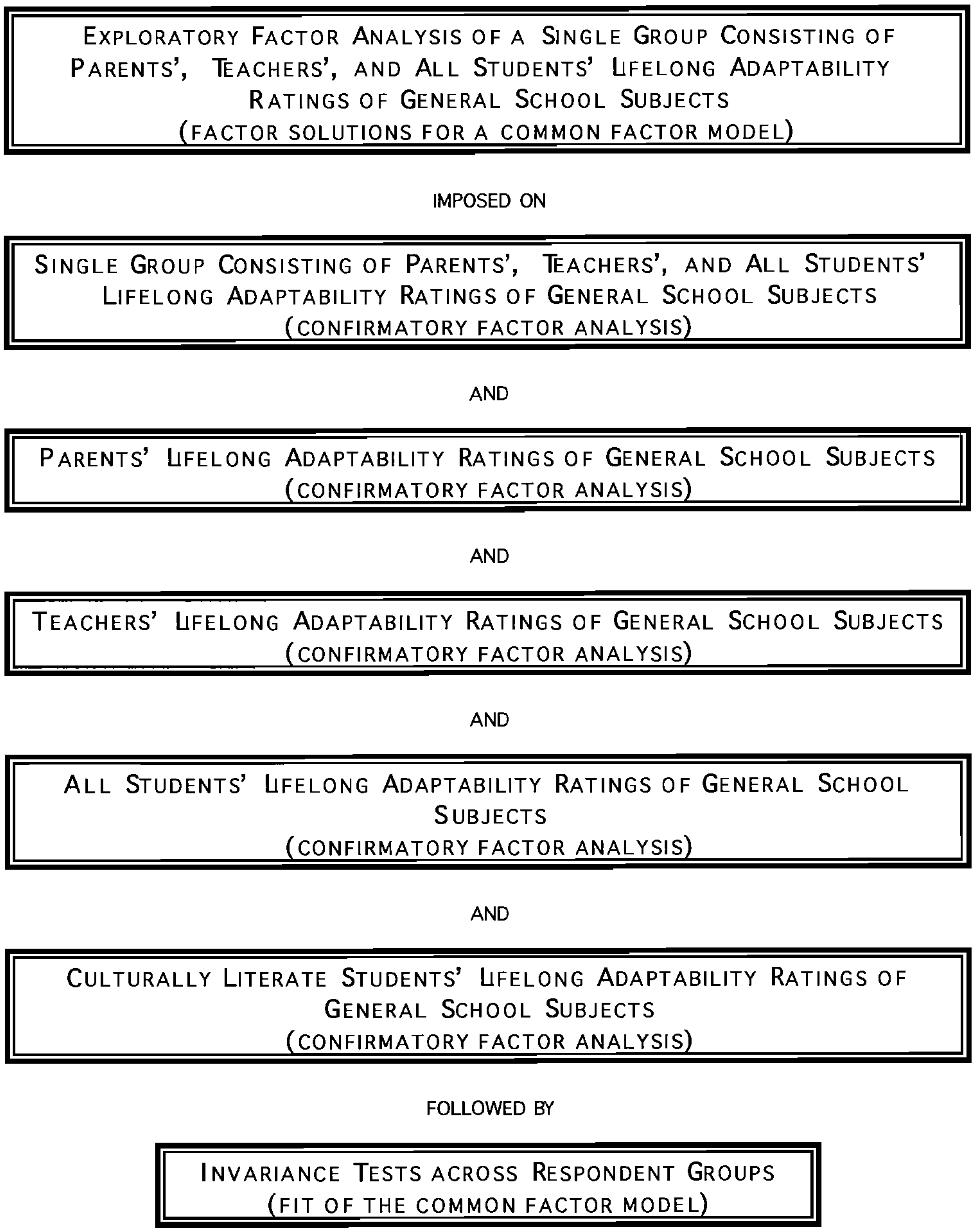

Figure 11. Exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of general school subjects to identify factor solutions for a common factor model and subsequent confirmatory factor analyses testing the attempt to impose that common factor model on the single group and on each respondent group to be followed by invariance tests across respondent groups to assess the fit of the common factor model.

General Hypothesis 5E (H_{G5E}).

H_{G5E}: Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects share a common factor model.

Subjects

The subject population in the present study was involved with middle-class suburban Millcreek Township School District adjacent to Erie, Pennsylvania. Although some of the subjects may have resided outside Millcreek Township School District geographically, all subjects were involved with Millcreek Township School District educationally. This study's population included 455 high school seniors; 444 to 888 parents, the exact number being unknown at 1 or 2 parents per student, of all 455 high school seniors (who included 11 sets of twins); 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors; and 6 secondary building administrators. These subjects constituted the population of potential subjects involved with Millcreek Township School District. Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households.

Therefore, potentially, this study solicited 665 to 1,109 (the range due to the unknown number of one or two parents per household) total survey returns from 87 high school seniors reporting to the school test-survey site; from 444 high school seniors' households (i.e., from 444 to 888 individual parents); from 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors (with initially 129 solicited before 1 more teacher was also identified as a parent of a high school senior); and from 6 secondary building administrators.

Of solicited surveys, usable surveys were returned by 79 (91%) high school seniors of the 87 high school seniors (in a 455-member senior class) reporting to the school test-survey site; by 131 (30%) high school seniors' households (i.e., by 226 individual parents); by 85 (66%) secondary teachers; and by 6 (100%) secondary building administrators.

No respondent was permitted membership in more than one respondent group for collection of lifelong adaptability ratings of general school subjects. Teachers or administrators who were also parents of high school seniors were included in the parent group only. One exception was one administrator who was allowed to remain in the relatively small administrator group (*N* = 6) for collection of his lifelong adaptability ratings of general school subjects and who was allowed to remain in the parent group for collection of student demographic data.

The current study's student sample consisted of 79 mainstream (excluding remedial special education and foreign exchange) 12th-grade students (17% of the senior class) who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site. This 79-member student group was comprised of 38 (48%) females and 41 (52%) males. At the time of this study's *Cultural Literacy Test* and Lifelong Adaptability Survey (Student), 18 (22.78%) of the 79 students were 17 years old, 51 (64.56%) were 18 years old, and 10 (12.66%) were 19 years old with a mean age of 17.90 years (*SD* = .59).

Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 1 (1%) withdrew from the study, 79 (91%) provided valid *Cultural*

Literacy Test data, 71 (82%) had 10th-grade *DAT* VR + NA composite raw scores which were subsequently employed as student intelligence proxy scores in the present research, 53 (61%) had parent-provided demographic data, 6 (7%) were removed due to their receiving remedial special education services, and 1 (1%) was removed due to being a Dutch exchange student.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994), whose findings are discussed below under "Instrumentation" within this chapter. Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

Sampling Procedures

The necessity of simple randomization was mentioned by Kerlinger (1973), who wrote, "Indeed, it [i.e., simple random sampling] is relatively uncommon, at least for describing characteristics of populations and the relations between such characteristics" (p. 129). This study utilized a nonrandom convenience, or volunteer, sample.

Thorndike Sample Size Analysis

Thorndike (1978) offered two guidelines for sample size in a multivariate analysis, which includes multiple regression (Kerlinger & Pedhazur, 1973), a statistical treatment utilized in the present study. His guidelines applied to a single regression equation. He stated, "One informal guide (and perhaps lower limit) is that there should be 10 subjects for each variable. We should probably add 50 to this number to ensure sufficient sample size for small sets of variables. Thus our first rule of thumb is that $N \geq 10(p + c) + 50$ [where p = number of predictor/independent variables and c = number of criterion/dependent variables]" (p. 184).

Regarding number of variables, the current study's largest regression equation, which involved a student *N* of 45 subjects who were tested for cultural literacy and for whom demographic data were provided, occurred in General Hypothesis 3. Applying Thorndike's (1978) sample size formula to this largest regression equation precipitated the following list of variables and the resulting sample size calculation:

<u>independent/predictor variables</u>

1. family structure
2. parental age
3. parental educational level
4. student cultural literacy
5. student gender

<u>dependent/criterion variables</u>

1. in any given regression equation of 15 possible equations, students' lifelong adaptability ratings of any 1 of 15 general school subjects (art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical)

<u>resulting sample size calculation</u>

$$N \geq 10(p + c) + 50$$

$$N \geq 10(5 + 1) + 50$$

$$N \geq 10(6) + 50$$

$$N \geq 60 + 50$$

$$N \geq 110$$

Thorndike (1978) continued with another, less lenient, equation for sample size:

> A second and more stringent rule which is also a function of the number of variables is that *N* should be equal to the square of the number of variables (and we should add 50 or 100 for small sets). This rule [$N = (p + c)^2 + 50$] means that our required sample size would rise rapidly as the sets become large. It gets logical support from the fact that the number of correlations among the variables rises much more rapidly than the number of variables does. Empirical support comes from the fact that the sample sizes recommended by Barcikowski and Stevens are surprisingly close to those provided by this second rule. (p. 184)

Applying this more demanding sample size formula to the present study's listed variables for its largest regression equation ironically yielded a smaller sample size calculation due to the presence of only six total variables:

<u>resulting sample size calculation</u>

$$N = (p + c)^2 + 50$$

$$N = (5 + 1)^2 + 50$$

$$N = (6)^2 + 50$$

$$N = 36 + 50$$

$$N = 86$$

If Thorndike's (1978) suggestion of adding as many as 100 to the square of the variables were implemented in the current research, then the following calculation would result:

<u>resulting sample size calculation</u>

$$N = (p + c)^2 + 100$$

$$N = (5 + 1)^2 + 100$$

$$N = (6)^2 + 100$$

$$N = 36 + 100$$

$$N = 136$$

Thorndike's (1978) most lenient sample size requirement imposed an *N* of 86 while his most rigorous sample size requirement imposed an *N* of 136 for this study's largest regression equation. Therefore, there was concern over inability to randomize because General Hypothesis 3 contained a student *N* of only 45 subjects who were tested for cultural literacy and for whom demographic data were provided. This student *N* of 45 was noticeably smaller than Thorndike's (1978) most lenient sample size requirement of 86.

Cohen Power Analysis

Consequently, in addition to Thorndike's (1978) sample size criteria, a more sophisticated appraisal of sample size, a power analysis, was conducted. J. Cohen (1969) stated, "*The power of a statistical test of a null hypothesis is the probability that it will lead to the rejection of the null hypothesis*, i.e., the probability that it will result in the conclusion that the phenomenon exists" (p. 4). More directly, "the power of a statistical test is the probability that it will yield statistically significant results" (J. Cohen, 1977, p. 1). He explained the relationship of power to sample size:

> When an investigator anticipates a certain ES [effect size], sets a significance criterion a, and then specifies the amount of power he [*sic*] desires, the n which is necessary to meet these specifications can be determined. This . . . type of power analysis must be at the core of any rational basis for deciding on the sample size to be used in an investigation. (J. Cohen, 1969, p. 14)

For the current study, a cell *n* was inappropriate for statistical treatment with linear regression. A total sample *N* was needed. J. Cohen (1977) accounted for this qualification with "The degree of significance, as always, is a multiplicative function of effect size and experiment size [*N*]. The power of the test is the same type of function, but now it is the *population* ES that is involved" (p. 409). He provided the following description:

> The simplest case is one in which a set B, made up of a number (u) of independent variables, is correlated with a dependent variable Y, and $R^2_{Y \cdot B}$, the PV [proportion of variance] of Y accounted for by the set B, is determined. The null hypothesis is simply that the population $R^2_{Y \cdot B}$ is zero. Specializing the general F test . . ., PV_S is the sample $R^2_{Y \cdot B}$, $PV_E = 1 - R^2_{Y \cdot B}$, and u is the numerator df; v, the denominator (error) df, is given by
>
> $$\ldots v = N - u - 1.$$
>
> For the power analysis, only the alternate-hypothetical population $R^2_{Y \cdot B}$ is required, since [the effect size] $f^2 = R^2_{Y \cdot B}/(1 - R^2_{Y \cdot B})$. . . . Thus, [the formula for the noncentrality parameter L] . . . becomes
>
> $$\ldots L = \frac{R^2_{Y \cdot B}}{1 - R^2_{Y \cdot B}} \times (N - u - 1). \text{ (p. 415)}$$

J. Cohen (1977) noted that "alternatively, a conventional f^2 value may be used" (p. 415). Accordingly, the following formula was derived for the noncentrality parameter L:

$$L = f^2 \times (N - u - 1).$$

Effect sizes. Due to relatively rare effect size meta-analyses (DeBaz, 1994; Salzman, 1987) involving the present study's variables, it proved helpful to estimate effect sizes for the current research hypotheses from the evidence of significant findings in the research literature and J. Cohen's (1977) effect size guidelines. Concerning effect size, J. Cohen (1977) presented an f^2 of .02 as a "small effect size" (p. 413), an f^2 of .15 as a "medium effect size" (p. 413), and an f^2 of .35 as a "large effect size" (p. 414). Congruous with the present study's investigation of lifelong adaptability from a cultural literacy perspective, which is an achievement perspective, the estimation of effect sizes for general hypotheses involving intelligence, cultural literacy, or demography was influenced by J. Cohen's (1977) effect size guidelines; by significant findings in the research literature regarding intelligence, achievement, or demography; and/or by relatively rare meta-analyses (DeBaz, 1994; Salzman, 1987) of effect sizes for those intelligence, achievement, or demographic variables.

Although conspicuously limited research is available on the intelligence-cultural literacy relationship, a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990). In addition, an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kuusinen et al., 1988; D. S. Watts et al., 1991).

Likewise due to cultural literacy being an achievement subdomain, the present study permitted an expanded demographic literature review that encompassed the broader achievement domain. Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987) as a discriminating research variable.

Student gender has received support (E. L. Baker, 1992; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; Duran et al., 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn et al., 1983; Marshall, 1987; K. J. Roberts, 1986) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990) as a discriminating research variable.

Furthermore, the research literature reports interaction effects involving these demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Ensminger et al., 1992; Feldman et al., 1993; Å. Murray et al., 1990; Teachman, 1987; Zimiles et al., 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (S. M. Dornbusch et al., 1987; S. M. Dornbusch et al., 1991; Ensminger et al., 1992; J. D. House et al., 1989; T. E. Smith, 1992). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus et al., 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink et al., 1989) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Lutzer, 1986; C. J. Patterson et al., 1990). Nevertheless, sound research practice dictated that interaction be considered in the present study in order to detect possible attenuation of main effects.

Again, the estimation of effect sizes for general hypotheses involving intelligence, cultural literacy, or demography was influenced by J. Cohen's (1977) effect size guidelines; by significant findings in the research literature regarding intelligence, achievement, or demography; and/or by relatively rare meta-analyses (DeBaz, 1994; Salzman, 1987) of effect sizes for those intelligence, achievement, or demographic variables.

• In a meta-analysis of science achievement and related variables, DeBaz (1994) reported several effect sizes applicable to General Hypothesis 1 conducted from an achievement perspective:

> The [positive] relationship between students' science test scores and general ability indicated a mean effect size r_{es} of 0.42 . . . based on nine studies. Finally, the [positive] relationship between students' science test scores and cognitive reasoning ability revealed a mean effect size r_{es} of 0.56 . . . based on 13 studies. (p. 206)

In addition, "the findings of this study also revealed a [positive relationship] mean effect size r_{es} of 0.33 . . . between students' science grades and cognitive reasoning ability, based on 12 studies" (p. 206).

Therefore, because of J. Cohen's (1977) effect size guidelines, related literature on student intelligence and cultural literacy, related literature on student intelligence and academic achievement, DeBaz's (1994) meta-analytic results, and a statistically conservative approach, a medium effect size ($f^2 = .15$) of student intelligence on student cultural literacy was anticipated in General Hypothesis 1. This "medium" effect size per J. Cohen's (1977) effect size guidelines was obviously, nonetheless, a rather conservative effect size estimate relative to DeBaz's (1994) findings.

• General Hypothesis 2's novel exploration of the effect of student cultural literacy on students' lifelong adaptability ratings of general school subjects was likewise assigned a medium f^2 of .15 solely per J. Cohen's (1977) effect size guidelines absent any related literature or related effect size meta-analyses.

• Otherwise, General Hypothesis 3 incorporated an additive effect of student cultural literacy and demographic variables (family structure, parental age, parental educational level, and student gender). General Hypothesis 4A incorporated main effect variables (student cultural literacy, family structure, parental age, parental educational level, and student gender), and General Hypothesis 4B incorporated two-way interactions of the variables in General Hypothesis 4A (student cultural literacy, family structure, parental age, parental educational level, and student gender). Reporting a meta-analysis of father absence research including "studies of 'parent absence,' 'one-parent families,' and 'broken homes' . . . since the missing parent was usually the father" (p. 8), Salzman (1987) "investigated the effects of father absence on cognitive performance as assessed by scores on intelligence, scholastic aptitude, or academic achievement tests or school grades" (p. 9):

> Findings from the 137 studies . . . in the meta-analysis yielded an overall average effect size of -.26 [or .26] reflecting a .26 standard deviation superiority of the father-present group over the father-absent group. Thus, the average father-present subject had higher intelligence test scores, scholastic aptitude test scores, achievement test scores, or school grades than approximately 59% of the father-absent subjects. (pp. 13-14)

Moreover, DeBaz (1994) provided mean effect sizes pertaining to parental educational level and student gender:

> This [meta-analytic] study revealed a [positive relationship] mean effect size r_{es} of 0.21 . . . between students' science test scores and the father's education variable, based on nine studies. A mean effect size r_{es} of 0.18 . . . was also revealed between student's [*sic*] science test scores and the mother's education variable, based on nine studies. (p. 200)

and

> In this [meta-analytic] study, the relationship between students' science test scores and gender differences revealed a mean effect size r_{es} of 0.15 . . . based on 25 studies, in favor of males. A mean effect size r_{es} of 0.13 . . . based on nine studies was also reported between students' science grades based on their sex differences, in favor of males. The relationship between students' cognitive reasoning ability and gender revealed a mean effect size r_{es} of 0.28 . . . based on six studies, in favor of males. (p. 192)

Therefore, because of J. Cohen's (1977) effect size guidelines, related literature on controversial demography and its interaction, and the above meta-analyses (DeBaz, 1994; Salzman, 1987) involving some of the present study's variables, f^2 was set at .15 for General Hypothesis 3 and for General Hypothesis 4 in guarded anticipation of a medium effect size from additive effects, main effects, or two-way interactions involving student cultural literacy and demography, if there were any effect whatsoever, on the present study's novel criterion variables (students' lifelong adaptability ratings of general school subjects).

• An effect size was not estimated for General Hypothesis 5 employing factor analysis to which effect size estimates are inapplicable.

Calculations. The power analysis calculation stipulated by J. Cohen (1977) was applied to the present study's four general hypotheses employing linear regression, in other words, to General Hypotheses 1, 2, 3, and 4. Inserting this study's four general hypotheses' values for f^2 (effect size), *N* (sample size), and u ($m_1 - m_2$, or df_1, of an *F* test) into J. Cohen's (1977) noncentrality parameter formula below yielded a value for L (noncentrality parameter) for each general hypothesis.

<u>noncentrality parameter calculation</u>

$$L = f^2 \times (N - u - 1)$$

J. Cohen (1977), in reference to his power tables (pp. 416-418), explained that "to read out power, the tables are entered with a, L, and u" (p. 414). Because his power tables listed only L values of 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 25, and 30, J. Cohen (1977) further explained that "since L is a continuous function, interpolation will generally be necessary" (p. 415). Additionally, "linear interpolation is quite adequate for virtually all purposes, and, because of the intervals tabled, can frequently be done by mental arithmetic" (p. 415).

Regarding significance level, J. Cohen (1977) remarked that "the significance criterion represents the standard of proof that the phenomenon exists, or the risk of mistakenly rejecting the null hypothesis" (p. 4). Furthermore, he cautioned that the relationship between significance level (a) and power is such that "other things equal, the more stringent the standard for proof, i.e., the lower the value of a, the poorer the chances are that the sample will provide results which meet this standard, i.e., the lower the power" (pp. 4-5). Therefore, of the three significance levels (.01, .05, and

.10) available in J. Cohen's (1977) power tables, the conventional .05 was chosen for the current research. This choice allowed an a value which has been traditionally accepted in educational research and which would not unduly limit the power of the current study.

With values for u, with a at .05, with calculated L values, and with subsequent interpolation between tabled L values, power was calculated for General Hypotheses 1, 2, 3, and 4 per J. Cohen's (1977) power table (p. 417). J. Cohen (1977) suggested the following guidelines regarding the power of a research investigation:

> The view offered here is that more often than not, the behavioral scientist will decide that Type I errors, which result in false positive claims, are more serious and therefore to be more stringently guarded against than Type II errors, which result in false negative claims. The notion that failure to find is less serious than finding something that is not there accords with the conventional scientific view.
>
> It is proposed here as a convention that, when the investigator has no other basis for setting the desired power value, the value .80 be used. This means that b [Type II error risk] is set at .20. This arbitrary but reasonable value is offered for several reasons. . . . The chief among them takes into consideration the implicit convention for a of .05. The b of .20 is chosen with the idea that the general relative seriousness of these two kinds of errors is of the order of .20/.05, i.e., that Type I errors are of the order of four times as serious as Type II errors. This .80 desired power convention is offered with the hope that it will be ignored whenever an investigator can find a basis in his [*sic*] substantive concerns in his [*sic*] specific research investigation to choose a value *ad hoc*. (p. 56)

All power analyses' results for General Hypotheses 1, 2, 3, and 4 are presented in Table 1.

Approximate powers were .856 for General Hypothesis 1, .850 for General Hypothesis 2, .420 for General Hypothesis 3, and .717 for General Hypothesis 4. J. Cohen's (1977) suggested power of .80 was met in General Hypotheses 1 and 2. Regarding this .80 guideline, J. Cohen (1977) stated, "This .80 desired power convention is offered with the hope that it will be ignored whenever an investigator can find a basis in his [*sic*] substantive concerns in his [*sic*] specific research investigation

Table 1

Regression power analyses

Regression	N	f^2	u	L	a	power
H_{G1}	63	.15	1	9.15	.05	≈ .856
H_{G2}						
R_1- R_{15}	62	.15	1	9.00	.05	≈ .850
$R_{2', 5', 7', 12}$[a]	62	.15	1	9.00	.05	≈ .850
H_{G3}						
R_{16}- R_{30}	45	.15	5	5.85	.05	≈ .420
$R_{17', 20', 22', 23}$[b]	45	.15	5	5.85	.05	≈ .420
H_{G4A}						
R_{31}- R_{105}	45	.15	1	6.45	.05	≈ .717
$R_{58', 68', 92', 95', 97', 98}$[c]	45	.15	1	6.45	.05	≈ .717
H_{G4B}						
R_{106}- R_{255}	45	.15	1	6.45	.05	≈ .717
$R_{110', 139', 185', 235}$[d]	45	.15	1	6.45	.05	≈ .717

Table 1 (continued)

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[a]Due to H_{G2}'s controlling for student intelligence, all regressions were conducted on an *N* of 62 with necessary student intelligence data available. R_2, R_5, R_7, and R_{12} were initially significant. They were subsequently tested in *F* tests of full-versus-restricted regression models controlling for student intelligence, thereby rendering them nonsignificant. H_{G2} was nonsignificant with a power of approximately .850.

[b]Due to R_{17}, R_{20}, R_{22}, and R_{23}'s being initially significant among 15 regressions in H_{G3}, their *p* values were multiplied by the Bonferroni correction factor of 15, thereby rendering them nonsignificant. H_{G3} was nonsignificant after applying the Bonferroni correction factor to regressions with a low power of approximately .420.

[c]Due to R_{58}, R_{68}, R_{92}, R_{95}, R_{97}, and R_{98}'s being initially significant among 15 regressions in H_{G4A}, their *p* values were multiplied by the Bonferroni correction factor of 15, thereby rendering R_{58}, R_{68}, and R_{92} nonsignificant. H_{G4A}'s R_{95}, R_{97}, and R_{98} remained significant after applying the Bonferroni correction factor to regressions with a power of approximately .717.

[d]Due to R_{110}, R_{139}, R_{185}, and R_{235}'s being initially significant among 15 *F* tests in each of H_{G4B}'s ten two-way interactions, their *p* values were multiplied by the Bonferroni correction factor of 15, thereby rendering them nonsignificant. H_{G4B} was nonsignificant after applying the Bonferroni correction factor to *F* tests of full-versus-restricted regression models with a power of approximately .717.

to choose a value *ad hoc*" (p. 56). This study utilized a nonrandom convenience, or volunteer, sample; an inability to control *N* presented a concomitant inability to control power. Therefore, an approximate power of .717 was considered adequate in General Hypothesis 4. General Hypothesis 3's approximate power of .420 necessitated a cautious interpretation of General Hypothesis 3's results.

Tabachnick and Fidell Sample Size Guidelines

General Hypothesis 5 did not lend itself to linear regression, in which case factor analysis was the chosen statistical treatment. Regarding sample size for factor analysis, Tabachnick et al. (1983) provided these suggestions:

> Correlation coefficients tend to be less reliable when estimated from small samples.

> Therefore, it is important that sample size be large enough that correlations are reliably estimated. Comrey (1973) gives as a guide sample sizes of 50 as very poor, 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 as excellent. Others suggest that *a sample size of* 100-200 *is good enough for most purposes, particularly when subjects are homogeneous and number of variables is not too large.* The required sample size depends also on magnitude of population correlation and number of factors. If there are strong, reliable correlations and a few, distinct factors, a sample size of 50 may even be adequate, as long as there are notably more cases than factors. (p. 379)

Based upon Tabachnick et al.'s (1983) guidelines, the present study's respondent group of only six administrators was not included in the factor analysis treatment of respondent data but instead was relegated to a simple comparison of means and standard deviations between administrators' lifelong adaptability ratings of general school subjects and similar ratings by parents, teachers, and students. Even this approach was admittedly no more than speculative with much qualification. Fortunately, all six administrators did rate all 15 general school subjects, thereby providing six lifelong adaptability ratings for each general school subject contained in the Lifelong Adaptability Survey.

Also based upon Tabachnick et al.'s (1983) guidelines, ranging from the more demanding "200 as fair" (p. 379) to the more lenient "50 may even be adequate" (p. 379), the lifelong adaptability ratings of general school subjects provided by this study's remaining respondent groups of 226 parents (30% of high school seniors' households), of 85 teachers (66% of those surveyed), of 79 total students (17% of the senior class), and of 61 culturally literate students (13% of the senior class) were considered for factor analyses. Most parents, teachers, and students rated all 15 general school subjects contained in the Lifelong Adaptability Survey.

Therefore, after listwise deletion of respondents who had not rated all 15 general school subjects, there still remained 215 parents (28% of high school seniors' households), 80 teachers (63% of those surveyed), 78 total students (17% of the senior class), and 51 culturally literate students (11% of the senior class) with lifelong adaptability ratings of 15 general school subjects to be factor analyzed. These respondent groups' inclusion in this statistical treatment was not founded solely on *N*. These respondent groups were included in factor analysis because 1) they correlated with their respective populations in that, after listwise deletion of respondents who had not rated all 15 general school subjects, they constituted from 11% of the senior class (i.e., the culturally literate student group) to 63% of teachers among those surveyed in the population of potential subjects and, more importantly, 2) these respondent groups each had an *N* far exceeding the number of potential factors revealed through subsequent factor analysis.

Instrumentation

Cultural Literacy Test

The now out-of-print *Cultural Literacy Test* employed in this study was procured from the Riverside Publishing Company in Chicago, Illinois, which provided the following information on its national standardization of the *Cultural Literacy Test*:

> Forms A and B of the test were standardized by the Riverside Publishing Company in April and May of 1988. A national, stratified random sample was drawn. In addition to public schools, Roman Catholic high schools were included in each region. Three stratification variables were used for the public school districts: geographic region (East/South and Great Plains/West), district enrollment size, and community socioeconomic status. . . . To derive the SES index by which the districts were ranked, the median years of education figure was multiplied by six and added to the median family income figure. This procedure gave approximately equal weights to education and income. (Riverside Publishing Company, 1989, p. 18)

The *Cultural Literacy Test*'s reliability was .95 (Form A) and .94 (Form B) based on "the Kuder-Richardson Formula 20 estimate of internal consistency" (Riverside Publishing Company, 1989, p. 22). The *Cultural Literacy Test*'s validity was addressed by its publisher in this way:

> There is no single criterion by which a test may be judged as having validity. Rather, the test user must evaluate the validity of any test on the basis of a variety of information available about the test. Test content, structure, and statistical data can all be used for this evaluation, but information should always be interpreted in relation to the user's own purpose for testing. (p. 24)

The current researcher considered the *Cultural Literacy Test* to be a valid instrument for the present study because, regarding the *Cultural Literacy Test*'s content, Riverside Publishing Company (1989) offered this statement:

> The development of test items adhered to three criteria summarized as follows: 1) Is an explanation of the term required when it is referenced in a mass publication? 2) Is the term too specialized or so general as to be common knowledge? and 3) Does the term have lasting significance? The *Cultural Literacy Test* adheres to careful judgments related to these content specifications. (p. 25)

Furthermore, evaluating the *Cultural Literacy Test*'s data in comparison with other standardized tests' data, Riverside Publishing Company (1989) supplied this observation:

> Test validity may also be evaluated by obtaining statistical relationships with other instruments. When the prepublication research was performed in Virginia, school administrators provided information on the examinees' performance on the *Scholastic Aptitude Test* (SAT), the *Preliminary Scholastic Aptitude Test* (PSAT), selected subtests on the SRA Achievement Series, and the SRA *Educational Ability Series*. Correlations among test scores . . . show reasonably strong positive correlations between the *Cultural Literacy Test* and these tests of aptitude, achievement, and ability. The average correlations for these three types of tests are .62, .60, and .62, respectively. Correlations tended to be greater among the tests that rely more heavily on verbal skills than with those that tap quantitative skills. While these are strong positive correlations, they are low enough relative to their reliabilities to suggest that the cultural literacy trait differs from the traits measured by the other four tests. (p. 25)

In a study of 150 University of St. Thomas full-time, first-semester freshmen who were administered the *Cultural Literacy Test*, Pentony (1992) concluded, "It appears that the Cultural Literacy Test is very reliable with a high split-half reliability estimate of .93" (p. 970) and added, "Its validity for practical use appears promising but is not yet convincing" (p. 971). Less impressed, Gullickson (1994) commented that the *Cultural Literacy Test* "is at best a crude measure of cultural literacy" (p. 64) and that "only composite scores can possibly meet minimum requirements for individual interpretation" (p. 64). Nonetheless, "the test may serve as a reasonable measure in addressing the issue of cultural literacy for research purposes" (p. 65). Gullickson (1994) also argued that "the correlations between the cultural literacy test [*sic*] and aptitude measures are as high as the test's correlations with achievement measures. This suggests the test is as much a measure of aptitude as a measure of achievement in cultural literacy" (p. 64).

Both Forms A and B of the *Cultural Literacy Test* contained 115 items to measure "students' general knowledge of subject matter in the humanities, social sciences, and sciences" (Riverside Publishing Company, 1989, p. 2) via "twenty-three objectives: eight in the humanities, ten in the social sciences, and five in the sciences" (p. 2). The *Cultural Literacy Test* was available for evaluating the cultural literacy of high school juniors or seniors (Riverside Publishing Company, 1989).

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers. For example, Gilmer (1994) wrote, "In general, Forms A and B appear to be reasonably parallel, but a 4.54 difference in the Social Sciences means between A and B is unexplained. . . ." (p. 62). Moreover, "some of the Form A correlations with other tests are sufficiently different from some of the Form B correlations with the same tests to warrant additional questions concerning the parallelism of the two forms" (p. 63). Gullickson (1994) stated, "The best measure of equivalence across forms, correlation between Form A and Form B, is not provided" (p. 64). Consequently, in the present study, minority Form A results were dropped from the database.

Lifelong Adaptability Survey

The Lifelong Adaptability Survey (Parent) and its cover letter in Appendix 5; the Lifelong Adaptability Survey (Teacher) and its cover letter in Appendix 6; the Lifelong Adaptability Survey (Administrator) and its cover letter in Appendix 7; and the Lifelong Adaptability Survey (Student) and its cover letter in Appendix 8 were developed by the present investigator. The Lifelong Adaptability Survey (Parent) and its return envelope were number coded and color coded (white). The Lifelong Adaptability Survey (Teacher) and its return envelope were name coded, number coded, and color coded (gray). The Lifelong Adaptability Survey (Administrator) and its return envelope were name coded, number coded, and color coded (pink). The Lifelong Adaptability Survey (Student) and its return envelope were name coded, number coded, and color coded (yellow). With all four respondent versions of the Lifelong Adaptability Survey, only the number code and color code were used in research tabulations. The Lifelong Adaptability Survey (Parent) was distributed and returned through the United States Postal Service. The Lifelong Adaptability Survey (Teacher), the Lifelong Adaptability Survey (Administrator), and the Lifelong Adaptability Survey (Student) were distributed and returned through Millcreek Township School District. Moreover, to ensure that no respondent was permitted membership in more than one respondent group for collection of lifelong adaptability ratings of general school subjects, several potential respondents received additional specialized letters, a sample of which is included in Appendix 6. For example, teachers or administrators who were also parents of high school seniors were included in the parent group only. One exception was one administrator who was allowed to remain in the relatively small administrator group ($N = 6$) for collection of his lifelong adaptability ratings of general school subjects and who was allowed to remain in the parent group for collection of student demographic data.

All four respondent versions of the Lifelong Adaptability Survey were piloted by proxy in neighboring Fairview School District (Appendix 10) to protect the researcher's anonymity in Millcreek Township School District (Appendix 11) where he was personally known to subjects in the current study. The Lifelong Adaptability Survey Pilot Cover Letter and the Lifelong Adaptability Survey Pilot Follow-up Letter are respectively included in Appendices 2 and 3. The 13-member pilot group consisted of 4 female parents, 1 female secondary teacher, 1 male secondary teacher, 1 female secondary administrative intern, 1 male secondary administrator, 4 female high school seniors, and 1 male high school senior. One pilot group member, an anonymous female parent who did not provide her name, did not receive a Lifelong Adaptability Survey Pilot Follow-up Letter for this reason.

General school subjects contained in all four respondent versions of the Lifelong Adaptability Survey were selected by determining regionally common required or elected content offerings in Grade 9, 10, 11, or 12. A researcher-constructed table based on Northwest Tri-County Intermediate Unit 5 (1989) unpublished raw data appears in Appendix 1. Of 16 secondary schools in the Millcreek Township School District vicinity, 2 (McDowell Intermediate High School and McDowell Senior High School in Millcreek Township School District) were examined in combination (McDowell High School) because they together encompass Grade 9 through Grade 12; 1 (North East High School in North East School District) was discarded because of unclear raw data; 1 (Academy High School in Erie City School District) was not considered because since 1989 it has been combined with another school (Tech Memorial High School in Erie City School District) to create a joint school (Central High School in Erie City School District); and 1 (Tech Memorial High School in Erie City School District) was excluded due to incomplete raw data. Removal of two Erie City School District high schools, nonetheless, allowed two Erie city high schools to remain in consideration (East High School and Strong Vincent High School).

After these minor adjustments to Northwest Tri-County Intermediate Unit 5 (1989) unpublished raw data, a total of 12 regional secondary schools remained in the tabulation of General School Subjects of 12 Secondary Schools in Millcreek Township School District Vicinity (Appendix 1). Among these 12 secondary schools' curricula, the 15 most common general school subjects were art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical.

Computer technology appeared within more than one general school subject. Therefore, it was listed in this study as a discrete general school subject in order that respondents' ratings of computer technology could be distinguished from respondents' ratings of other general school subjects (e.g., mathematics) which subsumed computer technology. Subsequent to 1989, driver education at McDowell High School in Millcreek Township School District became a summer tuition course only. Again, of note are two errors in the Lifelong Adaptability Survey. One of the vocational-technical descriptors was misspelled in each respondent version of the survey; *tool and dye* ought to have been spelled *tool and die*. In the Lifelong Adaptability Survey (Parent)'s demography section, formal education's highest option was listed as "8. earned doctorate (M.D., D.D.S., Ph.D., J.D., Ed.D., etc.)"; *J.D.* (Juris Doctor, which is equivalent to a bachelor of laws degree) ought to have been *S.J.D.* (Doctor of Juridical Science, which is an earned doctorate in law).

All four respondent versions of the Lifelong Adaptability Survey utilized an analogue scale for respondent ratings of each of the 15 general school subjects contained in the survey. Respondent ratings were then quantified by the researcher with a researcher-developed 100-increment Lifelong Adaptability Survey Rating Template (Appendix 12). Quantification of respondent ratings was consistently accurate at ±1 increment. The Lifelong Adaptability Survey Rating Template permitted a range of 0 through 100. Any "creatively extreme" respondent ratings < 0 were quantified as 0, whereas any "creatively extreme" respondent ratings > 100 were quantified as 100.

Only the Lifelong Adaptability Survey (Parent) contained a section for respondent reporting of student demographic data.

Differential Aptitude Tests (DAT)

The present study employed *DAT*, Form W results as proxies for student intelligence. Millcreek Township School District administered the *DAT* to the present study's seniors when they were in 10th grade. The 10th-grade *DAT* testing date was November 12, 1991, whereas the current student research was conducted on May 20, 1994 (initial *Cultural Literacy Test* and Lifelong Adaptability Survey day) with 75 students and on May 26, 1994 (make-up *Cultural Literacy Test* and Lifelong Adaptability Survey day) with 11 students. This allowed about 2.54 years between the collection of this study's proxy for intelligence data (*DAT* VR + NA composite raw scores) and the collection of this study's other instrumentation data (*Cultural Literacy Test* composite raw scores and Lifelong Adaptability Survey ratings).

The Psychological Corporation publishes the *DAT*, now in Forms C and D to replace Forms V and W (Psychological Corporation, 1992). Form W of the *DAT*, that used in the current study, provided nine categories of student data: 1) verbal reasoning, 2) numerical ability, 3) verbal reasoning + numerical ability (VR + NA), 4) abstract reasoning, 5) clerical speed and accuracy, 6) mechanical reasoning, 7) space relations,

8) spelling, and 9) language usage. The VR + NA composite category consisted of 90 items (Psychological Corporation, 1991). Writing about Forms V and W of the *DAT*, Sander (1985) reported that "the usefulness of the VR + NA composite score as an indicator of general ability is well-established" (p. 506).

Specifically, the VR + NA composite of Forms V and W exhibited significant (*a* = .01) coefficients of correlation with other aptitude test results or achievement test results (Psychological Corporation, 1992, Appendix B). These other aptitude test results or achievement test results included, but were not limited to, the *ACT Test Battery of the American College Testing Program* Composite (.94 for males and .87 for females among Grade 12 students, p. 170); the *Comprehensive Tests of Basic Skills (CTBS)*, Expanded Edition, Form T, Level 4 Reading Total/Math Total (.63/.80 for males and .59/.79 for females among Grade 10 students, p. 172); the *Otis-Lennon School Ability Test (OLSAT)*, 1979 Edition, Form R, Advanced Level School Ability Index (.87 for males and .85 for females among Grade 10 students, p. 173); the *Scholastic Aptitude Test (SAT)* Verbal/Math (.77/.74 for males and .79/.72 for females among Grade 11 students, .64/.60 for males and .65/.76 for females within one sample of Grade 12 students, .45/.38 for males and .74/.64 for females within another sample of Grade 12 students, pp. 174-175); and the *Short Form Test of Academic Aptitude (SFTAA)*, 1970 Edition, Level 4 Total (.81 for males and .74 for females among Grade 9 students, p. 175).

In consideration of these significant (*a* = .01) coefficients of correlation between the *DAT* VR + NA composite and other aptitude measures or achievement measures, the present researcher incorporated the *DAT* VR + NA composite raw score into this study as a proxy for student intelligence.

Data Collection

Parent-supplied demographic data along with parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects were collected through initial survey solicitations involving 665 to 1,109 (the range due to the unknown number of one or two parents per household) potential respondents (with 2 parent survey solicitations [i.e., to one household] returned as undeliverable by the United States Postal Service). Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households. Approximately 78 second survey solicitations (i.e., to 39 households) were made to nonrespondent parents of those students who had taken the *Cultural Literacy Test*. These second survey solicitations were made to this select parent subgroup in order to acquire necessary demographic data to bolster the power of General Hypothesis 3. Student gender data were obtained through Millcreek Township School District student *DAT* records or, if unavailable, through other student records in the district. This study's data collection targeted the population of all qualified subjects involved with Millcreek Township School District.

Due to the researcher's being known in Millcreek Township School District, the researcher attempted to maintain his anonymity throughout the survey piloting phase and throughout the data collection phase of this study. This precaution developed from the concern that respondents' lifelong adaptability ratings of certain general school subjects could have been skewed if respondents had known that the researcher is an English teacher, that the researcher is certified in secondary education, that the researcher holds a degree in computer technology, etc. Therefore, explanatory Lifelong

Adaptability Survey Respondent Follow-up Letters (Appendix 9) were sent to all respondents after the data collection phase of this study had been completed. Nonetheless, it is necessary to caution that skewing of respondent ratings may have occurred due to political and personal conflicts between respondents and the Millcreek Education Center administrator who was the designated distributor of surveys and collector of all survey data (excluding pilot data) and whose name appeared on all surveys, cover letters, and return envelopes. This caution is especially applicable to teachers' lifelong adaptability ratings of general school subjects.

Student cultural literacy data were secured by administration of the *Cultural Literacy Test*, hand-scored Survey Edition Form B to 75 high school seniors who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site. This was accomplished during one school day in a single test-survey session for mainstream seniors only. Absentee make-up testing of 11 other high school seniors who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site was conducted through the *Cultural Literacy Test*, machine-scored Form A due to apprehensions regarding test security in that there could be possible absentee score inflation caused by inevitable absentee student conversation with fellow students already tested on the initial test-survey day with the *Cultural Literacy Test*, hand-scored Survey Edition Form B.

Students completed both the *Cultural Literacy Test* and the Lifelong Adaptability Survey (Student) in a single session (initial or make-up) at the school test-survey site. Prior parental permission was secured for administration of the *Cultural Literacy Test*, for completion of the Lifelong Adaptability Survey (Student), and for use of students' 10th-grade *DAT* results (Appendix 4). After the data collection phase of this study had been completed, individual students' *Cultural Literacy Test* results were mailed to their respective households with the parent/graduate version of the explanatory Lifelong Adaptability Survey Respondent Follow-up Letters (Appendix 9).

Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 1 (1%) withdrew from the study, 79 (91%) provided valid *Cultural Literacy Test* data, 71 (82%) had 10th-grade *DAT* VR + NA composite raw scores which were subsequently employed as student intelligence proxy scores in the present research, 53 (61%) had parent-provided demographic data, 6 (7%) were removed due to their receiving remedial special education services, and 1 (1%) was removed due to being a Dutch exchange student.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994). Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

Statistical Treatment

Linear Regression

The present ex post facto study's numerous variables suggested the creation of vectors for statistical treatment of General Hypotheses 1, 2, 3, and 4. To maintain potentially significant specificity in a large, detailed database, a researcher may choose to arrange each variable's data in a vector, "an ordered set of numbers which allows data to be represented in a very concise fashion" (K. A. McNeil, F. J. Kelly, & J. T. McNeil, 1975, p. 56). Additionally, the current research employed multiple predictor variables because "a single predictor probably won't account for all the criterion variance" (K. McNeil, I. Newman, & F. J. Kelly, 1992, pp. 1-2). These multiple predictor variables were used in an attempt to account for a significant amount of variance within specific criterion variables. Such a statistical approach warranted multiple linear regression, which fulfilled the present study's needs.

Kerlinger et al. (1973) characterized multiple regression analysis in this way:

> It can be used effectively in sociological, psychological, economic, political, and educational research. It can be used equally well in experimental or nonexperimental research. It can handle continuous and categorical variables. It can handle two, three, four, or more independent variables. (p. 3)

It can also accommodate interactions and covariates (K. McNeil et al., 1992). Multiple linear regression additionally provides an advantage over analysis of variance (ANOVA):

> Although analysis of variance and multiple regression analysis are interchangeable in the case of categorical independent variables, multiple regression analysis is superior or the only appropriate method of analysis in the following cases: (1) when the independent variable is continuous, that is experimental treatments with varying degrees of the same variable; (2) when the independent variables are both continuous and categorical, as in analysis of covariance, or treatments by levels designs; (3) when cell frequencies in a factorial design are unequal and disproportionate; (4) when studying trends in data: linear, quadratic, and so on. (pp. 113-114)

The present study was conducted with hypotheses and their alternatives. K. A. McNeil et al. (1975) explained the procedure:

> To test a research hypothesis, one must compare the accuracy of two linear models in fitting the same data, one model reflecting the state of affairs supposed by the research hypothesis, and the other model reflecting the state of affairs supposed by the statistical hypothesis. The two models will provide two estimates of the population criterion variance accounted for by the predictor variables. An F test can then be calculated from these two variance estimates. (p. 91)

These "competing or rival hypotheses to the ones the researcher is interested in verifying" (I. Newman et al., 1992, p. 117) were systematically considered in the present study, thus assuring "the greater the internal validity of the design" (p. 117).

All criterion variables were statistically treated as continuous variables. All predictor variables were statistically treated as continuous variables, except family structure and student gender, which were statistically treated as categorical variables. K. A. McNeil et al. (1975) provided this explanation:

> Continuous predictor variables are usually preferred over dichotomous predictors. Most of the variables in the real world are continuous, which means that criterion variables will usually be continuous. And since the real world usually varies systematically . . . rather than by leaps and bounds . . ., the continuous predictors will usually yield a higher R^2. (pp. 250-251)

Furthermore, "if a variable has originally been collected as continuous, then the researcher probably thought it to be systematically related to the criterion. It remains the task of the researcher to discover that systematic relationship" (p. 251).

Because the current ex post facto research incorporated continuous variables, categorical variables, predictor variables, criterion variables, a covariate, an additive effect, and interactive effects, the statistical treatment chosen was multiple linear regression for this study's General Hypotheses 2, 3, and 4. General Hypothesis 1 required only simple linear regression with one predictor variable and one criterion variable. Moreover, all predictor variables or vectors entered into General Hypotheses 1, 2, 3, and 4 regression equations were linearly independent (K. A. McNeil et al., 1975).

Exploratory Factor Analysis and Confirmatory Factor Analysis

General Hypothesis 5 did not lend itself to linear regression. The current study's search for consensus across respondent groups' lifelong adaptability ratings of 15 general school subjects suggested comparison of rankings in General Hypotheses 5A and 5B (Linton & Gallo, 1975), comparison of exploratory factor analysis solutions in General Hypotheses 5C and 5D (Tabachnick et al., 1983), and confirmatory factor analysis in General Hypothesis 5E (Ullman, 2007).

Concerning rankings, Linton et al. (1975) wrote, "If you have numerical scores that you wish to change to ranks, list them in ascending or descending order. . . . Assigned ranks go from 1 to *N* (the total number of scores ranked)" (p. 100).

Tabachnick et al. (1983) commented on uses of factor analysis (FA):

> There are two major uses of FA: exploratory and confirmatory. In exploratory FA, one seeks to summarize data by grouping together variables that are intercorrelated. The variables themselves may or may not have been chosen with potential underlying structure in mind. Exploratory FA is usually performed in the early stages of research, when it provides a tool for consolidating variables and for generating hypotheses about relationships in a reduced data set. Confirmatory FA is performed to test hypotheses about the structure of underlying processes. It generally occurs later in the research process, when a theory about structure is to be tested or when hypothesized differences in structure between groups of research units are tested. Variables are specifically chosen to reveal underlying structural processes. Data used in confirmatory FA, then, might be different from those used in exploratory FA. (pp. 372-373)

Regarding structural equation modeling (SEM) and confirmatory factor analysis Ullman (2007) stated, "Structural equation modeling is also referred to as causal modeling, causal analysis, simultaneous equation modeling, analysis of covariance structures, path analysis, or confirmatory factor analysis. The latter two are actually special types of SEM" (p. 676). Ullman (2007) presented, among other statistical programs, *LISREL* (*LInear Structural RELations*) as available for SEM.

Comparison of rankings to detect consensus was deemed appropriate in General Hypotheses 5A and 5B. Factor analysis was exploratory in nature in General Hypothesis 5C, which explored whether common underlying factors would exist among three respondent groups (parents, teachers, and all students), and in General Hypothesis 5D, which explored whether common underlying factors would exist among three respondent groups (parents, teachers, and culturally literate students). In other words, there existed no theoretical structural model, or factor model, to be confirmed. Conversely, factor analysis was confirmatory in nature in General Hypothesis 5E, which tested the attempt to confirm the existence of a common factor model among four respondent groups (parents, teachers, all students, and culturally literate students). In other words, there existed a theoretical structural model, or factor model, to be confirmed.

In General Hypotheses 5C and 5D, a separate exploratory factor analysis was conducted for each of three respondent groups' lifelong adaptability ratings of 15 general school subjects. Each group's exploratory factor analysis included principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and an orthogonal solution as the definition of factor loadings method. A subsequent comparison of factor solutions identified any similar factors across respondent groups.

In General Hypothesis 5E, initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This exploratory factor analysis included principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and an orthogonal solution as the definition of factor loadings method. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent groups' lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. These confirmatory factor analyses were conducted with maximum likelihood as the estimation method. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). In these invariance tests, a baseline measure with all factor loadings free to vary tested the fit of the common factor model on two respondent groups simultaneously; then a second measure with all factor loadings constrained tested the fit of the common factor model on the same two respondent groups simultaneously. A nonsignificant change between the baseline measure and the second measure would indicate invariant factor loadings across these two respondent groups. In other words, a nonsignificant change between the baseline measure and the second measure would indicate the presence of a common factor model across these two respondent groups. Ultimately, all possible combinations of qualifying respondent groups were so assessed for the presence of a common factor model.

All regressions and exploratory factor analyses were performed on a Macintosh iBook utilizing *StatView 5.0.1* (SAS Institute, 2000-2001). All confirmatory factor analyses and invariance tests were performed on a Dell Inspiron 8500 utilizing *LISREL 8.80* (Scientific Software International, 2007).

Limitations

The current research contained inherent limitations which restricted interpretation of results.

1. An ex post facto design precluded demonstration of causation.

2. A sample of only mainstream public high school seniors of a single middle-class suburban school district participated in this study, thereby limiting generalizability to other students.

3. Student subjects were limited to those high school seniors (excluding remedial special education and foreign exchange students) who had been granted parental permission to participate, who themselves agreed to participate, and who reported to the

school test-survey site, thereby limiting the qualified student population to 17% of the 455-member senior class.

4. Samples of parents, teachers, and administrators of a single middle-class suburban school district participated in this study, thereby limiting generalizability to other subjects.

5. With an *N* of 6, administrators in this study could not be judged representative of administrators generally and greatly limited interpretation of results and generalizability of results involving them.

6. The *Cultural Literacy Test*'s validity and reliability fixed a limitation on all results involving student cultural literacy as a variable.

7. The *DAT*'s validity and reliability fixed a limitation on all results involving the student intelligence proxy as a variable.

8. Some high school seniors approaching graduation may not have taken seriously the *Cultural Literacy Test* nor the Lifelong Adaptability Survey (Student).

9. Although the researcher attempted to maintain his anonymity, it is possible that some subjects identified him and consequently skewed the database.

Summary

The present study incorporated student cultural literacy, student intelligence, demography, and lifelong adaptability ratings of general school subjects. Because of an inability to manipulate this study's variables, an ex post facto approach was warranted. Such studies were deemed valuable by Kerlinger (1964):

> It can even be said that ex post facto research is more important than experimental research. This is, of course, not a methodological observation. It means, rather, that the most important social scientific and educational research problems do not lend themselves to experimentation, although many of them do lend themselves to controlled inquiry of the ex post facto kind. . . . If a tally of sound and important studies in psychology, sociology, and education were made, it is likely that ex post facto studies would outnumber and outrank experimental studies. (p.

373)

To prepare today's students for persistent future change, especially in the workplace, lifelong adaptability is a necessity. Cultural literacy (Hirsch, 1987) is a proposed component of lifelong adaptability because of cultural literacy's inextricable link with language, which in turn is linked with communication, which ultimately is linked with lifelong adaptability (see Figure 1) within an emerging global network tending toward English as its universal language (Naisbitt et al., 1990).

This study sought 1) to identify significant relationships among student cultural literacy, demography, and lifelong adaptability ratings of general school subjects and 2) to identify possible consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects with special consideration of the ratings of those students identified as culturally literate. These two areas of interest respectively lend themselves 1) to directing curricular revision for promoting lifelong adaptability and 2) to expediting politically such revision through shared respondent lifelong adaptability ratings of general school subjects.

Student cultural literacy was operationalized by composite raw scores from Form B of the now out-of-print *Cultural Literacy Test*, which contained 115 items to measure "students' general knowledge of subject matter in the humanities, social sciences, and sciences" (Riverside Publishing Company, 1989, p. 2) via "twenty-three objectives: eight in the humanities, ten in the social sciences, and five in the sciences" (p. 2). Student demography was operationalized by the researcher-developed Lifelong Adaptability Survey (Parent). Student intelligence was operationalized by *DAT*, Form W VR + NA composite raw scores as proxies for student intelligence. Lifelong adaptability ratings of 15 general school subjects were operationalized by piloted (Appendix 10), researcher-developed parent (Appendix 5), teacher (Appendix 6), administrator (Appendix 7), and student (Appendix 8) versions of the Lifelong Adaptability Survey, which utilized an analogue scale.

The related research literature in conjunction with the operationally defined independent/predictor variables (family structure, parental age, parental educational level, student cultural literacy, student gender, and student intelligence), dependent/criterion variables (lifelong adaptability ratings of 15 general school subjects and student cultural literacy), and covariate (student intelligence) yielded five general hypotheses, two of which consisted of subhypotheses:

H_{G1}: Student intelligence significantly predicts student cultural literacy.

H_{G2}: Student cultural literacy significantly predicts students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

H_{G3}: There is a significant addition of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

H_{G4A}: There are significant main effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

H_{G4B}: There are significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

H_{G5A}: There is consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects.

H_{G5B}: There is consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects.

H_{G5C}: There are common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects.

H_{G5D}: There are common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects.

H_{G5E}: Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects share a common factor model.

The subject population in the present study was educationally involved with middle-class suburban Millcreek Township School District adjacent to Erie, Pennsylvania. This study's population of potential subjects included 455 high school seniors; 444 to 888 parents, the exact number being unknown at 1 or 2 parents per student, of all 455 high school seniors (who included 11 sets of twins); 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors; and 6 secondary building administrators. Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households.

The current study's student sample consisted of 79 mainstream (excluding remedial special education and foreign exchange) 12th-grade students (17% of the senior class) who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site. This 79-member student group was comprised of 38 (48%) females and 41 (52%) males. At the time of this study's *Cultural Literacy Test* and Lifelong Adaptability Survey (Student), 18 (22.78%) of the 79 students were 17 years old, 51

(64.56%) were 18 years old, and 10 (12.66%) were 19 years old with a mean age of 17.90 years (*SD* = .59).

Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 1 (1%) withdrew from the study, 79 (91%) provided valid *Cultural Literacy Test* data, 71 (82%) had 10th-grade *DAT* VR + NA composite raw scores which were subsequently employed as student intelligence proxy scores in the present research, 53 (61%) had parent-provided demographic data, 6 (7%) were removed due to their receiving remedial special education services, and 1 (1%) was removed due to being a Dutch exchange student.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994). Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

Of solicited Lifelong Adaptability Surveys, usable surveys were returned by 79 (91%) high school seniors of the 87 high school seniors (in a 455-member senior class) reporting to the school test-survey site; by 131 (30%) high school seniors' households (i.e., by 226 individual parents); by 85 (66%) secondary teachers; and by 6 (100%) secondary building administrators.

General Hypotheses 1, 2, 3, and 4 warranted linear regression (Kerlinger et al., 1973; K. McNeil et al., 1992) with calculated approximate powers ranging from a cautious .420 to a healthy .856 per J. Cohen's (1977) sophisticated power analysis.

General Hypothesis 5 did not lend itself to linear regression. The current study's search for consensus across respondent groups' lifelong adaptability ratings of 15 general school subjects suggested comparison of rankings in General Hypotheses 5A and 5B (Linton et al., 1975), comparison of exploratory factor analysis solutions in General Hypotheses 5C and 5D (Tabachnick et al., 1983), and confirmatory factor analysis in General Hypothesis 5E (Ullman, 2007). Based upon Tabachnick et al.'s (1983) guidelines, this study's respondent group of only six administrators was not included in the factor analysis treatment of respondent data but instead was relegated to a simple comparison of means and standard deviations between administrators' lifelong adaptability ratings of general school subjects and similar ratings by parents, teachers, and students.

After listwise deletion of respondents who had not rated all 15 general school subjects, there remained 215 parents, 80 teachers, 78 total students, and 51 culturally literate students with lifelong adaptability ratings of 15 general school subjects to be factor analyzed. These respondent groups' inclusion in this statistical treatment was not founded solely on *N*. These respondent groups were included in factor analysis because 1) they correlated with their respective populations in that, after listwise deletion of respondents who had not rated all 15 general school subjects, they constituted from 11% of the senior class (i.e., the culturally literate student group) to 63% of teachers among those surveyed in the population of potential subjects and, more importantly, 2) these respondent groups each had an *N* far exceeding the number of potential factors revealed through subsequent factor analysis.

The current research contained inherent limitations which restricted interpretation of results. For example, an ex post facto design precluded demonstration of causation. In addition, population samples were limited to a single middle-class suburban school district, thereby limiting generalizability to other population samples.

Curricular revision was the expected application of the current research, which was motivated by a need to prepare today's students for future change, especially within the workplace of the 21st century. The study sought to identify a commonly acceptable curricular direction for educationally promoting lifelong adaptability from a cultural literacy perspective. Students' lifelong adaptability ratings of general school subjects were examined as they related to cultural literacy and demography in order to suggest helpful curricular revision to enhance student lifelong adaptability. A parallel objective of this research was to explore the possibility of consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects with special consideration of the ratings of those students identified as culturally literate. Such a consensus would politically expedite indicated curricular application of this research to enhance lifelong adaptability from a cultural literacy perspective.

CHAPTER IV

RESULTS OF THE STUDY

Introduction

Due to observed trends of accelerated future change, the intent of this study was to address a predictably unstable 21st century and to explore an appropriate educational response. A need for student adaptability, especially in the workplace, suggested identification of commonly acceptable curricular content for strengthening lifelong adaptability as ascertained by respondent lifelong adaptability ratings of general school subjects and as viewed from a cultural literacy perspective.

This research investigated students' lifelong adaptability ratings of general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. *Cultural Literacy Test* data from the now out-of-print *Cultural Literacy Test*, *Differential Aptitude Tests (DAT)* Verbal Reasoning + Numerical Ability (VR + NA) composite data, and survey data contributed to this primary research objective. This study also incorporated four survey respondent groups in an attempt to achieve consensus or, at least, direction for successfully revising curricula to arm students with lifelong adaptability for relentless change during the 21st century.

In partial accomplishment of these ends, the present researcher developed appropriate surveys; piloted them by proxy (Appendix 2); and ultimately employed the Lifelong Adaptability Survey (Parent) included in Appendix 5, the Lifelong Adaptability

Survey (Teacher) included in Appendix 6, the Lifelong Adaptability Survey (Administrator) included in Appendix 7, and the Lifelong Adaptability Survey (Student) included in Appendix 8.

The current study examined the following research questions.

1. Is it possible to predict student cultural literacy from student intelligence?

2. Is it possible to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence?

3. Is it possible to predict students' lifelong adaptability ratings of general school subjects from the additive effect of student cultural literacy and demography?

4. Is it possible to predict students' lifelong adaptability ratings of general school subjects from main effects of or from two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender?

5. Is there consensus across, are there common underlying factors among, or is there a common factor model shared by parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects?

Four Respondent Groups' Descriptive Statistics

Applicable data for the four respondent groups (parents, teachers, administrators, and students) are presented in Table 2. Only data which were usable in this study's general hypotheses were tabulated for this study's variables. For example, more than 45 students may have had family structure data available, but if those students with family structure data did not also have student lifelong adaptability ratings of general school subjects available, then their family structure data were inapplicable to the current research. The same or a similar restriction may have applied to other data in Table 2.

Table 2

Four respondent groups' descriptive statistics

Description with Survey Coding	Students	Parents	Teachers	Administrators
	Group			
Sample Subjects	79	226	85	6
Female (nonsurvey data)[a]	38			
Male (nonsurvey data)[a]	41			
Cultural Literacy Data	63			
Intelligence Data	63			
Family Structure Data[b]	45			
Female Only (1)	7 (16%)			
Both Female and Male (3)	38 (84%)			
Parental Age Data[c]	45			
30-39 Years				
(2.0)	3 (7%)			
(2.5)	2 (4%)			
40-49 Years				
(3.0)	27 (60%)			
(3.5)	7 (16%)			
50-59 Years				
(4.0)	6 (13%)			

Table 2 (continued)

Four respondent groups' descriptive statistics

	Group			
Description with Survey Coding	Students	Parents	Teachers	Administrators
Parental Educational Level Data[d]	45			
High School Diploma				
(2.0)	13 (29%)			
(2.5)	3 (7%)			
Adult Vocational Degree				
(3.0)	2 (4%)			
(3.5)	2 (4%)			
Associate's Degree				
(4.0)	3 (7%)			
(4.5)	4 (9%)			
Bachelor's Degree				
(5.0)	5 (11%)			
(5.5)	5 (11%)			
Master's Degree				
(6.0)	6 (13%)			
(6.5)	1 (2%)			
Law Degree				
(7.0)	1 (2%)			

Table 2 (continued)

Four respondent groups' descriptive statistics

	Group			
Description with Survey Coding	Students	Parents	Teachers	Administrators
Student Gender Data[a]	45			
Female (nonsurvey data)	26 (58%)			
Male (nonsurvey data)	19 (42%)			

[a]Student gender data were collected through *DAT* records or through other student records if *DAT* records were unavailable.

[b]No students with necessary data for this study's general hypotheses were reportedly in "Male Only" (2) family structure or "Other" (4) family structure (e.g., multiple-guardian group home, foster home, etc.).

[c]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses.

[d]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Percentages for this variable's averages sum to only 99% due to rounding error.

All of the tabulated codings were survey codings, not statistical codings for statistical analyses. Ultimately, the Lifelong Adaptability Survey (Parent) family structure category "Female Only" was renamed "Single Parent," and the Lifelong Adaptability Survey (Parent) family structure category "Both Female and Male" was renamed "Two Parents." Additionally, parental age and parental educational level were household averages, which meant that to possess, for example, a parental educational level of "Earned Doctorate" (8.0) both of a student's parents in a two-parent household must have held earned doctorates or one parent in a single-parent household must have held an earned doctorate for the household average parental educational level to be "Earned Doctorate" (8.0). Furthermore, a two-parent household parental educational level may have been the uneven average of two different levels, for example, "Master's Degree" (6.0) and "Law Degree" (7.0), thereby resulting in a fractional household average parental educational level of 6.5.

The subject population in the present study was involved with middle-class suburban Millcreek Township School District adjacent to Erie, Pennsylvania. Although some of the subjects may have resided outside Millcreek Township School District geographically, all subjects were involved with Millcreek Township School District educationally. This study's population included 455 high school seniors; 444 to 888 parents, the exact number being unknown at 1 or 2 parents per student, of all 455 high school seniors (who included 11 sets of twins); 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors; and 6 secondary building administrators. These subjects constituted the population of potential subjects involved with Millcreek Township School District. Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households.

Therefore, potentially, this study solicited 665 to 1,109 (the range due to the unknown number of one or two parents per household) total survey returns from 87 high school seniors reporting to the school test-survey site; from 444 high school seniors' households (i.e., from 444 to 888 individual parents); from 128 employed secondary teachers including teaching librarians but excluding nonteaching guidance counselors (with initially 129 solicited before 1 more teacher was also identified as a parent of a high school senior); and from 6 secondary building administrators.

Of solicited surveys, usable surveys were returned by 79 (91%) high school seniors of the 87 high school seniors (in a 455-member senior class) reporting to the school test-survey site; by 131 (30%) high school seniors' households (i.e., by 226 individual parents); by 85 (66%) secondary teachers; and by 6 (100%) secondary building administrators.

No respondent was permitted membership in more than one respondent group for collection of lifelong adaptability ratings of general school subjects. Teachers or administrators who were also parents of high school seniors were included in the parent group only. One exception was one administrator who was allowed to remain in the relatively small administrator group ($N = 6$) for collection of his lifelong adaptability ratings of general school subjects and who was allowed to remain in the parent group for collection of student demographic data.

The current study's student sample consisted of 79 mainstream (excluding remedial special education and foreign exchange) 12th-grade students (17% of the senior class) who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site. This 79-member student group was comprised of 38 (48%) females and 41 (52%) males. At the time of this study's *Cultural Literacy Test* and Lifelong Adaptability Survey (Student), 18 (22.78%) of the 79 students were 17 years old, 51 (64.56%) were 18 years old, and 10 (12.66%) were 19 years old with a mean age of

17.90 years (*SD* = .59).

Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 1 (1%) withdrew from the study, 79 (91%) provided valid *Cultural Literacy Test* data, 71 (82%) had 10th-grade *DAT* VR + NA composite raw scores which were subsequently utilized as student intelligence proxy scores in the present research, 53 (61%) had parent-provided demographic data (family structure, parental age, and parental educational level), 6 (7%) were removed due to their receiving remedial special education services, and 1 (1%) was removed due to being a Dutch exchange student.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994). Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

As indicated under "Statistical Treatment" in Chapter III, all criterion variables were statistically treated as continuous variables. All predictor variables were statistically treated as continuous variables, except family structure and student gender, which were statistically treated as categorical variables (K. A. McNeil et al., 1975). Moreover, all predictor variables or vectors entered into General Hypotheses 1, 2, 3, and 4 regression equations were linearly independent (K. A. McNeil et al., 1975).

General Hypotheses' Descriptive and Inferential Statistics

Each of the present study's five general hypotheses is independently reported below as a separate entity isolated from the other four general hypotheses. Accordingly, each general hypothesis is accompanied by its own tables and explanations. Implications derived from these general hypotheses' subsequent synthesis are addressed in Chapter V.

General Hypothesis 1 (H_{G1})

H_{G1}: Student intelligence significantly predicts student cultural literacy.

Descriptive statistics for General Hypothesis 1 are displayed in Table 3. Due to post-data collection concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994), whose findings are discussed under "Instrumentation" in Chapter III. Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data, but *DAT* VR + NA composite student intelligence proxy data were available for only 63 of those 68 students. Accordingly, General Hypothesis 1's simple regression equation was conducted on an *N* of 63 with complete student cultural literacy data and student intelligence data. Student cultural literacy scores were reported as composite raw scores with a possible range of 0 through 115. Student intelligence scores were reported as composite raw scores with a possible range of 0 through 90. In General Hypothesis 1, the actual range of student cultural literacy scores was 33 through 104 (N = 63, M = 76.57, SD = 15.97). The actual range of student intelligence scores was 22 through 89 (N = 63, M = 61.05, SD = 14.10). In General Hypothesis 1, both the predictor variable and the criterion variable were statistically treated as continuous

Table 3

General Hypothesis 1 descriptive statistics

Test	*N*	Range	*M*	*SD*
Cultural Literacy Test	63	33-104	76.57	15.97
DAT VR + NA	63	22-89	61.05	14.10

variables (K. A. McNeil et al., 1975).

Inferential statistics for General Hypothesis 1 are displayed in Table 4. A simple regression equation employed student intelligence as the predictor variable and student cultural literacy as the criterion variable. With alpha established at .05, this equation with an *N* of 63 and with a healthy power of approximately .856 (J. Cohen, 1977; see Table 1) resulted in a highly significant prediction of student cultural literacy from student intelligence, $F\ (1, 61) = 96.82$, $p < .0001$. Student intelligence accounted for 61% of the variance in student cultural literacy. The simple regression plot for General Hypothesis 1 is provided in Figure 12.

General Hypothesis 2 (H_{G2})

H_{G2}: Student cultural literacy significantly predicts students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

Initial specific regressions testing for main effect of student cultural literacy with subsequent specific full and restricted regression model pairs testing for covariate effect of student intelligence if needed (R_1 - R_{15}).

R_1 - R_{15}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of . . .

Table 4

General Hypothesis 1 simple regression analysis for student intelligence predicting student cultural literacy (N = 63)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
Intel.	.887	.090	.783	9.840	.00					S
Regression						.613	1/61	96.820	.00	S

[a]All p values were truncated, not rounded, to the hundredths place. Each p value was $< .0001$.

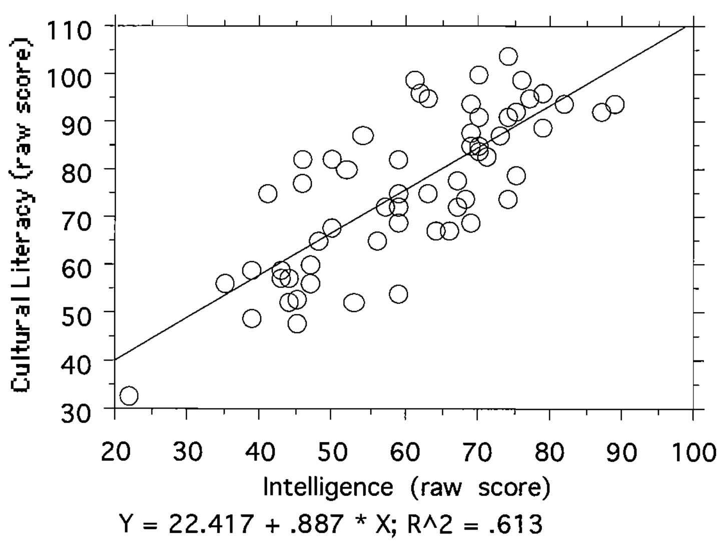

Figure 12. General Hypothesis 1 simple regression plot of intelligence predicting cultural literacy (N = 63).

R_1 . . . art.

R_2 . . . business.

R_3 . . . computer technology.

R_4 . . . driver education.

R_5 . . . English.

R_6 . . . foreign language.

R_7 . . . health.

R_8 . . . home economics.

R_9 . . . industrial technology.

R_{10} . . . mathematics.

R_{11} . . . music.

R_{12} . . . physical education.

R_{13} . . . science.

R_{14} . . . social studies.

R_{15} . . . vocational-technical.

Descriptive statistics for General Hypothesis 2 are displayed in Table 5. Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data, but *DAT* VR + NA composite student intelligence proxy data were available for only 63 of those 68 students, and only 62 of those students provided lifelong adaptability ratings for all 15 general school subjects in the Lifelong Adaptability Survey (Student). Accordingly, General Hypothesis 2's initial simple regression equations were conducted on an *N* of 62 with complete student cultural literacy data, complete student intelligence data, and

Table 5

General Hypothesis 2 descriptive statistics

Item	*N*	Range	*M*	*SD*
Test				
Cultural Literacy Test	62	33-104	76.61	16.10
DAT VR + NA	62	22-89	60.94	14.19
Rating				
Art	62	1-100	56.36	29.38
Business	62	12-100	70.90	21.35
Computer Technology	62	33-100	83.98	14.93
Driver Education	62	0-100	55.45	28.45
English	62	8-100	77.05	21.59
Foreign Language	62	8-100	57.44	29.31
Health	62	0-100	71.52	23.82
Home Economics	62	1-100	61.07	26.98
Industrial Technology	62	5-100	49.60	27.75
Mathematics	62	3-100	66.39	28.23
Music	62	0-100	45.47	30.97
Physical Education	62	0-100	41.68	30.74
Science	62	6-100	60.89	26.73
Social Studies	62	6-100	66.18	24.34
Vocational-Technical	62	0-100	60.48	26.64

lifelong adaptability ratings of all 15 general school subjects.

Student cultural literacy scores were reported as composite raw scores with a possible range of 0 through 115. Student intelligence scores were reported as composite raw scores with a possible range of 0 through 90. In General Hypothesis 2, the actual range of student cultural literacy scores was 33 through 104 (*N* = 62, *M* = 76.61, *SD* = 16.10). The actual range of student intelligence scores was 22 through 89 (*N* = 62, *M* = 60.94, *SD* = 14.19).

Students' lifelong adaptability ratings of 15 general school subjects are also statistically described in Table 5. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Student) were permitted a possible range of 0 through 100 on a respondent analogue scale.

Lifelong Adaptability Survey (Student) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations for 15 general school subjects: art (*N* = 62, range = 1-100, *M* = 56.36, *SD* = 29.38); business (*N* = 62, range = 12-100, *M* = 70.90, *SD* = 21.35); computer technology (*N* = 62, range = 33-100, *M* = 83.98, *SD* = 14.93); driver education (*N* = 62, range = 0-100, *M* = 55.45, *SD* = 28.45); English (*N* = 62, range = 8-100, *M* = 77.05, *SD* = 21.59); foreign language (*N* = 62, range = 8-100, *M* = 57.44, *SD* = 29.31); health (*N* = 62, range = 0-100, *M* = 71.52, *SD* = 23.82); home economics (*N* = 62, range = 1-100, *M* = 61.07, *SD* = 26.98); industrial technology (*N* = 62, range = 5-100, *M* = 49.60, *SD* = 27.75); mathematics (*N* = 62, range = 3-100, *M* = 66.39, *SD* = 28.23); music (*N* = 62, range = 0-100, *M* = 45.47, *SD* = 30.97); physical education (*N* = 62, range = 0-100, *M* = 41.68, *SD* = 30.74); science (*N* = 62, range = 6-100, *M* = 60.89, *SD* = 26.73); social studies (*N* = 62, range = 6-100, *M* = 66.18, *SD* = 24.34); and vocational-technical (*N* = 62, range = 0-100, *M* = 60.48, *SD* = 26.64).

In General Hypothesis 2, the predictor variable, criterion variable, and covariate were statistically treated as continuous variables (K. A. McNeil et al., 1975).

Fifteen initial simple regression equations revealed four significant findings (R_2, R_5, R_7, and R_{12}). These four significant findings ultimately necessitated four full-versus-restricted regression models with student intelligence as a covariate to be conducted on an *N* of 62.

Initial inferential statistics for General Hypothesis 2 are displayed in Table 6. For each of the 15 general school subjects, a simple regression equation (R_1 - R_{15}) employed student cultural literacy as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05, R_1 through R_{15} were conducted on an *N* of 62 and with a healthy power of approximately .850 (J. Cohen, 1977; see Table 1). The coefficient, standard error, standard coefficient, *t*, and *p* for the cultural literacy predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. Plots for General Hypothesis 2's initial simple regressions (R_1 - R_{15}) are provided respectively in Figure 13 through Figure 27. If the initial simple regression equation involving a given general school subject proved nonsignificant at an alpha of .05, then no further analyses involving that general school subject were undertaken in General Hypothesis 2. If this initial simple regression equation involving a given general school subject proved significant, then further regression analyses involving that general school subject were undertaken to covary student intelligence. The resulting full model, restricted model, and *F* test are presented in Table 7. In initial inferential statistics and in any covariate inferential statistics, all *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p*

Table 6

General Hypothesis 2 simple regression analyses for student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 62)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_1: Art										
Cult. Lit.	.008	.236	.004	.034	.97					NS
Regression						.000	1/60	.001	.97	NS
R_2: Business										
Cult. Lit.	-.345	.165	-.260	-2.088	.04					S
Regression						.068	1/60	4.358	.04	S
R_3: Computer Technology										
Cult. Lit.	-.077	.119	-.083	-.648	.51					NS
Regression						.007	1/60	.420	.51	NS
R_4: Driver Education										
Cult. Lit.	-.243	.226	-.138	-1.076	.28					NS
Regression						.019	1/60	1.157	.28	NS
R_5: English										
Cult. Lit.	-.369	.166	-.275	-2.217	.03					S
Regression						.076	1/60	4.915	.03	S

Table 6 (continued)

General Hypothesis 2 simple regression analyses for student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 62)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_6: Foreign Language										
Cult. Lit.	.143	.234	.078	.610	.54					NS
Regression						.006	1/60	.372	.54	NS
R_7: Health										
Cult. Lit.	-.543	.178	-.367	-3.055	.00					S
Regression						.135	1/60	9.334	.00	S
R_8: Home Economics										
Cult. Lit.	-.155	.215	-.093	-.721	.47					NS
Regression						.009	1/60	.519	.47	NS
R_9: Industrial Technology										
Cult. Lit.	-.003	.222	-.002	-.016	.98					NS
Regression						.000	1/60	.000	.98	NS
R_{10}: Mathematics										
Cult. Lit.	-.339	.222	-.193	-1.526	.13					NS
Regression						.037	1/60	2.330	.13	NS

Table 6 (continued)

General Hypothesis 2 simple regression analyses for student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 62)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{11}: Music										
Cult. Lit.	.284	.246	.147	1.155	.25					NS
Regression						.022	1/60	1.333	.25	NS
R_{12}: Physical Education										
Cult. Lit.	-.521	.237	-.273	-2.199	.03					S
Regression						.075	1/60	4.838	.03	S
R_{13}: Science										
Cult. Lit.	.229	.212	.138	1.076	.28					NS
Regression						.019	1/60	1.158	.28	NS
R_{14}: Social Studies										
Cult. Lit.	-.013	.195	-.008	-.065	.94					NS
Regression						.000	1/60	.004	.94	NS
R_{15}: Vocational-Technical										
Cult. Lit.	-.056	.213	-.034	-.261	.79					NS
Regression						.001	1/60	.068	.79	NS

Table 6 (continued)

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aAll *p* values were truncated, not rounded, to the hundredths place.

values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

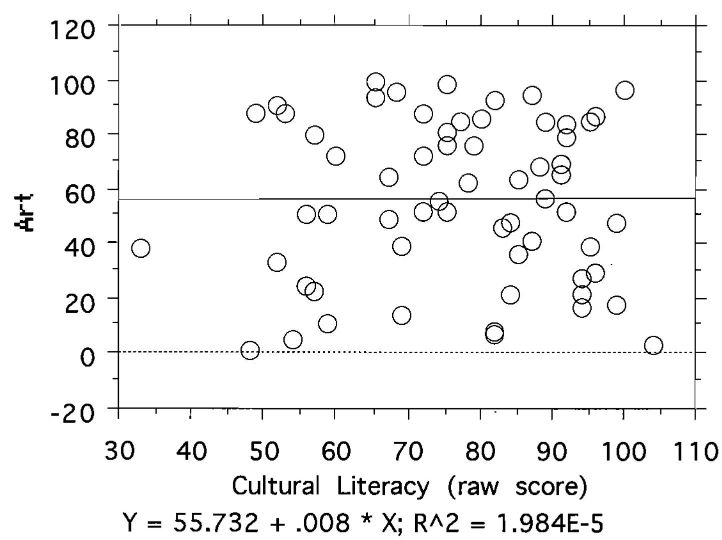

Figure 13. General Hypothesis 2 simple regression plot of cultural literacy predicting art lifelong adaptability ratings ($N = 62$).

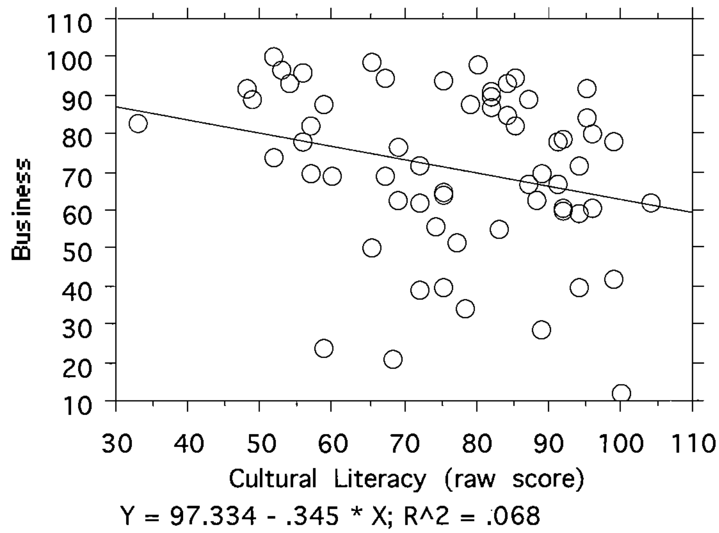

Figure 14. General Hypothesis 2 simple regression plot of cultural literacy predicting business lifelong adaptability ratings (N = 62).

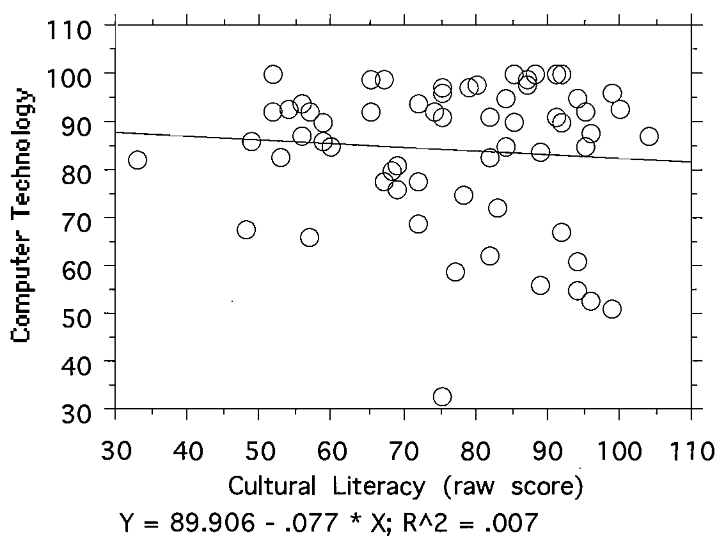

Figure 15. General Hypothesis 2 simple regression plot of cultural literacy predicting computer technology lifelong adaptability ratings (N = 62).

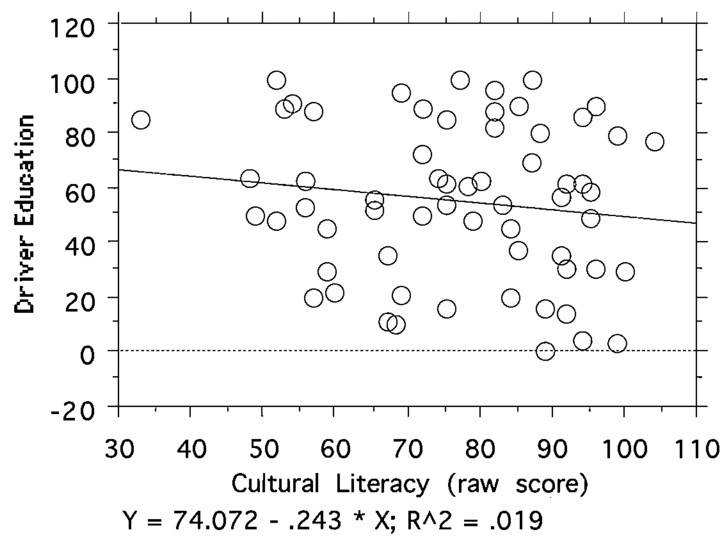

Figure 16. General Hypothesis 2 simple regression plot of cultural literacy predicting driver education lifelong adaptability ratings (*N* = 62).

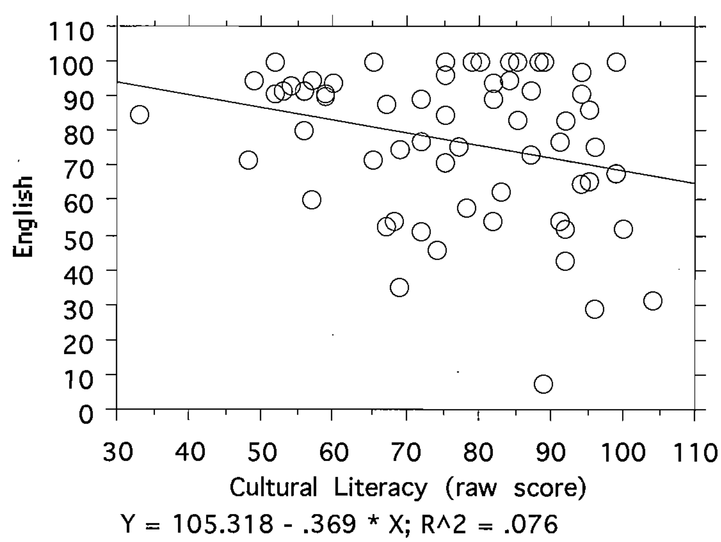

Figure 17. General Hypothesis 2 simple regression plot of cultural literacy predicting English lifelong adaptability ratings (*N* = 62).

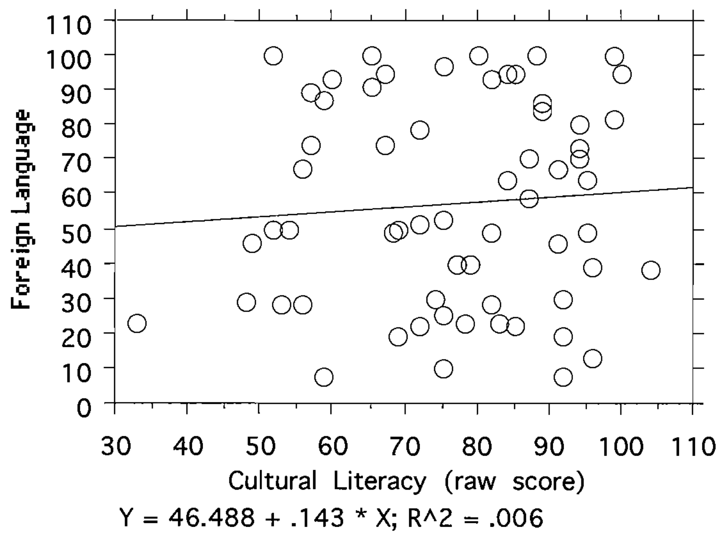

Figure 18. General Hypothesis 2 simple regression plot of cultural literacy predicting foreign language lifelong adaptability ratings (*N* = 62).

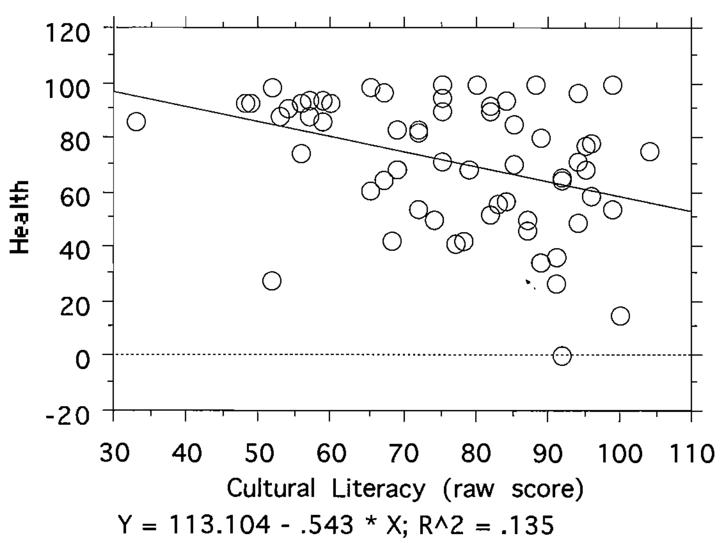

Figure 19. General Hypothesis 2 simple regression plot of cultural literacy predicting health lifelong adaptability ratings (*N* = 62).

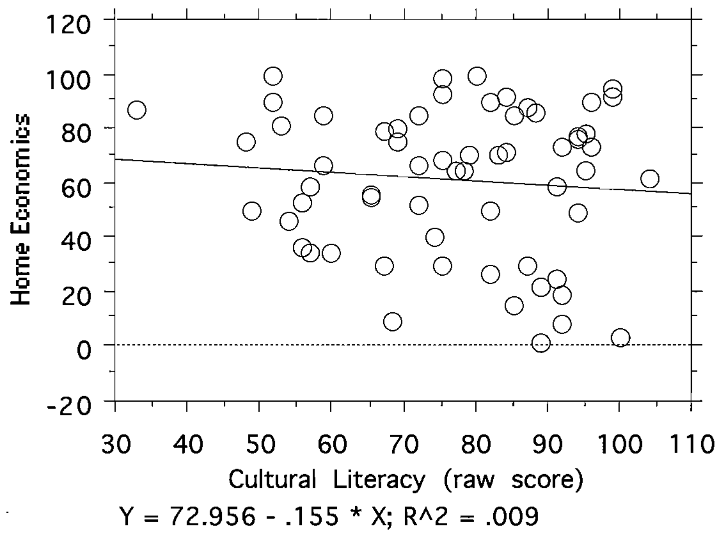

Figure 20. General Hypothesis 2 simple regression plot of cultural literacy predicting home economics lifelong adaptability ratings (N = 62).

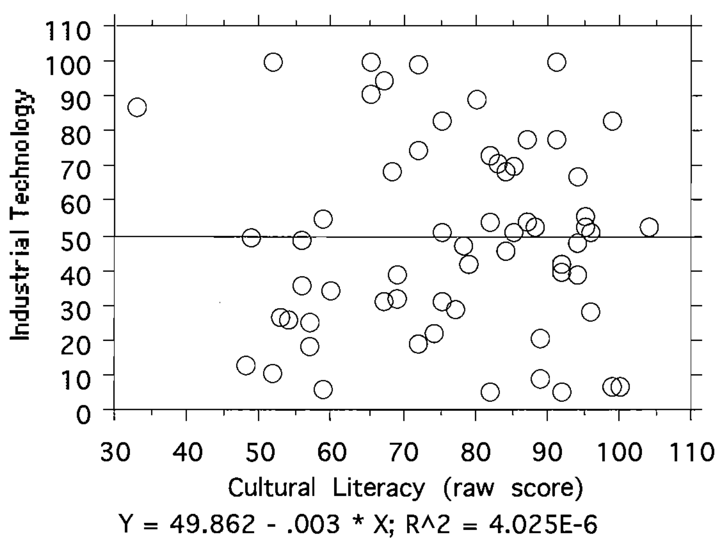

Figure 21. General Hypothesis 2 simple regression plot of cultural literacy predicting industrial technology lifelong adaptability ratings (N = 62).

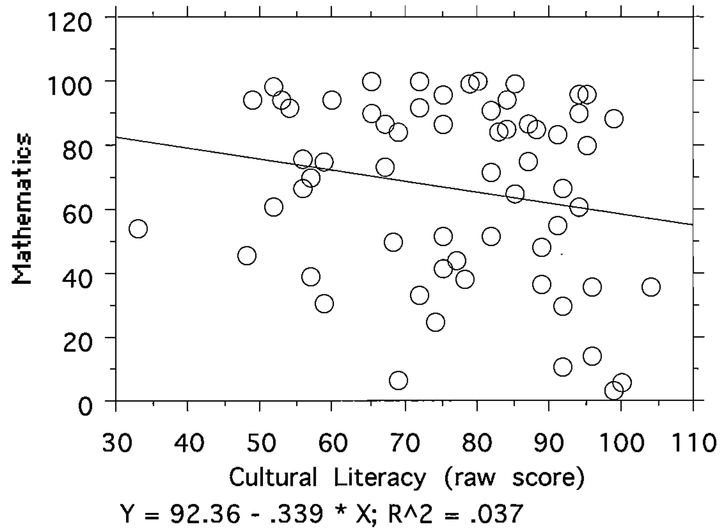

Figure 22. General Hypothesis 2 simple regression plot of cultural literacy predicting mathematics lifelong adaptability ratings (N = 62).

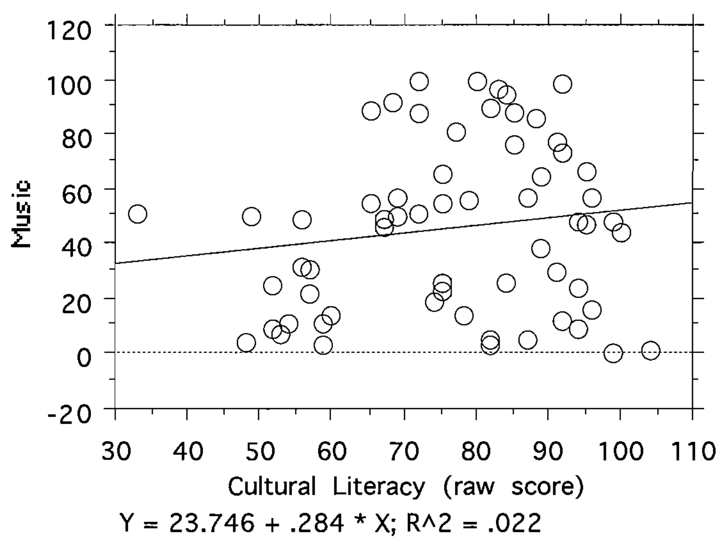

Figure 23. General Hypothesis 2 simple regression plot of cultural literacy predicting music lifelong adaptability ratings (N = 62).

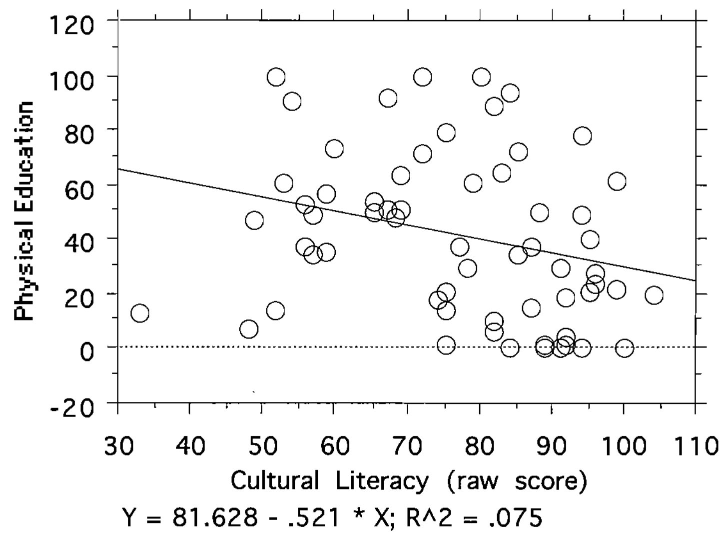

Figure 24. General Hypothesis 2 simple regression plot of cultural literacy predicting physical education lifelong adaptability ratings (*N* = 62).

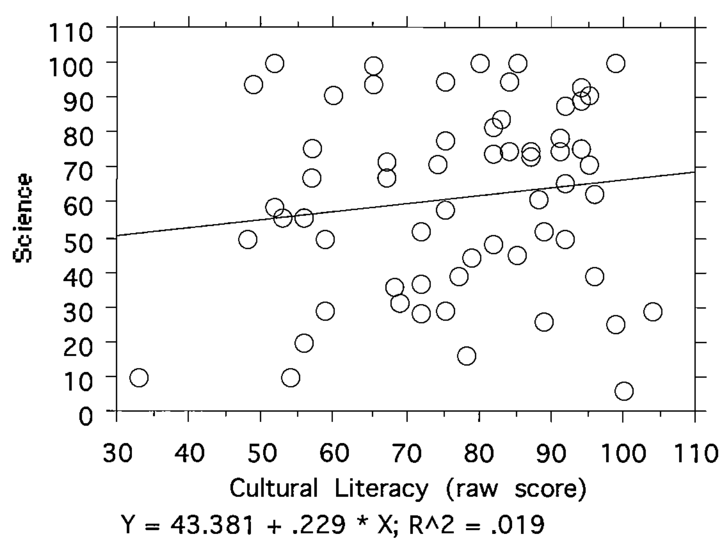

Figure 25. General Hypothesis 2 simple regression plot of cultural literacy predicting science lifelong adaptability ratings (*N* = 62).

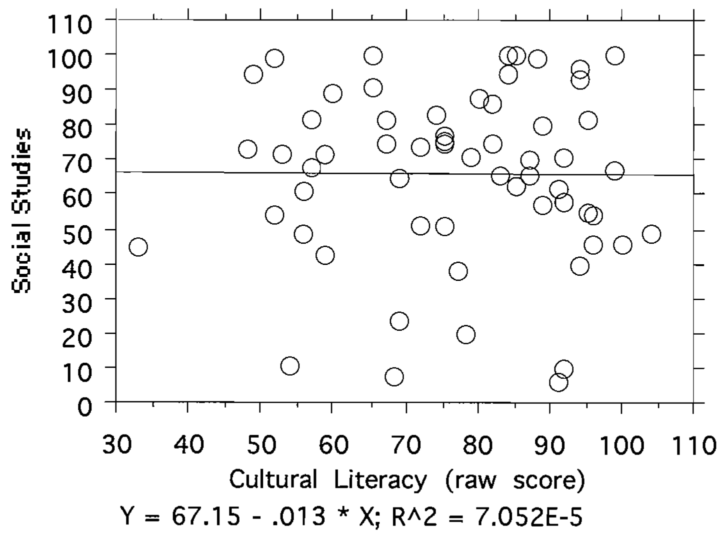

Figure 26. General Hypothesis 2 simple regression plot of cultural literacy predicting social studies lifelong adaptability ratings (N = 62).

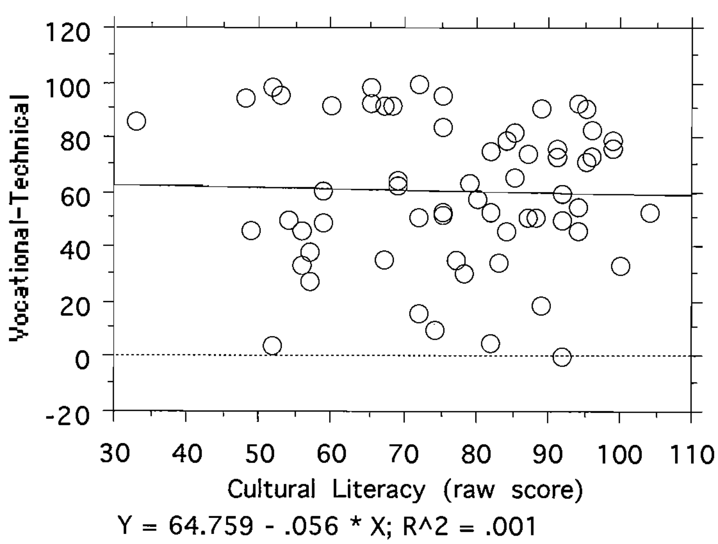

Figure 27. General Hypothesis 2 simple regression plot of cultural literacy predicting vocational-technical lifelong adaptability ratings (N = 62).

R_1: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of art.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of art. Student cultural literacy accounted for 0.0% of the criterion variance, F (1, 60) = .001, p = .97. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_1.

R_2: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of business.

With alpha established at .05, student cultural literacy was a significant negative predictor of students' lifelong adaptability ratings of business. In other words, the more culturally literate student assigned a lower lifelong adaptability rating to business. Student cultural literacy accounted for 6.8% of the criterion variance, F (1, 60) = 4.358, p = .04. In consequence of this initial significant finding, further analyses were undertaken to covary student intelligence in R_2.

The resulting full model, restricted model, and F test are presented in Table 7. Accounting for 7.2% of the criterion variance, the full model of student cultural literacy and student intelligence did not significantly predict students' lifelong adaptability ratings of business, F (2, 59) = 2.304, p = .10. Accounting for 6.1% of the criterion variance, the restricted model of student intelligence significantly predicted students' lifelong adaptability ratings of business, F (1, 60) = 3.903, p = .05. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 59) = .688, $p > .05$ (Appendix 13), thereby indicating that student cultural literacy did not significantly predict students' lifelong adaptability ratings of business after controlling for student intelligence.

Table 7

General Hypothesis 2 F tests of full-versus-restricted regression models with intelligence as covariate (N = 62)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_2: Business										
<u>Full Model</u>										
Cult. Lit.	-.229	.269	-.173	-.851	.39					NS
Intel.	-.168	.305	-.111	-.549	.58					NS
Regression						.072	2/59	2.304	.10	NS
<u>Restricted Model</u>										
Intel.	-.372	.188	-.247	-1.976	.05					S
Regression						.061	1/60	3.903	.05	S
<u>Full-versus-restricted Model</u>							1/59	.688	> .05	NS
R_5: English										
<u>Full Model</u>										
Cult. Lit.	-.129	.269	-.096	-.480	.63					NS
Intel.	-.346	.305	-.227	-1.135	.26					NS
Regression						.095	2/59	3.113	.05	S
<u>Restricted Model</u>										
Intel.	-.461	.187	-.303	-2.465	.01					S
Regression						.092	1/60	6.074	.01	S
<u>Full-versus-restricted Model</u>							1/59	.200	> .05	NS

Table 7 (continued)

General Hypothesis 2 F tests of full-versus-restricted regression models with intelligence as covariate (N = 62)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_7: Health										
Full Model										
Cult. Lit.	-.009	.276	-.006	-.031	.97					NS
Intel.	-.771	.313	-.459	-2.460	.01					S
Regression						.215	2/59	8.087	.00	S
Restricted Model										
Intel.	-.779	.192	-.464	-4.055	.00					S
Regression						.215	1/60	16.447	.00	S
Full-versus-restricted Model							1/59	.000	> .05	NS
R_{12}: Physical Education										
Full Model										
Cult. Lit.	-.362	.386	-.189	-.937	.35					NS
Intel.	-.231	.438	-.107	-.527	.60					NS
Regression						.079	2/59	2.528	.08	NS
Restricted Model										
Intel.	-.553	.270	-.255	-2.046	.04					S
Regression						.065	1/60	4.188	.04	S
Full-versus-restricted Model							1/59	.875	> .05	NS

Table 7 (continued)

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[a]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

R_3: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of computer technology.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of computer technology. Student cultural literacy accounted for 0.7% of the criterion variance, F (1, 60) = .420, p = .51. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_3.

R_4: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of driver education.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of driver education. Student cultural literacy accounted for 1.9% of the criterion variance, F (1, 60) = 1.157, p = .28. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_4.

R_5: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of English.

With alpha established at .05, student cultural literacy was a significant negative predictor of students' lifelong adaptability ratings of English. In other words, the more culturally literate student assigned a lower lifelong adaptability rating to English. Student cultural literacy accounted for 7.6% of the criterion variance, F (1,

60) = 4.915, p = .03. In consequence of this initial significant finding, further analyses were undertaken to covary student intelligence in R_5.

The resulting full model, restricted model, and F test are presented in Table 7. Accounting for 9.5% of the criterion variance, the full model of student cultural literacy and student intelligence significantly predicted students' lifelong adaptability ratings of English, F (2, 59) = 3.113, p = .05. Accounting for 9.2% of the criterion variance, the restricted model of student intelligence significantly predicted students' lifelong adaptability ratings of English, F (1, 60) = 6.074, p = .01. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 59) = .200, p > .05 (Appendix 13), thereby indicating that student cultural literacy did not significantly predict students' lifelong adaptability ratings of English after controlling for student intelligence.

R_6: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of foreign language.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of foreign language. Student cultural literacy accounted for 0.6% of the criterion variance, F (1, 60) = .372, p = .54. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_6.

R_7: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of health.

With alpha established at .05, student cultural literacy was a significant negative predictor of students' lifelong adaptability ratings of health. In other words, the more culturally literate student assigned a lower lifelong adaptability rating to health. Student cultural literacy accounted for 13.5% of the criterion variance, F (1, 60) = 9.334, p = .00. In consequence of this initial significant finding, further analyses were undertaken to covary student intelligence in R_7.

The resulting full model, restricted model, and F test are presented in Table 7. Accounting for 21.5% of the criterion variance, the full model of student cultural literacy and student intelligence significantly predicted students' lifelong adaptability ratings of health, F (2, 59) = 8.087, p = .00. Accounting for 21.5% of the criterion variance, the restricted model of student intelligence also significantly predicted students' lifelong adaptability ratings of health, F (1, 60) = 16.447, p = .00. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 59) = .000, p > .05 (Appendix 13), thereby indicating that student cultural literacy did not significantly predict students' lifelong adaptability ratings of health after controlling for student intelligence.

R_8: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of home economics.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of home economics. Student cultural literacy accounted for 0.9% of the criterion variance, F (1, 60) = .519, p = .47. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_8.

R_9: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of industrial technology. Student cultural literacy accounted for 0.0% of the criterion variance, F (1, 60) = .000, p = .98. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_9.

> R_{10}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of mathematics.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of mathematics. Student cultural literacy accounted for 3.7% of the criterion variance, F (1, 60) = 2.330, p = .13. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_{10}.

> R_{11}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of music.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of music. Student cultural literacy accounted for 2.2% of the criterion variance, F (1, 60) = 1.333, p = .25. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_{11}.

> R_{12}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of physical education.

With alpha established at .05, student cultural literacy was a significant negative predictor of students' lifelong adaptability ratings of physical education. In other words, the more culturally literate student assigned a lower lifelong adaptability rating to physical education. Student cultural literacy accounted for 7.5% of the criterion variance, F (1, 60) = 4.838, p = .03. In consequence of this initial significant finding, further analyses were undertaken to covary student intelligence in R_{12}.

The resulting full model, restricted model, and *F* test are presented in Table 7. Accounting for 7.9% of the criterion variance, the full model of student cultural literacy and student intelligence did not significantly predict students' lifelong adaptability ratings of physical education, $F\ (2, 59) = 2.528$, $p = .08$. Accounting for 6.5% of the criterion variance, the restricted model of student intelligence significantly predicted students' lifelong adaptability ratings of physical education, $F\ (1, 60) = 4.188$, $p = .04$. An *F* test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 59) = .875$, $p > .05$ (Appendix 13), thereby indicating that student cultural literacy did not significantly predict students' lifelong adaptability ratings of physical education after controlling for student intelligence.

> R_{13}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of science.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of science. Student cultural literacy accounted for 1.9% of the criterion variance, $F\ (1, 60) = 1.158$, $p = .28$. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_{13}.

> R_{14}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of social studies.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of social studies. Student cultural literacy accounted for 0.0% of the criterion variance, $F\ (1, 60) = .004$, $p = .94$. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_{14}.

> R_{15}: Independent of student intelligence, student cultural literacy significantly predicts students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, student cultural literacy was not a significant predictor of students' lifelong adaptability ratings of vocational-technical. Student cultural literacy accounted for 0.1% of the criterion variance, *F* (1, 60) = .068, *p* = .79. In consequence of this initial nonsignificant finding, no further analyses were undertaken to covary student intelligence in R_{15}.

In summation, with alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by student cultural literacy in initial simple regression equations (R_1, R_3, R_4, R_6, R_8, R_9, R_{10}, R_{11}, R_{13}, R_{14}, and R_{15}): art, *F* (1, 60) = .001, *p* = .97; computer technology, *F* (1, 60) = .420, *p* = .51; driver education, *F* (1, 60) = 1.157, *p* = .28; foreign language, *F* (1, 60) = .372, *p* = .54; home economics, *F* (1, 60) = .519, *p* = .47; industrial technology, *F* (1, 60) = .000, *p* = .98; mathematics, *F* (1, 60) = 2.330, *p* = .13; music, *F* (1, 60) = 1.333, *p* = .25; science, *F* (1, 60) = 1.158, *p* = .28; social studies, *F* (1, 60) = .004, *p* = .94; and vocational-technical, *F* (1, 60) = .068, *p* = .79.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by student cultural literacy in initial simple regression equations (R_2, R_5, R_7, and R_{12}): business, negatively predicted, *F* (1, 60) = 4.358, *p* = .04; English, negatively predicted, *F* (1, 60) = 4.915, *p* = .03; health, negatively predicted, F (1, 60) = 9.334, p = .00; and physical education, negatively predicted, F (1, 60) = 4.838, p = .03. Commensurate with General Hypothesis 2, R_2, R_5, R_7, and R_{12} were subsequently rerun independent of student intelligence. After controlling for student intelligence, student cultural literacy failed to remain a significant predictor of students' lifelong adaptability ratings of the four general school subjects that it had significantly predicted in initial regression equations (R_2, R_5, R_7, and R_{12}): business, F (1, 59) = .688, $p > .05$; English, F (1, 59) = .200, $p > .05$; health, F (1, 59) = .000, $p > .05$; and physical education F (1, 59) = .875, $p > .05$.

General Hypothesis 3 (H_{G3})

H_{G3}: There is a significant addition of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific regressions (R_{16} - R_{30}).

R_{16} - R_{30}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{16} . . . art.

R_{17} . . . business.

R_{18} . . . computer technology.

R_{19} . . . driver education.

R_{20} . . . English.

R_{21} . . . foreign language.

R_{22} . . . health.

R_{23} . . . home economics.

R_{24} . . . industrial technology.

R_{25} . . . mathematics.

R_{26} . . . music.

R_{27} . . . physical education.

R_{28} . . . science.

R_{29} . . . social studies.

R_{30} . . . vocational-technical.

Descriptive statistics for General Hypothesis 3 are displayed in Table 8. Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data. Necessary demographic data (family structure, parental age, and parental educational level) supplied by parents in the Lifelong Adaptability Survey (Parent) were available for 45 of those 68 students. All of those 45 students had student gender data available. All of those 45 students provided lifelong adaptability ratings for all 15 general school subjects in the Lifelong Adaptability Survey (Student). Accordingly, General Hypothesis 3's multiple regression equations were conducted on an *N* of 45 with complete student cultural literacy data, complete student gender data, complete parent-supplied demographic data, and lifelong adaptability ratings of all 15 general school subjects.

Student cultural literacy scores were reported as composite raw scores with a possible range of 0 through 115. In General Hypothesis 3, the actual range of student cultural literacy scores was 33 through 104 ($N = 45$, $M = 75.29$, $SD = 15.82$).

Table 8

General Hypothesis 3 descriptive statistics

Item	*N*	Range	*M*	*SD*
Test				
Cultural Literacy Test	45	33-104	75.29	15.82
Rating				
Art	45	1-100	53.56	28.11
Business	45	40-100	74.33	16.56
Computer Technology	45	1-100	82.33	19.55
Driver Education	45	10-100	59.18	24.73
English	45	31-100	79.02	19.39
Foreign Language	45	1-100	55.93	28.22
Health	45	0-100	72.73	23.32
Home Economics	45	8-100	63.91	26.28
Industrial Technology	45	5-100	55.24	24.77
Mathematics	45	7-100	71.76	25.33
Music	45	0-100	45.89	32.26
Physical Education	45	0-100	45.22	31.60
Science	45	10-100	64.76	25.06
Social Studies	45	10-100	68.07	21.73
Vocational-Technical	45	0-100	60.04	25.90

Students' lifelong adaptability ratings of 15 general school subjects are also statistically described in Table 8. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Student) were permitted a possible range of 0 through 100 on a respondent analogue scale.

Lifelong Adaptability Survey (Student) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations for 15 general school subjects: art (N = 45, range = 1-100, M = 53.56, SD = 28.11); business (N = 45, range = 40-100, M = 74.33, SD = 16.56); computer technology (N = 45, range = 1-100, M = 82.33, SD = 19.55); driver education (N = 45, range = 10-100, M = 59.18, SD = 24.73); English (N = 45, range = 31-100, M = 79.02, SD = 19.39); foreign language (N = 45, range = 1-100, M = 55.93, SD = 28.22); health (N = 45, range = 0-100, M = 72.73, SD = 23.32); home economics (N = 45, range = 8-100, M = 63.91, SD = 26.28); industrial technology (N = 45, range = 5-100, M = 55.24, SD = 24.77); mathematics (N = 45, range = 7-100, M = 71.76, SD = 25.33); music (N = 45, range = 0-100, M = 45.89, SD = 32.26); physical education (N = 45, range = 0-100, M = 45.22, SD = 31.60); science (N = 45, range = 10-100, M = 64.76, SD = 25.06); social studies (N = 45, range = 10-100, M = 68.07, SD = 21.73); and vocational-technical (N = 45, range = 0-100, M = 60.04, SD = 25.90).

Student demography and its numerical coding are presented in Table 9. All of the tabulated codings were statistical codings, not survey codings, for statistical analyses. Ultimately, the Lifelong Adaptability Survey (Parent) family structure category “Female Only” was renamed “Single Parent,” and the Lifelong Adaptability Survey (Parent) family structure category “Both Female and Male” was renamed “Two Parents.” These renamings are reflected in Table 9 and in any applicable tables thereafter. Additionally, parental age and parental educational level were household averages, which meant that to possess, for example, a parental educational level of “Earned Doctorate”(8.0) both of a student’s parents in a two-parent household must

Table 9

General Hypothesis 3 demography numerical coding

Description with Statistical Coding	*N*	Range	*M*	*SD*
Family Structure[a]	45	0-1	.84	.37
Single Parent				
(1, otherwise 0)	7 (16%)			
Two Parents				
(1, otherwise 0)	38 (84%)			
Parental Age[b]	45	2-4	3.12	.49
30-39 Years				
(2.0)	3 (7%)			
(2.5)	2 (4%)			
40-49 Years				
(3.0)	27 (60%)			
(3.5)	7 (16%)			
50-59 Years				
(4.0)	6 (13%)			
Parental Educational Level[c]	45	2-7	3.97	1.64
High School Diploma				
(2.0)	13 (29%)			
(2.5)	3 (7%)			
Adult Vocational Degree				
(3.0)	2 (4%)			

Table 9 (continued)

General Hypothesis 3 demography numerical coding

Description with Statistical Coding	*N*	Range	*M*	*SD*
(3.5)	2 (4%)			
Associate's Degree				
(4.0)	3 (7%)			
(4.5)	4 (9%)			
Bachelor's Degree				
(5.0)	5 (11%)			
(5.5)	5 (11%)			
Master's Degree				
(6.0)	6 (13%)			
(6.5)	1 (2%)			
Law Degree				
(7.0)	1 (2%)			
Student Gender[d]	45	0-1	.58	.50
Female (1, otherwise 0)	26 (58%)			
Male (1, otherwise 0)	19 (42%)			

[a]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered. Dummy-variable coding was employed.

[b]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses.

Table 9 (continued)

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[c]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Percentages for this variable's household averages sum to only 99% due to rounding error.

[d]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered. Dummy-variable coding was employed.

have held earned doctorates or one parent in a single-parent household must have held an earned doctorate for the household average parental educational level to be "Earned Doctorate" (8.0). Furthermore, a two-parent household parental educational level may have been the uneven average of two different levels, for example, "Master's Degree" (6.0) and "Law Degree" (7.0), thereby resulting in a fractional household average parental educational level, for example, 6.5.

Family structure (*N* = 45, range = 0-1, *M* = .84, *SD* = .37) consisted of 7 (16%) single-parent households and 38 (84%) two-parent households. Although, ideally, an equal percentage of each family structure would have been preferred in this volunteer sample, these percentages were roughly reflective of this study's population consisting of 24% single-parent households and 76% two-parent households.

Parental age (*N* = 45, range = 2-4, *M* = 3.12, *SD* = .49) consisted of 5 (11%) households with an average parental age of 30 through 39 years, 34 (76%) households with an average parental age of 40 through 49 years, and 6 (13%) households with an average parental age of 50 through 59 years. Although, ideally, an equal percentage of each average parental age would have been preferred in this volunteer sample, these percentages were considered reflective of this study's population of parents of high school seniors.

Parental educational level (*N* = 45, range = 2-7, *M* = 3.97, *SD* = 1.64) consisted of 16 (36%) households with an average parental educational level of a high school diploma or its equivalent, 4 (8%) households with an average parental educational level of an adult vocational school degree after a high school diploma, 7 (16%) households with an average parental educational level of a college or university associate's degree, 10 (22%) households with an average parental educational level of a bachelor's degree, 7 (15%) households with an average parental educational level of a master's degree, and 1 (2%) household with an average parental educational level of a law degree. Although, ideally, an equal percentage of each average parental educational level would have been preferred in this volunteer sample, these percentages were considered reflective of this study's population.

Student gender (*N* = 45, range = 0-1, *M* = .58, *SD* = .50) consisted of 26 (58%) females and 19 (42%) males. Although, ideally, an equal percentage of each student gender would have been preferred in this volunteer sample, these percentages were roughly reflective of equality.

In General Hypothesis 3, the criterion variable was statistically treated as a continuous variable. All predictor variables were statistically treated as continuous variables, except family structure and student gender, which were statistically treated as categorical variables (K. A. McNeil et al., 1975).

Fifteen initial multiple regression equations revealed four significant findings (R_{17}, R_{20}, R_{22}, and R_{23}). However, due to the presence of 15 multiple tests in General Hypothesis 3, these four significant findings were ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Inferential statistics for General Hypothesis 3 are displayed in Table 10. For each of the 15 general school subjects, a multiple regression equation (R_{16} - R_{30}) employed student cultural literacy, family structure, parental age, parental educational level, and student gender as predictor variables and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{16} through R_{30} were conducted with a power of approximately .420 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This lower power necessitated a cautious interpretation of General Hypothesis 3's results. The coefficient, standard error, standard coefficient, *t*, and *p* for each predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each multiple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place.

R_{16}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of art. The additive effect accounted for 11.0% of the criterion variance, F (5, 39) = .964, p = .45.

Parental educational level (stand. coef. = -.339, t = -1.949, p = .05) was a significant negative contributor in the additive model predicting students' lifelong adaptability ratings of art. In other words, the student with less highly educated parents assigned a higher lifelong adaptability rating to art. Student cultural literacy (stand. coef. = .167, t = .988, p = .32), family structure (stand. coef. = .209, t = 1.219, p =

Table 10

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{16}: Art										
Cult. Lit.	.297	.301	.167	.988	.32					NS
Family[b]	15.991	13.119	.209	1.219	.23					NS
Par. Age	.441	8.987	.008	.049	.96					NS
Par. Ed.	-5.833	2.992	-.339	-1.949	.05					S
Gender[c]	-2.766	8.963	-.049	-.309	.75					NS
Regression						.110	5/39	.964	.45	NS
R_{17}: Business										
Cult. Lit.	-.052	.164	-.050	-.320	.75					NS
Family[b]	-5.889	7.153	-.130	-.823	.41					NS
Par. Age	-6.715	4.900	-.199	-1.370	.17					NS
Par. Ed.	2.641	1.632	.261	1.619	.11					NS
Gender[c]	13.604	4.887	.410	2.784	.00					S
Regression						.238	5/39	2.433	.05	S[d]

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{18}: Computer Technology										
Cult. Lit.	.316	.204	.255	1.547	.13					NS
Family[b]	-7.406	8.899	-.139	-.832	.41					NS
Par. Age	-8.485	6.096	-.213	-1.392	.17					NS
Par. Ed.	.433	2.030	.036	.213	.83					NS
Gender[c]	11.355	6.080	.290	1.868	.06					NS
Regression						.153	5/39	1.412	.24	NS
R_{19}: Driver Education										
Cult. Lit.	.050	.275	.032	.182	.85					NS
Family[b]	-8.770	11.976	-.130	-.732	.46					NS
Par. Age	7.043	8.205	.140	.858	.39					NS
Par. Ed.	-.755	2.732	-.050	-.276	.78					NS
Gender[c]	3.678	8.182	.074	.449	.65					NS
Regression						.042	5/39	.342	.88	NS

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{20}: English										
Cult. Lit.	-.172	.190	-.140	-.906	.37					NS
Family[b]	13.468	8.278	.255	1.627	.11					NS
Par. Age	1.829	5.671	.046	.323	.74					NS
Par. Ed.	-.548	1.888	-.046	-.290	.77					NS
Gender[c]	16.107	5.655	.415	2.848	.00					S
Regression						.255	5/39	2.676	.03	S[d]
R_{21}: Foreign Language										
Cult. Lit.	.083	.300	.047	.277	.78					NS
Family[b]	-2.491	13.072	-.032	-.191	.84					NS
Par. Age	-13.076	8.955	-.227	-1.460	.15					NS
Par. Ed.	1.603	2.982	.093	.538	.59					NS
Gender[c]	16.536	8.931	.293	1.852	.07					NS
Regression						.123	5/39	1.098	.37	NS

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{22}: Health										
Cult. Lit.	-.187	.231	-.127	-.810	.42					NS
Family[b]	-9.781	10.063	-.154	-.972	.33					NS
Par. Age	5.697	6.894	.120	.826	.41					NS
Par. Ed.	.315	2.295	.022	.137	.89					NS
Gender[c]	18.169	6.875	.389	2.643	.01					S
Regression						.240	5/39	2.457	.04	S[d]
R_{23}: Home Economics										
Cult. Lit.	-.153	.257	-.092	-.596	.55					NS
Family[b]	-8.288	11.189	-.116	-.741	.46					NS
Par. Age	18.138	7.665	.338	2.366	.02					S
Par. Ed.	.971	2.552	.060	.380	.70					NS
Gender[c]	18.386	7.644	.350	2.405	.02					S
Regression						.259	5/39	2.728	.03	S[d]

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	*p*[a]	R^2	df_n/df_d	*F*	*p*[a]	Sig.
R_{24}: Industrial Technology										
Cult. Lit.	-.121	.265	-.077	-.457	.65					NS
Family[b]	-13.456	11.540	-.199	-1.166	.25					NS
Par. Age	12.811	7.906	.254	1.620	.11					NS
Par. Ed.	-.816	2.632	-.054	-.310	.75					NS
Gender[c]	-9.522	7.884	-.192	-1.208	.23					NS
Regression						.113	5/39	.993	.43	NS
R_{25}: Mathematics										
Cult. Lit.	-.098	.283	-.061	-.346	.73					NS
Family[b]	.112	12.338	.002	.009	.99					NS
Par. Age	-6.609	8.453	-.128	-.782	.43					NS
Par. Ed.	-1.019	2.814	-.066	-.362	.71					NS
Gender[c]	-2.099	8.429	-.041	-.249	.80					NS
Regression						.031	5/39	.247	.93	NS

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_{26}: Music										
Cult. Lit.	.332	.351	.163	.946	.34					NS
Family[b]	7.972	15.312	.091	.521	.60					NS
Par. Age	-.376	10.490	-.006	-.036	.97					NS
Par. Ed.	-3.593	3.492	-.182	-1.029	.30					NS
Gender[c]	-11.738	10.461	-.182	-1.122	.26					NS
Regression						.079	5/39	.672	.64	NS
R_{27}: Physical Education										
Cult. Lit.	-.276	.340	-.138	-.811	.42					NS
Family[b]	-1.327	14.828	-.015	-.090	.92					NS
Par. Age	-15.551	10.158	-.241	-1.531	.13					NS
Par. Ed.	.109	3.382	.006	.032	.97					NS
Gender[c]	-8.608	10.130	-.136	-.850	.40					NS
Regression						.100	5/39	.868	.51	NS

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{28}: Science										
Cult. Lit.	.331	.257	.209	1.290	.20					NS
Family[b]	24.129	11.195	.353	2.155	.03					S
Par. Age	-7.141	7.669	-.140	-.931	.35					NS
Par. Ed.	-.806	2.553	-.053	-.316	.75					NS
Gender[c]	-1.477	7.648	-.029	-.193	.84					NS
Regression						.185	5/39	1.769	.14	NS
R_{29}: Social Studies										
Cult. Lit.	.149	.225	.109	.663	.51					NS
Family[b]	7.220	9.826	.122	.735	.46					NS
Par. Age	2.475	6.731	.056	.368	.71					NS
Par. Ed.	2.642	2.241	.199	1.179	.24					NS
Gender[c]	13.766	6.713	.316	2.051	.04					S
Regression						.164	5/39	1.534	.20	NS

Table 10 (continued)

General Hypothesis 3 multiple regression analyses for addition of student cultural literacy and student demography in predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{30}: Vocational-Technical										
Cult. Lit.	-.108	.279	-.066	-.389	.69					NS
Family[b]	-7.418	12.166	-.105	-.610	.54					NS
Par. Age	13.136	8.334	.249	1.576	.12					NS
Par. Ed.	-2.587	2.775	-.163	-.932	.35					NS
Gender[c]	-3.723	8.311	-.072	-.448	.65					NS
Regression						.099	5/39	.855	.51	NS

[a]All p values were truncated, not rounded, to the hundredths place.

[b]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered. Dummy-variable coding was employed.

[c]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered. Dummy-variable coding was employed.

[d]Due to the presence of 15 multiple tests in H_{G3}, the significant p values in R_{17} (.05), in R_{20} (.03), in R_{22} (.04), and in R_{23} (.03) were multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the respective adjusted p values in R_{17} (.75), in R_{20} (.45), in R_{22} (.60), and in R_{23} (.45).

.23), parental age (stand. coef. = .008, t = .049, p = .96), and student gender (stand. coef. = -.049, t = -.309, p = .75) neither reached ($p \leq .05$) nor approached ($p < .10$

but > .05) significance in the additive model predicting students' lifelong adaptability ratings of art.

> R_{17}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was a significant predictor of students' lifelong adaptability ratings of business. The additive effect accounted for 23.8% of the criterion variance, F (5, 39) = 2.433, p = .05. However, due to the presence of 15 multiple tests in General Hypothesis 3, R_{17}'s significant p value of .05 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{17}'s adjusted p value nonsignificant at .75.

Student gender (stand. coef. = .410, t = 2.784, p = .00) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of business. In other words, the female student assigned a higher lifelong adaptability rating to business. Student cultural literacy (stand. coef. = -.050, t = -.320, p = .75), family structure (stand. coef. = -.130, t = -.823, p = .41), parental age (stand. coef. = -.199, t = -1.370, p = .17), and parental educational level (stand. coef. = .261, t = 1.619, p = .11) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of business.

> R_{18}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of computer technology. The additive effect accounted for 15.3% of the criterion variance, F (5, 39) = 1.412, p = .24.

Student gender (stand. coef. = .290, t = 1.868, p = .06) approached significance as a positive contributor in the additive model predicting students' lifelong adaptability ratings of computer technology. In other words, the apparent trend was for the female student to assign a higher lifelong adaptability rating to computer technology. Student cultural literacy (stand. coef. = .255, t = 1.547, p = .13), family structure (stand. coef. = -.139, t = -.832, p = .41), parental age (stand. coef. = -.213, t = -1.392, p = .17), and parental educational level (stand. coef. = .036, t = .213, p = .83) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of computer technology.

> R_{19}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of driver education. The additive effect accounted for 4.2% of the criterion variance, F (5, 39) = .342, p = .88.

Student cultural literacy (stand. coef. = .032, t = .182, p = .85), family structure (stand. coef. = -.130, t = -.732, p = .46), parental age (stand. coef. = .140, t = .858, p = .39), parental educational level (stand. coef. = -.050, t = -.276, p = .78), and student gender (stand. coef. = .074, t = .449, p = .65) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of driver education.

R_{20}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was a significant predictor of students' lifelong adaptability ratings of English. The additive effect accounted for 25.5% of the criterion variance, F (5, 39) = 2.676, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 3, R_{20}'s significant p value of .03 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{20}'s adjusted p value nonsignificant at .45.

Student gender (stand. coef. = .415, t = 2.848, p = .00) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of English. In other words, the female student assigned a higher lifelong adaptability rating to English. Student cultural literacy (stand. coef. = -.140, t = -.906, p = .37), family structure (stand. coef. = .255, t = 1.627, p = .11), parental age (stand. coef. = .046, t = .323, p = .74), and parental educational level (stand. coef. = -.046, t = -.290, p = .77) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of English.

R_{21}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of foreign language. The additive effect accounted for 12.3% of the criterion variance, F (5, 39) = 1.098, p = .37.

Student gender (stand. coef. = .293, t = 1.852, p = .07) approached significance as a positive contributor in the additive model predicting students' lifelong adaptability ratings of foreign language. In other words, the apparent trend was for the female student to assign a higher lifelong adaptability rating to foreign language. Student cultural literacy (stand. coef. = .047, t = .277, p = .78), family structure (stand. coef. = -.032, t = -.191, p = .84), parental age (stand. coef. = -.227, t = -1.460, p = .15), and parental educational level (stand. coef. = .093, t = .538, p = .59) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of foreign language.

> R_{22}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was a significant predictor of students' lifelong adaptability ratings of health. The additive effect accounted for 24.0% of the criterion variance, F (5, 39) = 2.457, p = .04. However, due to the presence of 15 multiple tests in General Hypothesis 3, R_{22}'s significant p value of .04 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{22}'s adjusted p value nonsignificant at .60.

Student gender (stand. coef. = .389, t = 2.643, p = .01) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of health. In other words, the female student assigned a higher lifelong adaptability rating to health. Student cultural literacy (stand. coef. = -.127, *t* = -.810, *p* = .42), family structure (stand. coef. = -.154, *t* = -.972, *p* = .33), parental age (stand. coef. = .120, *t* = .826, *p* = .41), and parental educational level (stand. coef. = .022, *t* = .137, *p* = .89) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of health.

> R_{23}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was a significant predictor of students' lifelong adaptability ratings of home economics. The additive effect accounted for 25.9% of the criterion variance, F (5, 39) = 2.728, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 3, R_{23}'s significant p value of .03 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{23}'s adjusted p value nonsignificant at .45.

Parental age (stand. coef. = .338, *t* = 2.366, *p* = .02) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of home economics. In other words, the student with older parents assigned a higher lifelong adaptability rating to home economics. Likewise, student gender (stand. coef. = .350, *t* = 2.405, *p* = .02) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of home economics. In other words, the female student assigned a higher lifelong adaptability rating to home economics. Student cultural literacy (stand. coef. = -.092, t = -.596, p = .55), family structure (stand. coef. = -.116, t = -.741, p = .46), and parental educational level (stand. coef. = .060, t = .380, p = .70) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of home economics.

> R_{24}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of industrial technology. The additive effect accounted for 11.3% of the criterion variance, F (5, 39) = .993, p = .43.

Student cultural literacy (stand. coef. = -.077, t = -.457, p = .65), family structure (stand. coef. = -.199, t = -1.166, p = .25), parental age (stand. coef. = .254, t = 1.620, p = .11), parental educational level (stand. coef. = -.054, t = -.310, p = .75), and student gender (stand. coef. = -.192, t = -1.208, p = .23) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of industrial technology.

> R_{25}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of mathematics. The additive effect accounted for 3.1% of the criterion variance, F (5, 39) = .247, p = .93.

Student cultural literacy (stand. coef. = -.061, t = -.346, p = .73), family structure (stand. coef. = .002, t = .009, p = .99), parental age (stand. coef. = -.128, t = -.782, p = .43), parental educational level (stand. coef. = -.066, t = -.362, p = .71), and student gender (stand. coef. = -.041, t = -.249, p = .80) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of mathematics.

R_{26}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of music. The additive effect accounted for 7.9% of the criterion variance, F (5, 39) = .672, p = .64.

Student cultural literacy (stand. coef. = .163, t = .946, p = .34), family structure (stand. coef. = .091, t = .521, p = .60), parental age (stand. coef. = -.006, t = -.036, p = .97), parental educational level (stand. coef. = -.182, t = -1.029, p = .30), and student gender (stand. coef. = -.182, t = -1.122, p = .26) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of music.

R_{27}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of physical education. The additive effect accounted for 10.0% of the criterion variance, F (5, 39) = .868, p =

.51.

Student cultural literacy (stand. coef. = -.138, *t* = -.811, *p* = .42), family structure (stand. coef. = -.015, *t* = -.090, *p* = .92), parental age (stand. coef. = -.241, *t* = -1.531, *p* = .13), parental educational level (stand. coef. = .006, *t* = .032, *p* = .97), and student gender (stand. coef. = -.136, *t* = -.850, *p* = .40) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of physical education.

R_{28}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of science. The additive effect accounted for 18.5% of the criterion variance, F (5, 39) = 1.769, p = .14.

Family structure (stand. coef. = .353, *t* = 2.155, *p* = .03) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of science. In other words, the student in a two-parent household assigned a higher lifelong adaptability rating to science. Student cultural literacy (stand. coef. = .209, *t* = 1.290, *p* = .20), parental age (stand. coef. = -.140, *t* = -.931, *p* = .35), parental educational level (stand. coef. = -.053, *t* = -.316, *p* = .75), and student gender (stand. coef. = -.029, *t* = -.193, *p* = .84) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of science.

R_{29}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of social studies. The additive effect accounted for 16.4% of the criterion variance, F (5, 39) = 1.534, p = .20.

Student gender (stand. coef. = .316, t = 2.051, p = .04) was a significant positive contributor in the additive model predicting students' lifelong adaptability ratings of social studies. In other words, the female student assigned a higher lifelong adaptability rating to social studies. Student cultural literacy (stand. coef. = .109, t = .663, p = .51), family structure (stand. coef. = .122, t = .735, p = .46), parental age (stand. coef. = .056, t = .368, p = .71), and parental educational level (stand. coef. = .199, t = 1.179, p = .24) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of social studies.

R_{30}: The additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender was not a significant predictor of students' lifelong adaptability ratings of vocational-technical. The additive effect accounted for 9.9% of the criterion variance, F (5, 39) = .855, p = .51.

Student cultural literacy (stand. coef. = -.066, t = -.389, p = .69), family structure (stand. coef. = -.105, t = -.610, p = .54), parental age (stand. coef. = .249, t = 1.576, p = .12), parental educational level (stand. coef. = -.163, t = -.932, p = .35), and student gender (stand. coef. = -.072, t = -.448, p = .65) neither reached nor approached significance in the additive model predicting students' lifelong adaptability ratings of vocational-technical.

In summation, with alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{16}, R_{18}, R_{19}, R_{21}, R_{24}, R_{25}, R_{26}, R_{27}, R_{28}, R_{29}, and R_{30}): art, F (5, 39) = .964, p = .45; computer technology, F (5, 39) = 1.412, p = .24; driver education, F (5, 39) = .342, p = .88; foreign language, F (5, 39) = 1.098, p = .37; industrial technology, F (5, 39) = .993, p = .43; mathematics, F (5, 39) = .247, p = .93; music, F (5, 39) = .672, p = .64; physical education, F (5, 39) = .868, p = .51; science, F (5, 39) = 1.769, p = .14; social studies, F (5, 39) = 1.534, p = .20; and vocational-technical, F (5, 39) = .855, p = .51.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}): business, F (5, 39) = 2.433, p = .05; English, F (5, 39) = 2.676, p = .03; health, F (5, 39) = 2.457, p = .04; and home economics, F (5, 39) = 2.728, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 3, all four significant multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}) were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Otherwise, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender did not approach significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

Regarding specific predictor variables, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, four predictor variables (student gender, family structure, parental age, and parental educational level) made significant contributions in the attempted prediction of several general school subjects. To begin, student gender was a significant positive contributor in five additive models attempting to predict students' lifelong adaptability ratings of business (stand. coef. = .410, t = 2.784, p = .00), English (stand. coef. = .415, t = 2.848, p = .00), health (stand. coef. = .389, t = 2.643, p = .01), home economics (stand. coef. = .350, t = 2.405, p = .02), and social studies (stand. coef. = .316, t = 2.051, p = .04). In other words, the female student assigned a higher lifelong adaptability rating to business, English, health, home economics, and social studies. Next, family structure was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of science (stand. coef. = .353, t = 2.155, p = .03). In other words, the student in a two-parent household assigned a higher lifelong adaptability rating to science. Furthermore, parental age was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of home economics (stand. coef. = .338, t = 2.366, p = .02). In other words, the student with older parents assigned a higher lifelong adaptability rating to home economics. Finally, parental educational level was a significant negative contributor in one additive model attempting to predict students' lifelong adaptability ratings of art (stand. coef. = -.339, t = -1.949, p = .05). In other words, the student with less highly educated parents assigned a higher lifelong adaptability rating to art.

Moreover, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, one predictor variable (student gender) approached significance as a positive contributor in two additive models attempting to predict students' lifelong adaptability ratings of computer technology (stand. coef. = .290, t = 1.868, p = .06) and foreign language (stand. coef. = .293, t = 1.852, p = .07). In other words, the apparent trend was for the female student to assign a higher lifelong adaptability rating to computer technology and to foreign language.

General Hypothesis 4 (H_{G4})

Descriptive statistics for General Hypothesis 4 are displayed in Table 11. Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data. Necessary demographic data (family structure, parental age, and parental educational level) supplied by parents in the Lifelong Adaptability Survey (Parent) were available for 45 of those 68 students. All of those 45 students had student gender data available. All of those 45 students provided lifelong adaptability ratings for all 15 general school subjects in the Lifelong Adaptability Survey (Student). Accordingly, General Hypothesis 4's multiple regression equations were conducted on an N of 45 with complete student cultural literacy data, complete student gender data, complete parent-supplied demographic data, and lifelong adaptability ratings of all 15 general school subjects.

Student cultural literacy scores were reported as composite raw scores with a possible range of 0 through 115. In General Hypothesis 4, the actual range of student cultural literacy scores was 33 through 104 (N = 45, M = 75.29, SD = 15.82).

Students' lifelong adaptability ratings of 15 general school subjects are also

Table 11

General Hypothesis 4 descriptive statistics

Item	*N*	Range	*M*	*SD*
Test				
Cultural Literacy Test	45	33-104	75.29	15.82
Rating				
Art	45	1-100	53.56	28.11
Business	45	40-100	74.33	16.56
Computer Technology	45	1-100	82.33	19.55
Driver Education	45	10-100	59.18	24.73
English	45	31-100	79.02	19.39
Foreign Language	45	1-100	55.93	28.22
Health	45	0-100	72.73	23.32
Home Economics	45	8-100	63.91	26.28
Industrial Technology	45	5-100	55.24	24.77
Mathematics	45	7-100	71.76	25.33
Music	45	0-100	45.89	32.26
Physical Education	45	0-100	45.22	31.60
Science	45	10-100	64.76	25.06
Social Studies	45	10-100	68.07	21.73
Vocational-Technical	45	0-100	60.04	25.90

statistically described in Table 11. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Student) were permitted a possible range of 0 through 100 on a respondent analogue scale.

Lifelong Adaptability Survey (Student) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations for 15 general school subjects: art (*N* = 45, range = 1-100, *M* = 53.56, *SD* = 28.11); business (*N* = 45, range = 40-100, *M* = 74.33, *SD* = 16.56); computer technology (*N* = 45, range = 1-100, *M* = 82.33, *SD* = 19.55); driver education (*N* = 45, range = 10-100, *M* = 59.18, *SD* = 24.73); English (*N* = 45, range = 31-100, *M* = 79.02, *SD* = 19.39); foreign language (*N* = 45, range = 1-100, *M* = 55.93, *SD* = 28.22); health (*N* = 45, range = 0-100, *M* = 72.73, *SD* = 23.32); home economics (*N* = 45, range = 8-100, *M* = 63.91, *SD* = 26.28); industrial technology (*N* = 45, range = 5-100, *M* = 55.24, *SD* = 24.77); mathematics (*N* = 45, range = 7-100, *M* = 71.76, *SD* = 25.33); music (*N* = 45, range = 0-100, *M* = 45.89, *SD* = 32.26); physical education (*N* = 45, range = 0-100, *M* = 45.22, *SD* = 31.60); science (*N* = 45, range = 10-100, *M* = 64.76, *SD* = 25.06); social studies (*N* = 45, range = 10-100, *M* = 68.07, *SD* = 21.73); and vocational-technical (*N* = 45, range = 0-100, *M* = 60.04, *SD* = 25.90).

Student demography and its numerical coding are presented in Table 12. All of the tabulated codings were statistical codings, not survey codings, for statistical analyses. Ultimately, the Lifelong Adaptability Survey (Parent) family structure category “Female Only” was renamed “Single Parent,” and the Lifelong Adaptability Survey (Parent) family structure category “Both Female and Male” was renamed “Two Parents.” These renamings are reflected in Table 12 and in any applicable tables thereafter. Additionally, parental age and parental educational level were household averages, which meant that to possess, for example, a parental educational level of “Earned Doctorate”(8.0) both of a student’s parents in a two-parent household must have held earned doctorates or one parent in a single-parent household must have held an

Table 12

General Hypothesis 4 demography numerical coding

Description with Statistical Coding	*N*	Range	*M*	*SD*
Family Structure[a]	45	0-1	.84	.37
Single Parent				
(1, otherwise 0)	7 (16%)			
Two Parents				
(1, otherwise 0)	38 (84%)			
Parental Age[b]	45	2-4	3.12	.49
30-39 Years				
(2.0)	3 (7%)			
(2.5)	2 (4%)			
40-49 Years				
(3.0)	27 (60%)			
(3.5)	7 (16%)			
50-59 Years				
(4.0)	6 (13%)			
Parental Educational Level[c]	45	2-7	3.97	1.64
High School Diploma				
(2.0)	13 (29%)			
(2.5)	3 (7%)			
Adult Vocational Degree				
(3.0)	2 (4%)			

Table 12 (continued)

General Hypothesis 4 demography numerical coding

Description with Statistical Coding	*N*	Range	*M*	*SD*
(3.5)	2 (4%)			
Associate's Degree				
(4.0)	3 (7%)			
(4.5)	4 (9%)			
Bachelor's Degree				
(5.0)	5 (11%)			
(5.5)	5 (11%)			
Master's Degree				
(6.0)	6 (13%)			
(6.5)	1 (2%)			
Law Degree				
(7.0)	1 (2%)			
Student Gender[d]	45	0-1	.58	.50
Female (1, otherwise 0)	26 (58%)			
Male (1, otherwise 0)	19 (42%)			

[a]Family structure was statistically treated as a categorical variable. In each simple or multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[b]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by

Table 12 (continued)

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parents of students with other necessary data for this study's general hypotheses.

[c]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Percentages for this variable's household averages sum to only 99% due to rounding error.

[d]Student gender was statistically treated as a categorical variable. In each simple or multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

earned doctorate for the household average parental educational level to be "Earned Doctorate" (8.0). Furthermore, a two-parent household parental educational level may have been the uneven average of two different levels, for example, "Master's Degree" (6.0) and "Law Degree" (7.0), thereby resulting in a fractional household average parental educational level, for example, 6.5.

Family structure (N = 45, range = 0-1, M = .84, SD = .37) consisted of 7 (16%) single-parent households and 38 (84%) two-parent households. Although, ideally, an equal percentage of each family structure would have been preferred in this volunteer sample, these percentages were roughly reflective of this study's population consisting of 24% single-parent households and 76% two-parent households.

Parental age (N = 45, range = 2-4, M = 3.12, SD = .49) consisted of 5 (11%) households with an average parental age of 30 through 39 years, 34 (76%) households with an average parental age of 40 through 49 years, and 6 (13%) households with an average parental age of 50 through 59 years. Although, ideally, an equal percentage of each average parental age would have been preferred in this volunteer sample, these percentages were considered reflective of this study's population of parents of high school seniors.

Parental educational level (*N* = 45, range = 2-7, *M* = 3.97, *SD* = 1.64) consisted of 16 (36%) households with an average parental educational level of a high school diploma or its equivalent, 4 (8%) households with an average parental educational level of an adult vocational school degree after a high school diploma, 7 (16%) households with an average parental educational level of a college or university associate's degree, 10 (22%) households with an average parental educational level of a bachelor's degree, 7 (15%) households with an average parental educational level of a master's degree, and 1 (2%) household with an average parental educational level of a law degree. Although, ideally, an equal percentage of each average parental educational level would have been preferred in this volunteer sample, these percentages were considered reflective of this study's population.

Student gender (*N* = 45, range = 0-1, *M* = .58, *SD* = .50) consisted of 26 (58%) females and 19 (42%) males. Although, ideally, an equal percentage of each student gender would have been preferred in this volunteer sample, these percentages were roughly reflective of equality.

Descriptive statistics for General Hypothesis 4B's two-way interaction variables are displayed in Table 13. Each two-way interaction variable was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender). Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category

Table 13

General Hypothesis 4B two-way interactions descriptive statistics

Interaction[a]	*N*	Range	*M*	*SD*
Cult. Lit. x Family Struct.[b]				
Cult. Lit. x Single Parent	45	0-104	10.09	25.05
Cult. Lit. x Two Parents	45	0-96	65.20	31.11
Cult. Lit. x Parental Age[c]	45	108-384	236.27	66.60
Cult. Lit. x Par. Educ. Lev.[d]	45	66-574	307.86	155.09
Cult. Lit. x Student Gender[e]				
Cult. Lit. x Fem. Student	45	0-96	41.38	37.82
Cult. Lit. x Male Student	45	0-104	33.91	41.11
Family Struct. x Parental Age				
Single Parent x Parental Age	45	0-4	.44	1.08
Two Parents x Parental Age	45	0-4	2.68	1.23
Family Struct. x Par. Educ. Lev.				
Single Parent x Par. Educ. Lev.	45	0-5	.38	.98
Two Parents x Par. Educ. Lev.	45	0-7	3.59	2.12
Family Struct. x Student Gender				
Single Parent x Fem. Student	45	0-1	.11	.32
Single Parent x Male Student	45	0-1	.04	.21
Two Parents x Fem. Student	45	0-1	.47	.51
Two Parents x Male Student	45	0-1	.38	.49
Parental Age x Par. Educ. Lev.	45	4-21	12.46	5.37

Table 13 (continued)

General Hypothesis 4B two-way interactions descriptive statistics

Interaction[a]	*N*	Range	*M*	*SD*
Parental Age x Student Gender				
Parental Age x Fem. Student	45	0-4	1.81	1.62
Parental Age x Male Student	45	0-4	1.31	1.58
Par. Educ. Lev. x Student Gender				
Par. Educ. Lev. x Fem. Student	45	0-6.5	2.11	2.21
Par. Educ. Lev. x Male Student	45	0-7	1.86	2.41

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[c]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5*.

[d]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

[e]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector

Table 13 (continued)

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employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed. Likewise, student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

Moreover, parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5*. Likewise, parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

General Hypothesis 4B employed the following interaction variables or vectors: cultural literacy x single parent (N = 45, range = 0-104, M = 10.09, SD = 25.05); cultural literacy x two parents (N = 45, range = 0-96, M = 65.20, SD = 31.11);

cultural literacy x parental age (N = 45, range = 108-384, M = 236.27, SD = 66.60); cultural literacy x parental educational level (N = 45, range = 66-574, M = 307.86, SD = 155.09); cultural literacy x female student (N = 45, range = 0-96, M = 41.38, SD = 37.82); cultural literacy x male student (N = 45, range = 0-104, M = 33.91, SD = 41.11); single parent x parental age (N = 45, range = 0-4, M = .44, SD = 1.08); two parents x parental age (N = 45, range = 0-4, M = 2.68, SD = 1.23); single parent x parental educational level (N = 45, range = 0-5, M = .38, SD = .98); two parents x parental educational level (N = 45, range = 0-7, M = 3.59, SD = 2.12); single parent x female student (N = 45, range = 0-1, M = .11, SD = .32); single parent x male student (N = 45, range = 0-1, M = .04, SD = .21); two parents x female student (N = 45, range = 0-1, M = .47, SD = .51); two parents x male student (N = 45, range = 0-1, M = .38, SD = .49); parental age x parental educational level (N = 45, range = 4-21, M = 12.46, SD = 5.37); parental age x female student (N = 45, range = 0-4, M = 1.81, SD = 1.62); parental age x male student (N = 45, range = 0-4, M = 1.31, SD = 1.58); parental educational level x female student (N = 45, range = 0-6.5, M = 2.11, SD = 2.21); and parental educational level x male student (N = 45, range = 0-7, M = 1.86, SD = 2.41).

In General Hypothesis 4, the criterion variable was statistically treated as a continuous variable. All predictor variables were statistically treated as continuous variables, except family structure and student gender, which were statistically treated as categorical variables (K. A. McNeil et al., 1975). One exception occurred, only for purposes of interpretation, in the follow-up graphing of initially statistically significant R_{139} testing for two-way interaction of student cultural literacy and parental educational level in predicting students' lifelong adaptability ratings of driver education. To accommodate the manual graphing of interaction between two continuous variables, student cultural literacy and parental educational level, student cultural literacy was converted to a categorical variable consisting of cultural literacy low, cultural literacy medium, and cultural literacy high.

General Hypothesis 4A (H_{G4A}).

H_{G4A}: There are significant main effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific regressions (R_{31} - R_{105}).

R_{31} - R_{45}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{31} . . . art.

R_{32} . . . business.

R_{33} . . . computer technology.

R_{34} . . . driver education.

R_{35} . . . English.

R_{36} . . . foreign language.

R_{37} . . . health.

R_{38} . . . home economics.

R_{39} . . . industrial technology.

R_{40} . . . mathematics.

R_{41} . . . music.

R_{42} . . . physical education.

R_{43} . . . science.

R_{44} . . . social studies.

R_{45} . . . vocational-technical.

Fifteen simple regression equations revealed no significant findings in R_{31} through R_{45}.

Inferential statistics for General Hypothesis 4A's R_{31} through R_{45} are displayed in Table 14. For each of the 15 general school subjects, a simple regression equation (R_{31} - R_{45}) employed student cultural literacy as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{31} through R_{105} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4A's results. The coefficient, standard error, standard coefficient, *t*, and *p* for the cultural literacy predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place. Plots for General Hypothesis 4A's simple regressions R_{31} through R_{45} are provided respectively in Figure 28 through Figure 42.

Table 14

General Hypothesis 4A simple regression analyses for main effect of student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{31}: Art										
Cult. Lit.	.210	.269	.118	.780	.43					NS
Regression						.014	1/43	.608	.43	NS
R_{32}: Business										
Cult. Lit.	-.143	.158	-.137	-.904	.37					NS
Regression						.019	1/43	.817	.37	NS
R_{33}: Computer Technology										
Cult. Lit.	.143	.187	.116	.763	.44					NS
Regression						.013	1/43	.582	.44	NS
R_{34}: Driver Education										
Cult. Lit.	-.034	.238	-.022	-.142	.88					NS
Regression						.000	1/43	.020	.88	NS

Table 14 (continued)

General Hypothesis 4A simple regression analyses for main effect of student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{35}: English										
Cult. Lit.	-.234	.183	-.191	-1.276	.20					NS
Regression						.036	1/43	1.627	.20	NS
R_{36}: Foreign Language										
Cult. Lit.	-.081	.272	-.045	-.297	.76					NS
Regression						.002	1/43	.088	.76	NS
R_{37}: Health										
Cult. Lit.	-.370	.218	-.251	-1.698	.09					NS
Regression						.063	1/43	2.884	.09	NS
R_{38}: Home Economics										
Cult. Lit.	-.242	.251	-.146	-.966	.33					NS
Regression						.021	1/43	.933	.33	NS

Table 14 (continued)

General Hypothesis 4A simple regression analyses for main effect of student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{39}: Industrial Technology										
Cult. Lit.	-.096	.238	-.061	-.401	.69					NS
Regression						.004	1/43	.161	.69	NS
R_{40}: Mathematics										
Cult. Lit.	-.150	.243	-.093	-.616	.54					NS
Regression						.009	1/43	.379	.54	NS
R_{41}: Music										
Cult. Lit.	.350	.306	.172	1.142	.25					NS
Regression						.029	1/43	1.304	.25	NS
R_{42}: Physical Education										
Cult. Lit.	-.282	.302	-.141	-.935	.35					NS
Regression						.020	1/43	.874	.35	NS

Table 14 (continued)

General Hypothesis 4A simple regression analyses for main effect of student cultural literacy predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_{43}: Science										
Cult. Lit.	.439	.232	.277	1.889	.06					NS
Regression						.077	1/43	3.570	.06	NS
R_{44}: Social Studies										
Cult. Lit.	.189	.207	.138	.913	.36					NS
Regression						.019	1/43	.833	.36	NS
R_{45}: Vocational-Technical										
Cult. Lit.	-.158	.249	-.097	-.637	.52					NS
Regression						.009	1/43	.406	.52	NS

[a]All *p* values were truncated, not rounded, to the hundredths place.

R_{31}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of art. Student cultural literacy accounted for 1.4% of the criterion variance, $F(1, 43) = .608$, $p = .43$.

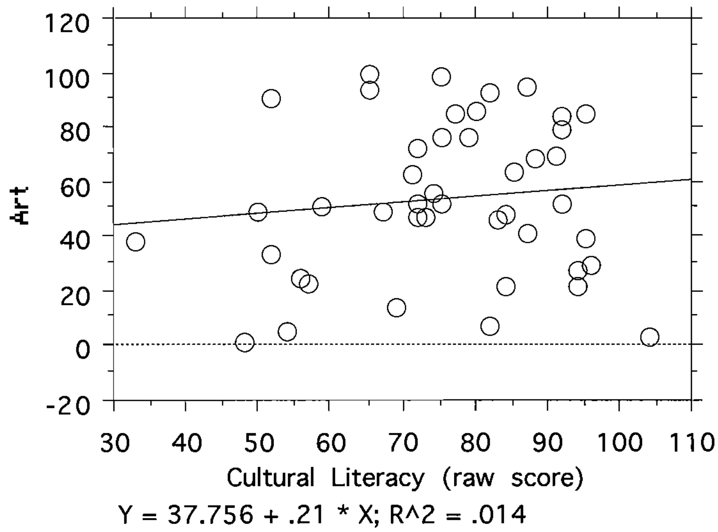


Figure 28. General Hypothesis 4A simple regression plot of cultural literacy predicting art lifelong adaptability ratings (*N* = 45).

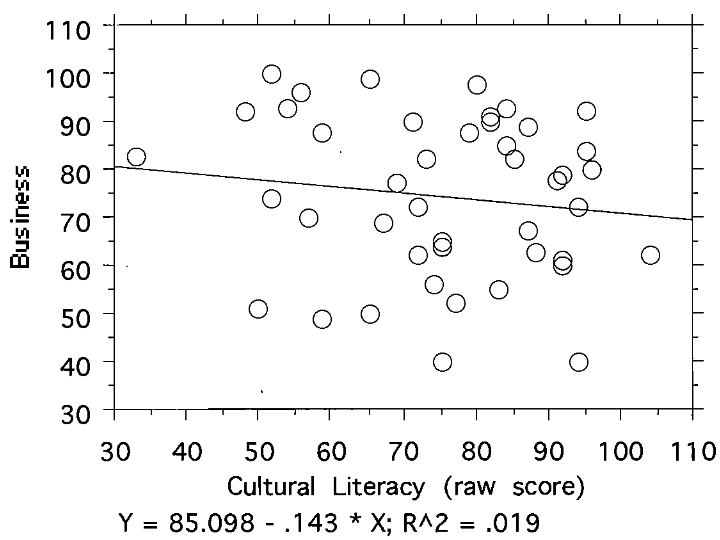
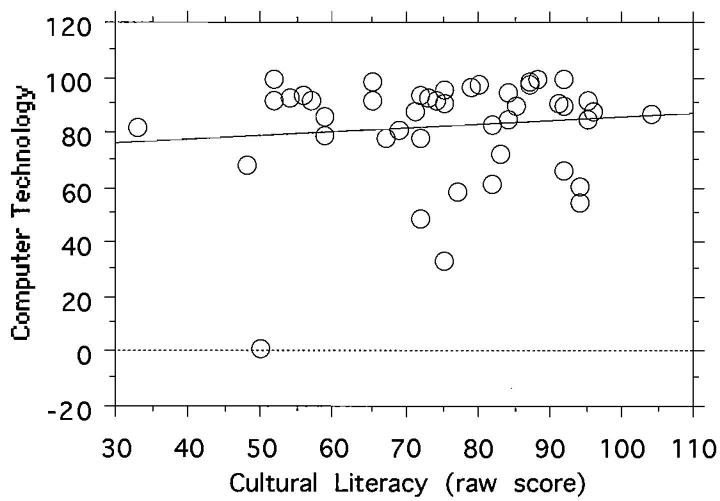
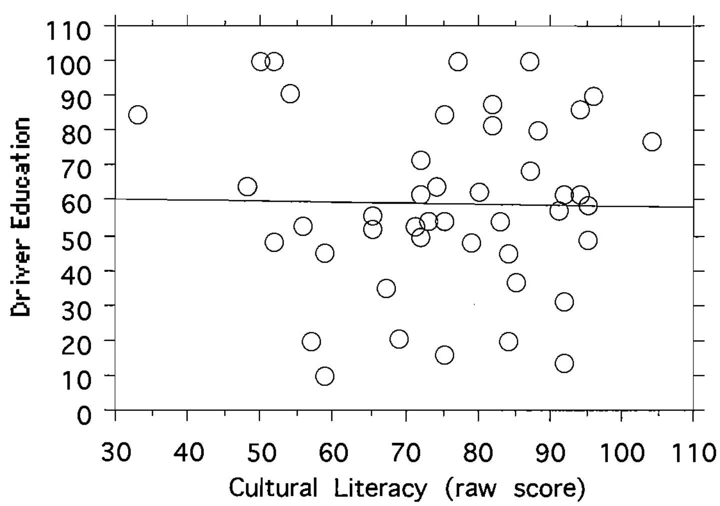


Figure 29. General Hypothesis 4A simple regression plot of cultural literacy predicting business lifelong adaptability ratings (*N* = 45).



Y = 71.587 + .143 * X; R^2 = .013

Figure 30. General Hypothesis 4A simple regression plot of cultural literacy predicting computer technology lifelong adaptability ratings (*N* = 45).



Y = 61.73 - .034 * X; R^2 = 4.702E-4

Figure 31. General Hypothesis 4A simple regression plot of cultural literacy predicting driver education lifelong adaptability ratings (*N* = 45).

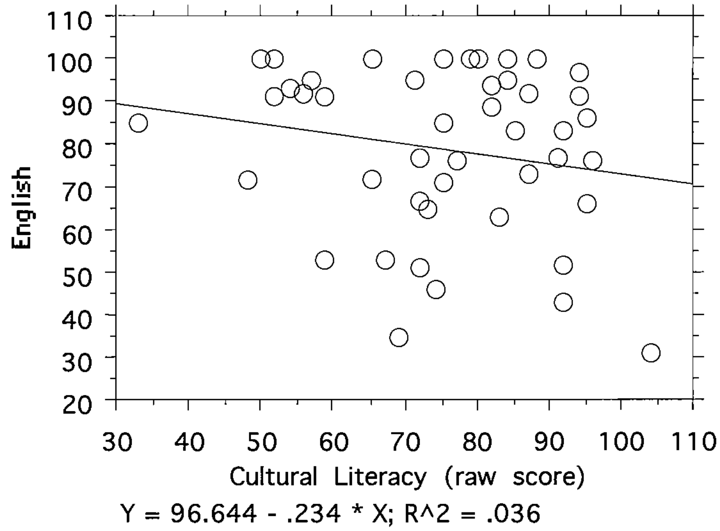


Figure 32. General Hypothesis 4A simple regression plot of cultural literacy predicting English lifelong adaptability ratings (*N* = 45).

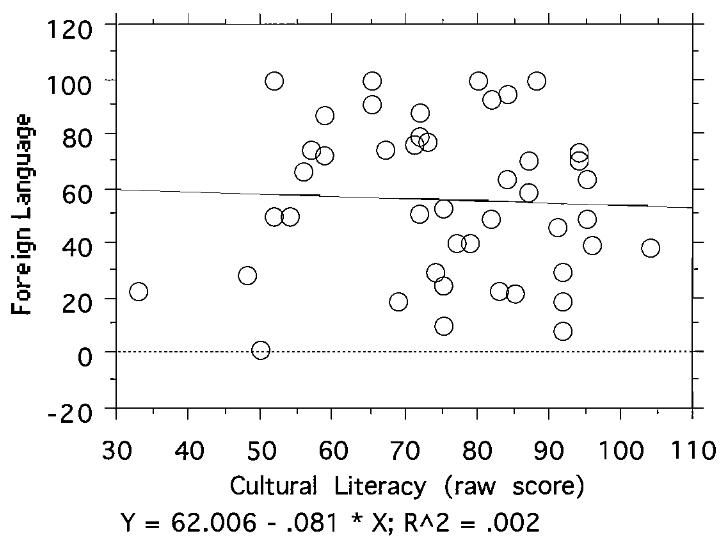


Figure 33. General Hypothesis 4A simple regression plot of cultural literacy predicting foreign language lifelong adaptability ratings (*N* = 45).

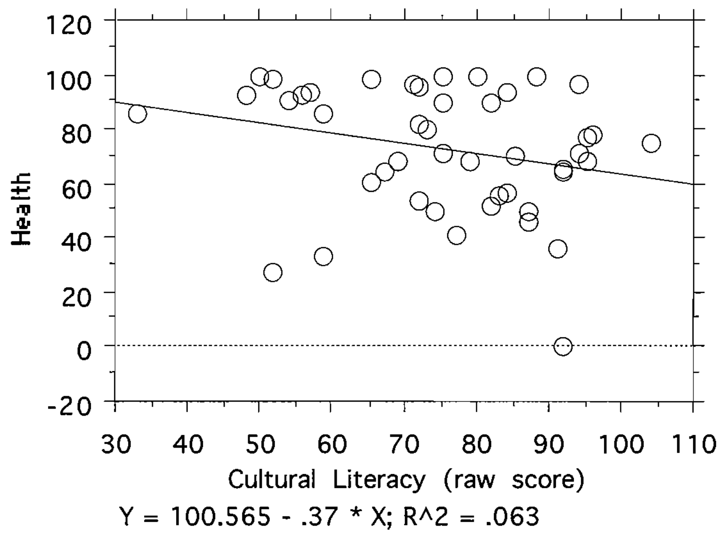


Figure 34. General Hypothesis 4A simple regression plot of cultural literacy predicting health lifelong adaptability ratings (*N* = 45).

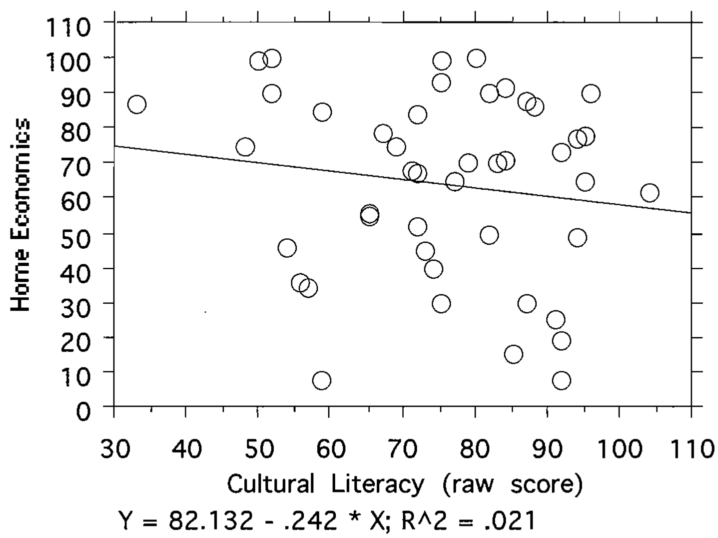


Figure 35. General Hypothesis 4A simple regression plot of cultural literacy predicting home economics lifelong adaptability ratings (*N* = 45).

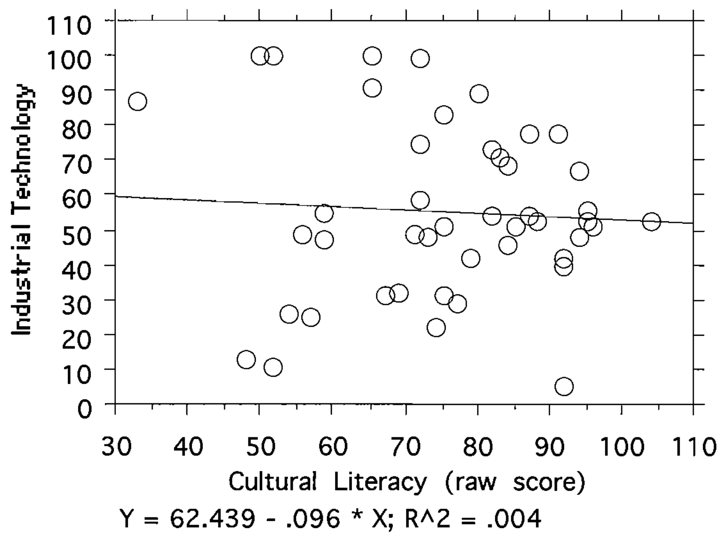


Figure 36. General Hypothesis 4A simple regression plot of cultural literacy predicting industrial technology lifelong adaptability ratings (N = 45).

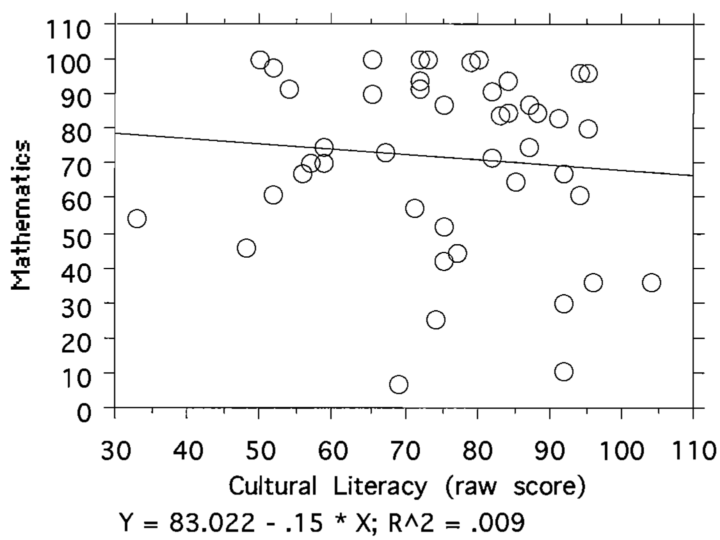


Figure 37. General Hypothesis 4A simple regression plot of cultural literacy predicting mathematics lifelong adaptability ratings (N = 45).

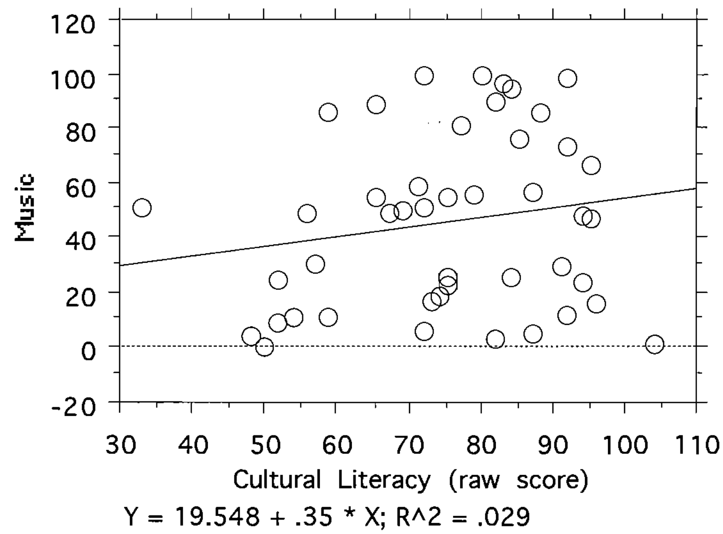


Figure 38. General Hypothesis 4A simple regression plot of cultural literacy predicting music lifelong adaptability ratings (N = 45).

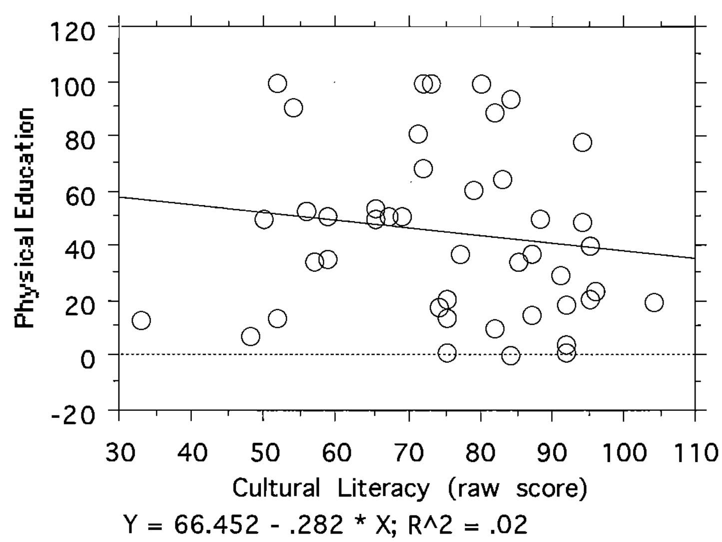


Figure 39. General Hypothesis 4A simple regression plot of cultural literacy predicting physical education lifelong adaptability ratings (N = 45).

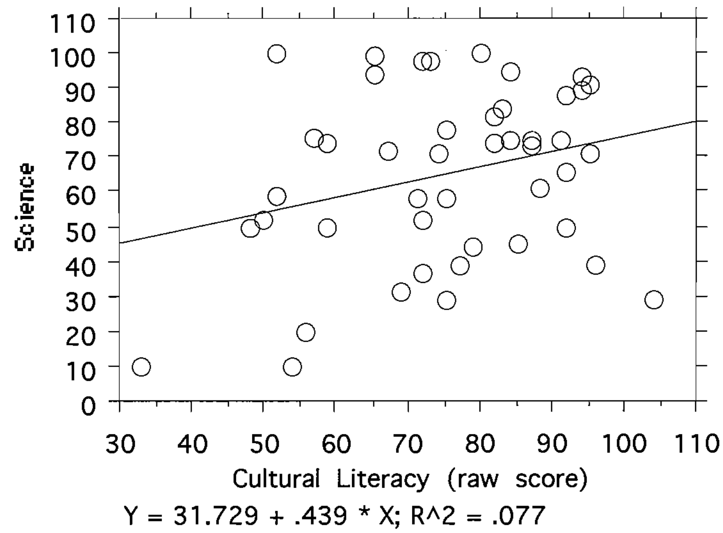


Figure 40. General Hypothesis 4A simple regression plot of cultural literacy predicting science lifelong adaptability ratings (N = 45).

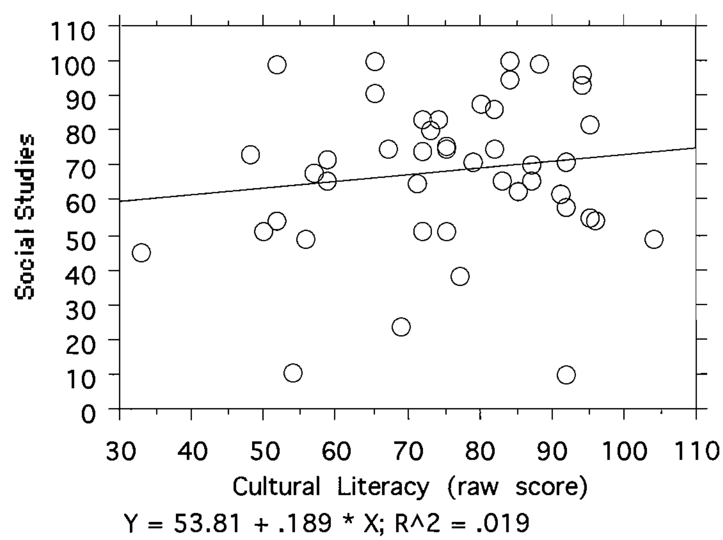


Figure 41. General Hypothesis 4A simple regression plot of cultural literacy predicting social studies lifelong adaptability ratings (N = 45).

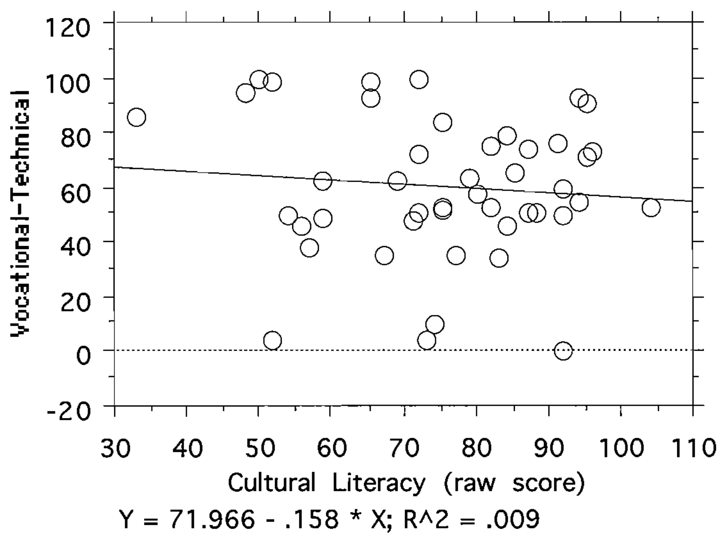


Figure 42. General Hypothesis 4A simple regression plot of cultural literacy predicting vocational-technical lifelong adaptability ratings (N = 45).

R_{32}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of business. Student cultural literacy accounted for 1.9% of the criterion variance, F (1, 43) = .817, p = .37.

R_{33}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Student cultural literacy accounted for 1.3% of the criterion variance, F (1, 43) = .582, p = .44.

R_{34}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Student cultural literacy accounted for 0.0% of the criterion variance, F (1, 43) = .020, p = .88.

R_{35}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of English. Student cultural literacy accounted for 3.6% of the criterion variance, F (1, 43) = 1.627, p = .20.

R_{36}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Student cultural literacy accounted for 0.2% of the criterion variance, F (1, 43) = .088, p = .76.

R_{37}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of health. Nonetheless, student cultural literacy approached (p < .10 but > .05) significance and accounted for 6.3% of the criterion variance, F (1, 43) = 2.884, p = .09.

R_{38}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Student cultural literacy accounted for 2.1% of the criterion variance, F (1, 43) = .933, p = .33.

> R_{39}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Student cultural literacy accounted for 0.4% of the criterion variance, F (1, 43) = .161, p = .69.

> R_{40}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Student cultural literacy accounted for 0.9% of the criterion variance, F (1, 43) = .379, p = .54.

> R_{41}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of music. Student cultural literacy accounted for 2.9% of the criterion variance, F (1, 43) = 1.304, p = .25.

> R_{42}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Student cultural literacy accounted for 2.0% of the criterion variance, F (1,

43) = .874, p = .35.

R_{43}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of science. Nonetheless, student cultural literacy approached significance and accounted for 7.7% of the criterion variance, F (1, 43) = 3.570, p = .06.

R_{44}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Student cultural literacy accounted for 1.9% of the criterion variance, F (1, 43) = .833, p = .36.

R_{45}: The main effect of student cultural literacy significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Student cultural literacy accounted for 0.9% of the criterion variance, F (1, 43) = .406, p = .52.

In summation, with alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{31}, R_{32}, R_{33}, R_{34}, R_{35}, R_{36}, R_{37}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, R_{44}, and R_{45}): art, F (1, 43) = .608, p = .43; business, F (1, 43) = .817, p = .37; computer technology, F (1, 43) = .582, *p* = .44; driver education, F (1, 43) = .020, *p* = .88; English, F (1, 43) = 1.627, *p* = .20; foreign language, F (1, 43) = .088, *p* = .76; health, F (1, 43) = 2.884, *p* = .09; home economics, F (1, 43) = .933, *p* = .33; industrial technology, F (1, 43) = .161, *p* = .69; mathematics, F (1, 43) = .379, *p* = .54; music, F (1, 43) = 1.304, *p* = .25; physical education, F (1, 43) = .874, *p* = .35; science, F (1, 43) = 3.570, *p* = .06; social studies, F (1, 43) = .833, *p* = .36; and vocational-technical, F (1, 43) = .406, *p* = .52. Nonetheless, the main effect of student cultural literacy approached significance in the prediction of students' lifelong adaptability ratings of two of the 15 general school subjects: health, F (1, 43) = 2.884, *p* = .09; and science, F (1, 43) = 3.570, *p* = .06. The apparent trend was for the more culturally literate student to assign a lower lifelong adaptability rating to health and a higher lifelong adaptability rating to science.

R_{46} - R_{60}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{46} . . . art.

R_{47} . . . business.

R_{48} . . . computer technology.

R_{49} . . . driver education.

R_{50} . . . English.

R_{51} . . . foreign language.

R_{52} . . . health.

R_{53} . . . home economics.

R_{54} . . . industrial technology.

R_{55} . . . mathematics.

R_{56} . . . music.

R_{57} . . . physical education.

R_{58} . . . science.

R_{59} . . . social studies.

R_{60} . . . vocational-technical.

Fifteen simple regression equations revealed one significant finding (R_{58}) in R_{46} through R_{60}. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{46} through R_{60}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Inferential statistics for General Hypothesis 4A's R_{46} through R_{60} are displayed in Table 15. For each of the 15 general school subjects, a simple regression equation (R_{46} - R_{60}) employed family structure as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{31} through R_{105} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4A's results. The

Table 15

General Hypothesis 4A simple regression analyses for main effect of family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{46}: Art										
Family[b]	9.624	11.602	.125	.829	.41					NS
Regression						.016	1/43	.688	.41	NS
R_{47}: Business										
Family[b]	-6.034	6.829	-.134	-.884	.38					NS
Regression						.018	1/43	.781	.38	NS
R_{48}: Computer Technology										
Family[b]	-7.218	8.058	-.135	-.896	.37					NS
Regression						.018	1/43	.802	.37	NS
R_{49}: Driver Education										
Family[b]	-7.910	10.219	-.117	-.774	.44					NS
Regression						.014	1/43	.599	.44	NS

Table 15 (continued)

General Hypothesis 4A simple regression analyses for main effect of family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{50}: English										
Family[b]	8.316	7.967	.157	1.044	.30					NS
Regression						.025	1/43	1.089	.30	NS
R_{51}: Foreign Language										
Family[b]	-5.323	11.714	-.069	-.454	.65					NS
Regression						.005	1/43	.207	.65	NS
R_{52}: Health										
Family[b]	-12.665	9.510	-.199	-1.332	.18					NS
Regression						.040	1/43	1.774	.18	NS
R_{53}: Home Economics										
Family[b]	-5.688	10.897	-.079	-.522	.60					NS
Regression						.006	1/43	.272	.60	NS

Table 15 (continued)

General Hypothesis 4A simple regression analyses for main effect of family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{54}: Industrial Technology										
Family[b]	-10.876	10.170	-.161	-1.069	.29					NS
Regression						.026	1/43	1.144	.29	NS
R_{55}: Mathematics										
Family[b]	-4.688	10.515	-.068	-.446	.65					NS
Regression						.005	1/43	.199	.65	NS
R_{56}: Music										
Family[b]	7.312	13.374	.083	.547	.58					NS
Regression						.007	1/43	.299	.58	NS
R_{57}: Physical Education										
Family[b]	-8.026	13.089	-.093	-.613	.54					NS
Regression						.009	1/43	.376	.54	NS

Table 15 (continued)

General Hypothesis 4A simple regression analyses for main effect of family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	*p*[a]	R^2	df_n/df_d	*F*	*p*[a]	Sig.
R_{58}: Science										
Family[b]	24.748	9.721	.362	2.546	.01					S
Regression						.131	1/43	6.482	.01	S[c]
R_{59}: Social Studies										
Family[b]	12.429	8.839	.210	1.406	.16					NS
Regression						.044	1/43	1.977	.16	NS
R_{60}: Vocational-Technical										
Family[b]	-8.744	10.694	-.124	-.818	.41					NS
Regression						.015	1/43	.669	.41	NS

[a]All *p* values were truncated, not rounded, to the hundredths place.

[b]Family structure was statistically treated as a categorical variable. In each simple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure. Dummy-variable coding was employed.

[c]Due to the presence of 15 multiple tests in H_{G4A}'s R_{46} through R_{60}, the significant *p* value in R_{58} (.01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted *p* value in R_{58} (.15).

coefficient, standard error, standard coefficient, *t*, and *p* for the family structure predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place. Plots for General Hypothesis 4A's simple regressions R_{46} through R_{60} are provided respectively in Figure 43 through Figure 57.

R_{46}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of art. Family structure accounted for 1.6% of the criterion variance, F (1, 43) = .688, p = .41.

R_{47}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of business. Family structure accounted for 1.8% of the criterion variance, F (1, 43) = .781, p = .38.

R_{48}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Family structure accounted for 1.8% of the criterion variance, F (1, 43) = .802, p = .37.

R_{49}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of driver

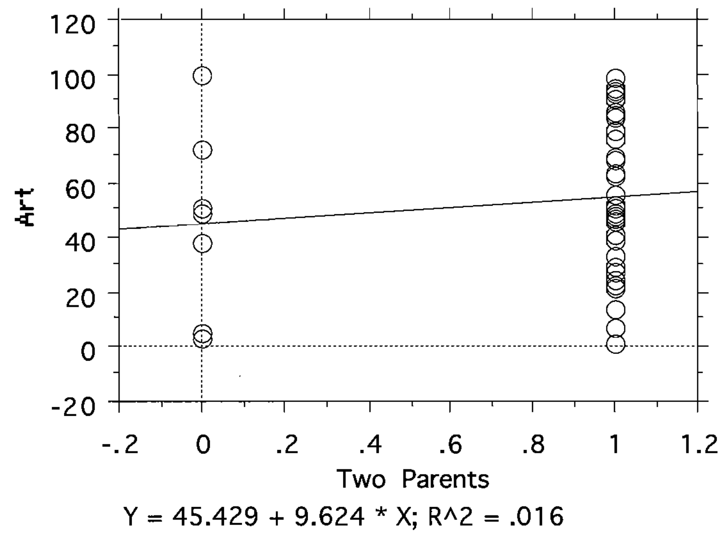


Figure 43. General Hypothesis 4A simple regression plot of family structure predicting art lifelong adaptability ratings (N = 45).

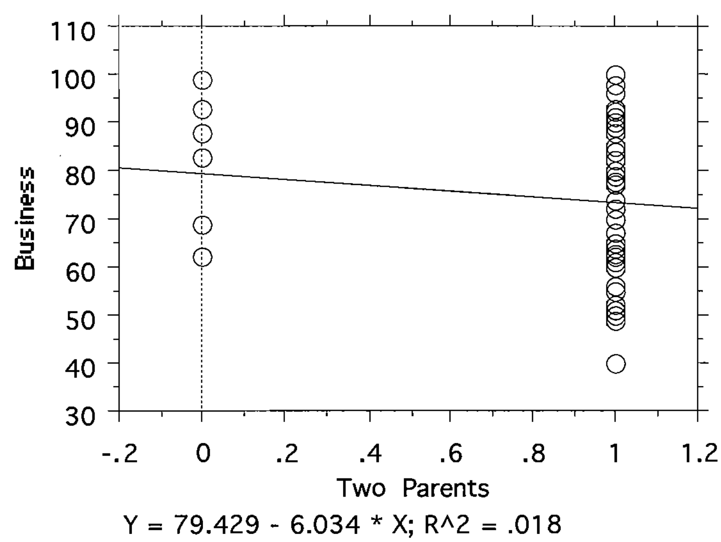


Figure 44. General Hypothesis 4A simple regression plot of family structure predicting business lifelong adaptability ratings (N = 45).

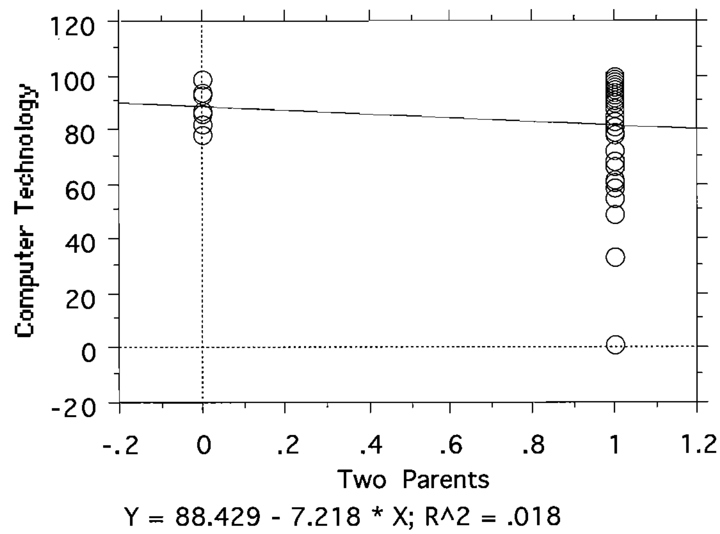


Figure 45. General Hypothesis 4A simple regression plot of family structure predicting computer technology lifelong adaptability ratings (N = 45).

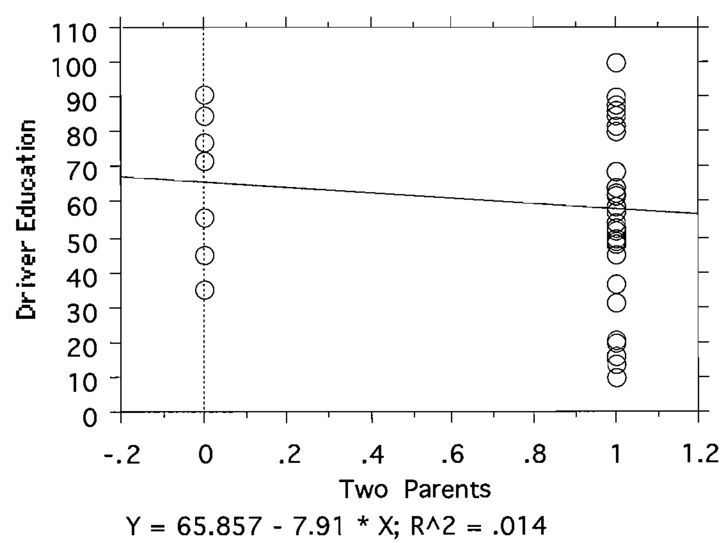


Figure 46. General Hypothesis 4A simple regression plot of family structure predicting driver education lifelong adaptability ratings (N = 45).

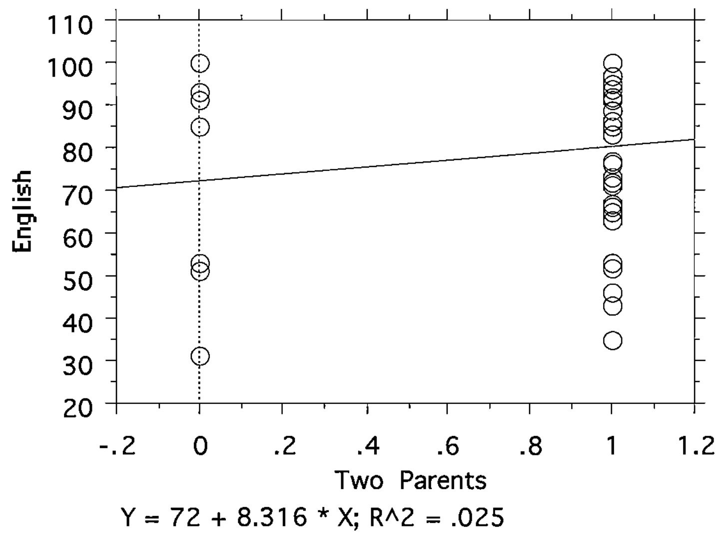


Figure 47. General Hypothesis 4A simple regression plot of family structure predicting English lifelong adaptability ratings ($N = 45$).

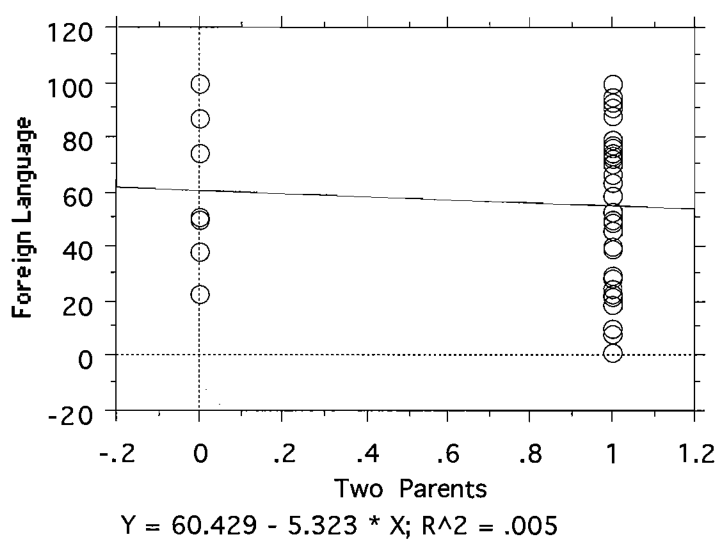


Figure 48. General Hypothesis 4A simple regression plot of family structure predicting foreign language lifelong adaptability ratings ($N = 45$).

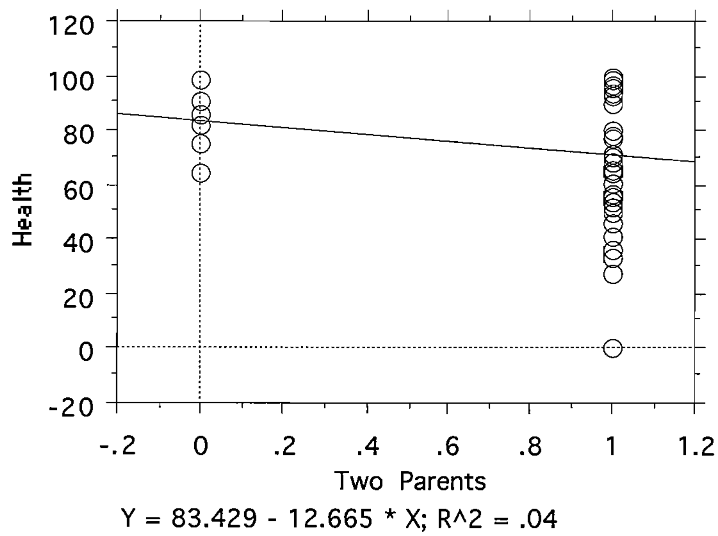


Figure 49. General Hypothesis 4A simple regression plot of family structure predicting health lifelong adaptability ratings (*N* = 45).

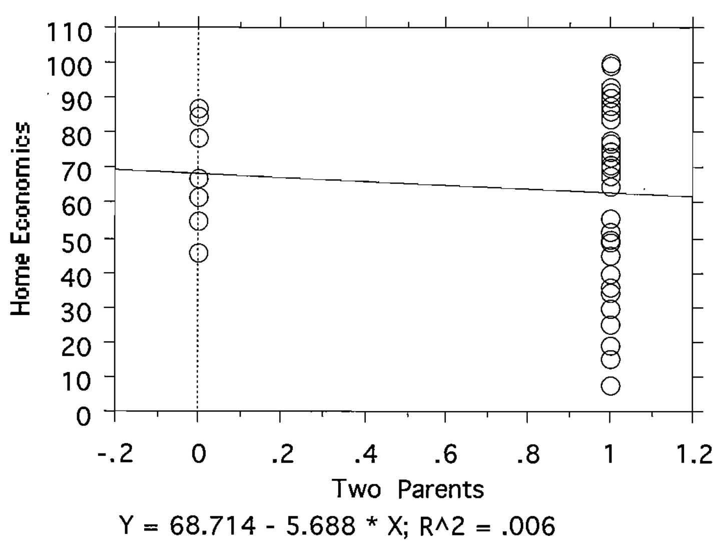


Figure 50. General Hypothesis 4A simple regression plot of family structure predicting home economics lifelong adaptability ratings (*N* = 45).

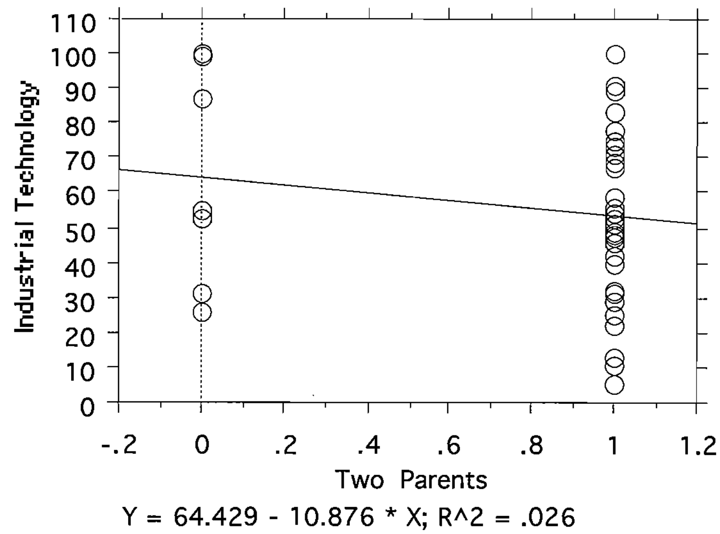


Figure 51. General Hypothesis 4A simple regression plot of family structure predicting industrial technology lifelong adaptability ratings (*N* = 45).

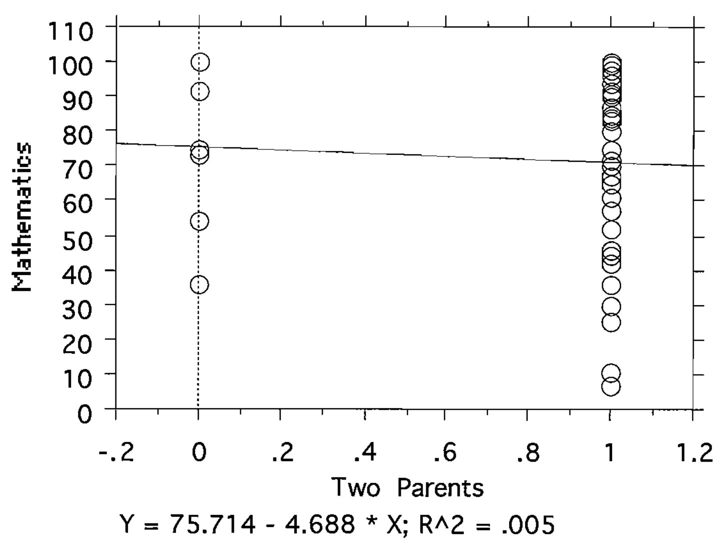
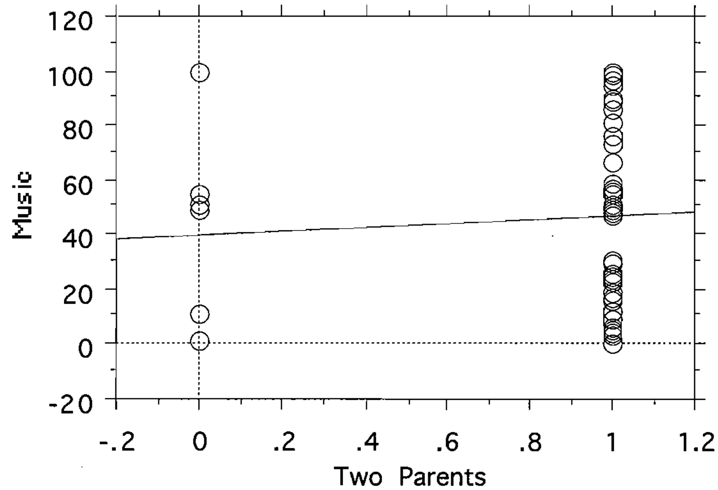
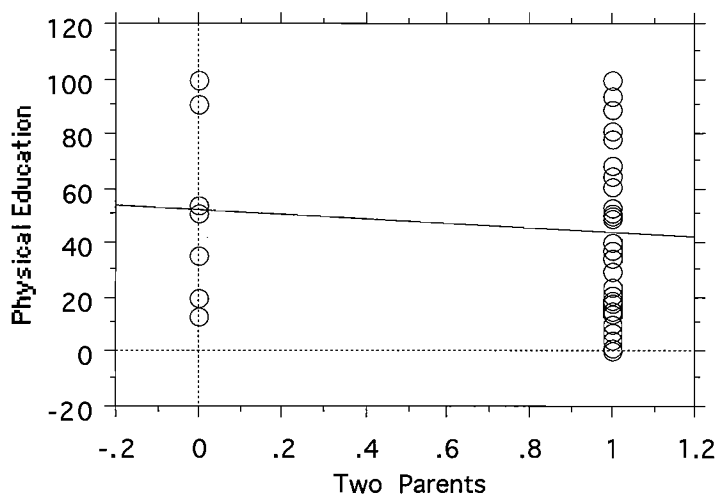


Figure 52. General Hypothesis 4A simple regression plot of family structure predicting mathematics lifelong adaptability ratings (*N* = 45).



Y = 39.714 + 7.312 * X; R^2 = .007

Figure 53. General Hypothesis 4A simple regression plot of family structure predicting music lifelong adaptability ratings (*N* = 45).



Y = 52 - 8.026 * X; R^2 = .009

Figure 54. General Hypothesis 4A simple regression plot of family structure predicting physical education lifelong adaptability ratings (*N* = 45).

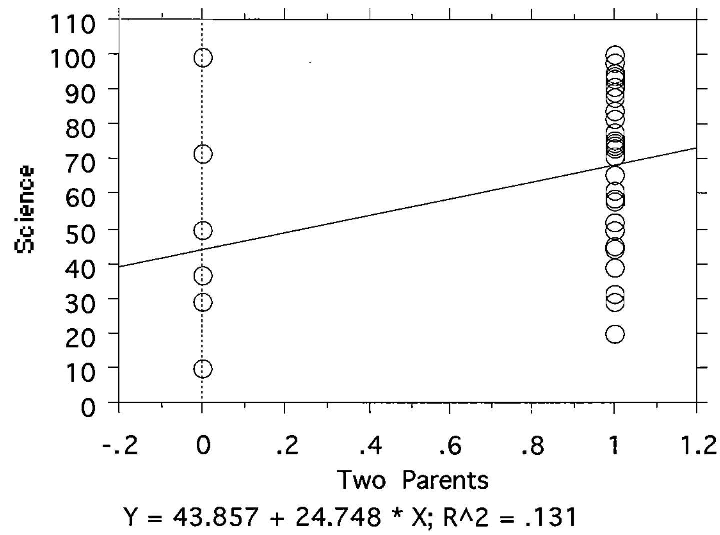


Figure 55. General Hypothesis 4A simple regression plot of family structure predicting science lifelong adaptability ratings (*N* = 45).

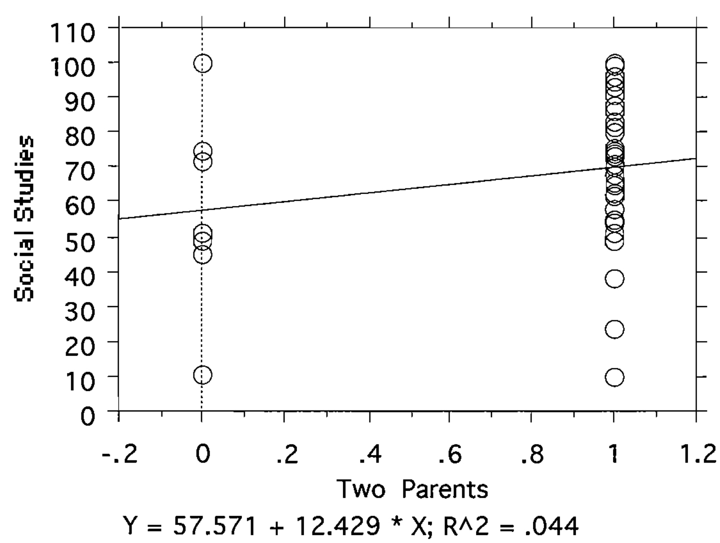


Figure 56. General Hypothesis 4A simple regression plot of family structure predicting social studies lifelong adaptability ratings (*N* = 45).

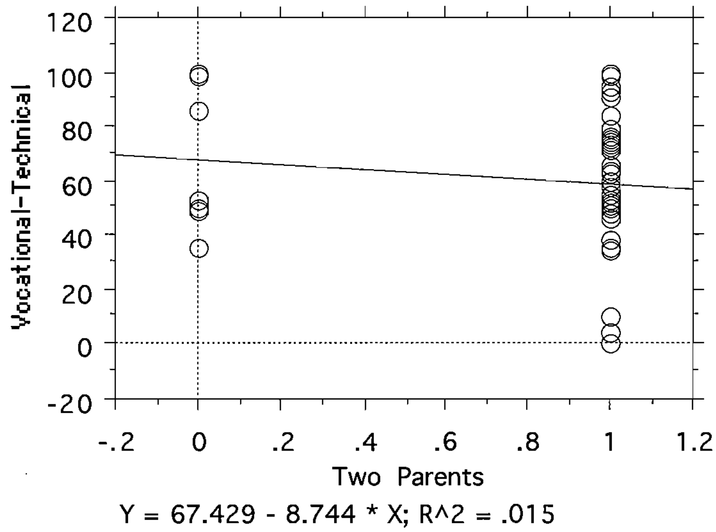


Figure 57. General Hypothesis 4A simple regression plot of family structure predicting vocational-technical lifelong adaptability ratings (N = 45).

education. Family structure accounted for 1.4% of the criterion variance, F (1, 43) = .599, p = .44.

> R_{50}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of English. Family structure accounted for 2.5% of the criterion variance, F (1, 43) = 1.089, p = .30.

> R_{51}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Family structure accounted for 0.5% of the criterion variance, F (1, 43) = .207, p = .65.

R_{52}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of health. Family structure accounted for 4.0% of the criterion variance, F (1, 43) = 1.774, p = .18.

R_{53}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Family structure accounted for 0.6% of the criterion variance, F (1, 43) = .272, p = .60.

R_{54}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Family structure accounted for 2.6% of the criterion variance, F (1, 43) = 1.144, p = .29.

R_{55}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Family structure accounted for 0.5% of the criterion variance, F (1, 43) = .199, p = .65.

R_{56}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of music. Family structure accounted for 0.7% of the criterion variance, F (1, 43) = .299, p = .58.

R_{57}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Family structure accounted for 0.9% of the criterion variance, F (1, 43) = .376, p = .54.

R_{58}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of science in that family structure was a significant positive predictor of students' lifelong adaptability ratings of science. In other words, the student in a two-parent household assigned a higher lifelong adaptability rating to science. Family structure accounted for 13.1% of the criterion variance, F (1, 43) = 6.482, p = .01. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{46} through R_{60}, R_{58}'s significant p value of .01 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{58}'s adjusted p value nonsignificant at .15.

R_{59}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Family structure accounted for 4.4% of the criterion variance, F (1, 43) = 1.977, $p = .16$.

R_{60}: The main effect of family structure significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Family structure accounted for 1.5% of the criterion variance, F (1, 43) = .669, $p = .41$.

In summation, with alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{46}, R_{47}, R_{48}, R_{49}, R_{50}, R_{51}, R_{52}, R_{53}, R_{54}, R_{55}, R_{56}, R_{57}, R_{59}, and R_{60}): art, F (1, 43) = .688, $p = .41$; business, F (1, 43) = .781, $p = .38$; computer technology, F (1, 43) = .802, $p = .37$; driver education, F (1, 43) = .599, $p = .44$; English, F (1, 43) = 1.089, $p = .30$; foreign language, F (1, 43) = .207, $p = .65$; health, F (1, 43) = 1.774, $p = .18$; home economics, F (1, 43) = .272, $p = .60$; industrial technology, F (1, 43) = 1.144, $p = .29$; mathematics, F (1, 43) = .199, $p = .65$; music, F (1, 43) = .299, $p = .58$; physical education, F (1, 43) = .376, $p = .54$; social studies, F (1, 43) = 1.977, $p = .16$; and vocational-technical, F (1, 43) = .669, $p = .41$.

Conversely, the main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{58}): science, F (1, 43) = 6.482, $p = .01$. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{46} through R_{60}, this one significant simple regression equation (R_{58}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Otherwise, the main effect of family structure did not approach significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

R_{61} - R_{75}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{61} . . . art.

R_{62} . . . business.

R_{63} . . . computer technology.

R_{64} . . . driver education.

R_{65} . . . English.

R_{66} . . . foreign language.

R_{67} . . . health.

R_{68} . . . home economics.

R_{69} . . . industrial technology.

R_{70} . . . mathematics.

R_{71} . . . music.

R_{72} . . . physical education.

R_{73} . . . science.

R_{74} . . . social studies.

R_{75} . . . vocational-technical.

Fifteen simple regression equations revealed one significant finding (R_{68}) in R_{61} through R_{75}. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{61} through R_{75}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Inferential statistics for General Hypothesis 4A's R_{61} through R_{75} are displayed in Table 16. For each of the 15 general school subjects, a simple regression equation (R_{61} - R_{75}) employed parental age as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{31} through R_{105} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4A's results. The coefficient, standard error, standard coefficient, *t*, and *p* for the parental age predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place. Plots for General Hypothesis 4A's simple regressions R_{61} through R_{75} are provided respectively in Figure 58 through Figure 72.

> R_{61}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of art.

Table 16

General Hypothesis 4A simple regression analyses for main effect of parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{61}: Art										
Par. Age[b]	2.784	8.732	.049	.319	.75					NS
Regression						.002	1/43	.102	.75	NS
R_{62}: Business										
Par. Age[b]	-6.744	5.047	-.200	-1.336	.18					NS
Regression						.040	1/43	1.785	.18	NS
R_{63}: Computer Technology										
Par. Age[b]	-7.689	5.965	-.193	-1.289	.20					NS
Regression						.037	1/43	1.661	.20	NS
R_{64}: Driver Education										
Par. Age[b]	5.627	7.644	.112	.736	.46					NS
Regression						.012	1/43	.542	.46	NS

Table 16 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_{65}: English										
Par. Age[b]	3.628	6.005	.092	.604	.54					NS
Regression						.008	1/43	.365	.54	NS
R_{66}: Foreign Language										
Par. Age[b]	-12.066	8.583	-.210	-1.406	.16					NS
Regression						.044	1/43	1.976	.16	NS
R_{67}: Health										
Par. Age[b]	3.684	7.233	.077	.509	.61					NS
Regression						.006	1/43	.259	.61	NS
R_{68}: Home Economics										
Par. Age[b]	16.779	7.761	.313	2.162	.03					S
Regression						.098	1/43	4.674	.03	S[c]

Table 16 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_{69}: Industrial Technology										
Par. Age[b]	9.279	7.572	.184	1.225	.22					NS
Regression						.034	1/43	1.502	.22	NS
R_{70}: Mathematics										
Par. Age[b]	-7.483	7.795	-.145	-.960	.34					NS
Regression						.021	1/43	.922	.34	NS
R_{71}: Music										
Par. Age[b]	1.192	10.031	.018	.119	.90					NS
Regression						.000	1/43	.014	.90	NS
R_{72}: Physical Education										
Par. Age[b]	-17.416	9.461	-.270	-1.841	.07					NS
Regression						.073	1/43	3.388	.07	NS

Table 16 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{73}: Science										
Par. Age[b]	-1.527	7.792	-.030	-.196	.84					NS
Regression						.001	1/43	.038	.84	NS
R_{74}: Social Studies										
Par. Age[b]	5.779	6.700	.130	.863	.39					NS
Regression						.017	1/43	.744	.39	NS
R_{75}: Vocational-Technical										
Par. Age[b]	10.329	7.901	.196	1.307	.19					NS
Regression						.038	1/43	1.709	.19	NS

[a]All p values were truncated, not rounded, to the hundredths place.

[b]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses.

[c]Due to the presence of 15 multiple tests in H_{G4A}'s R_{61} through R_{75}, the significant p value in R_{68} (.03) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted p value in R_{68} (.45).

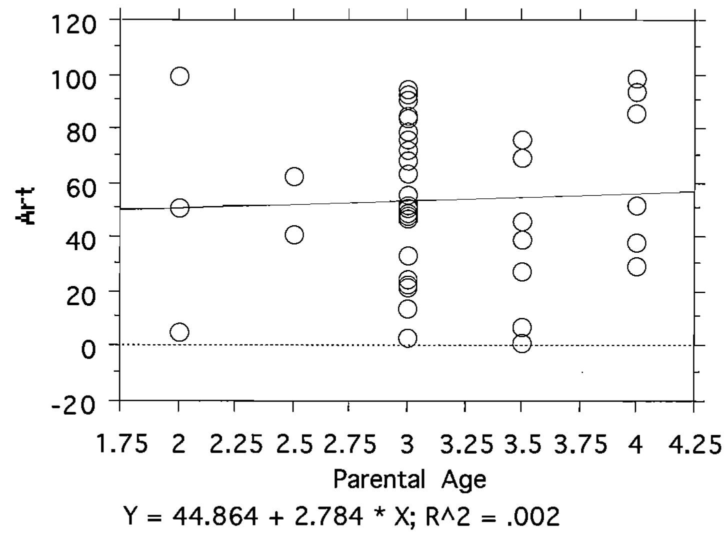


Figure 58. General Hypothesis 4A simple regression plot of parental age predicting art lifelong adaptability ratings (N = 45).

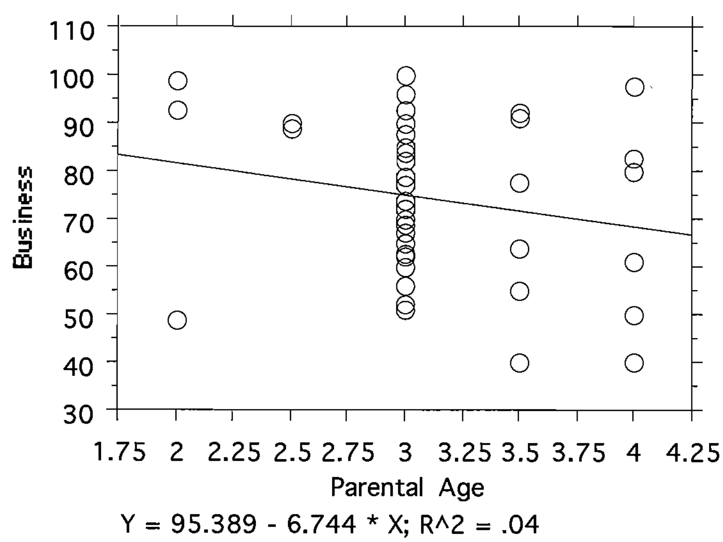


Figure 59. General Hypothesis 4A simple regression plot of parental age predicting business lifelong adaptability ratings (N = 45).

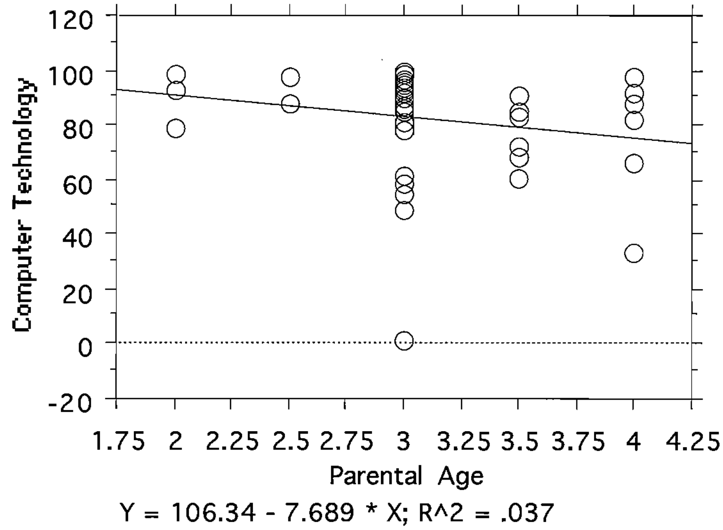


Figure 60. General Hypothesis 4A simple regression plot of parental age predicting computer technology lifelong adaptability ratings (*N* = 45).

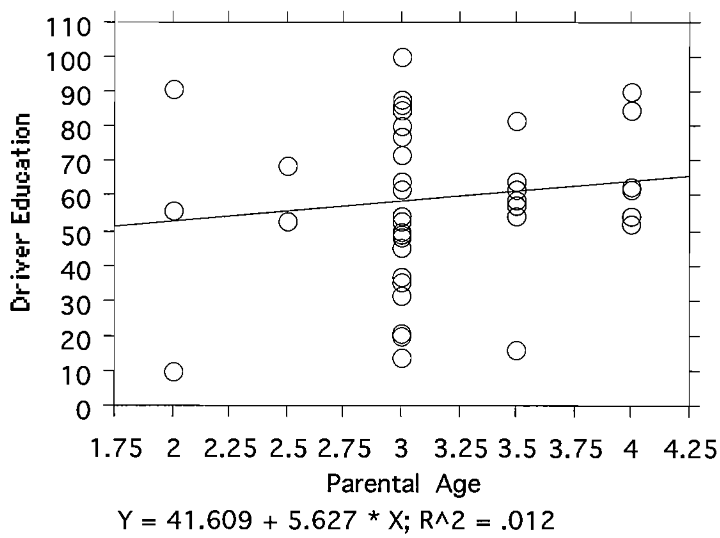


Figure 61. General Hypothesis 4A simple regression plot of parental age predicting driver education lifelong adaptability ratings (*N* = 45).

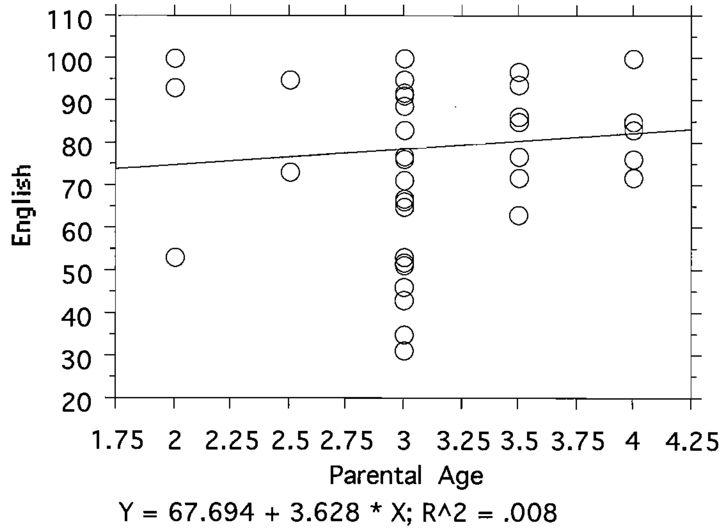


Figure 62. General Hypothesis 4A simple regression plot of parental age predicting English lifelong adaptability ratings (*N* = 45).

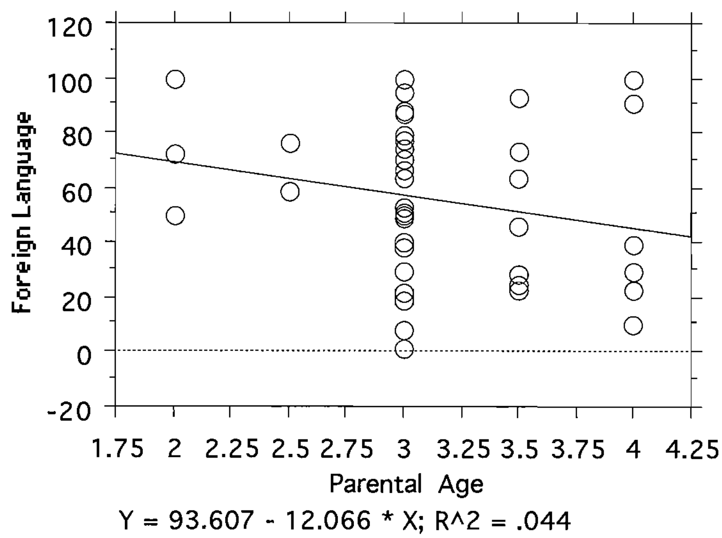


Figure 63. General Hypothesis 4A simple regression plot of parental age predicting foreign language lifelong adaptability ratings (*N* = 45).

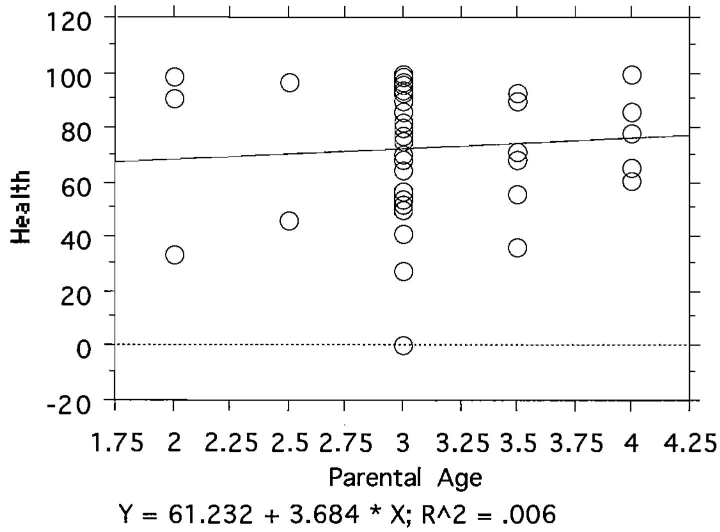


Figure 64. General Hypothesis 4A simple regression plot of parental age predicting health lifelong adaptability ratings (*N* = 45).

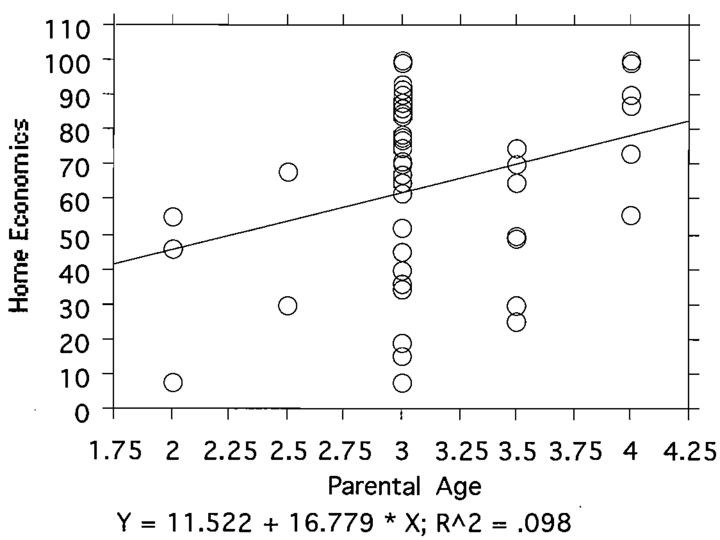


Figure 65. General Hypothesis 4A simple regression plot of parental age predicting home economics lifelong adaptability ratings (*N* = 45).

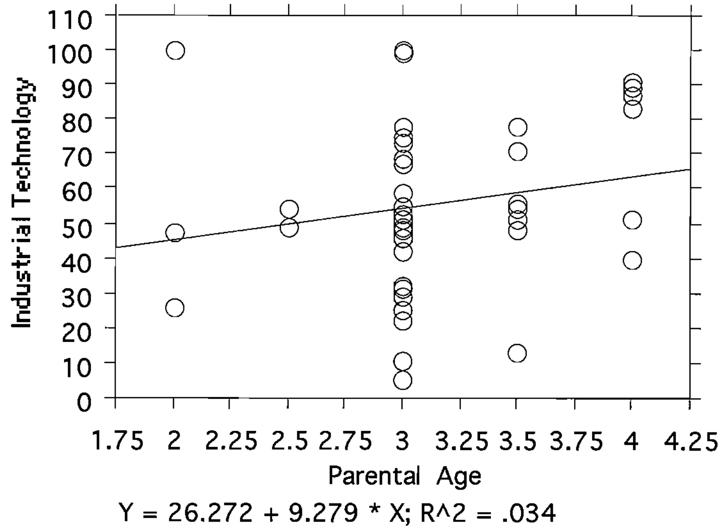


Figure 66. General Hypothesis 4A simple regression plot of parental age predicting industrial technology lifelong adaptability ratings (N = 45).

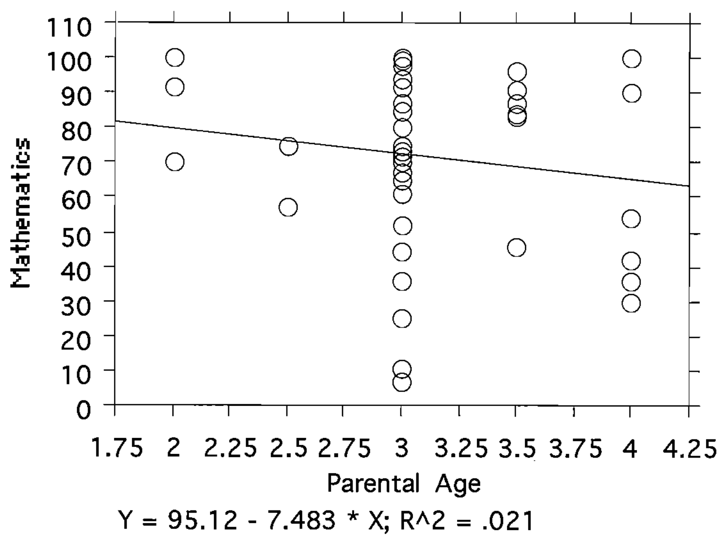


Figure 67. General Hypothesis 4A simple regression plot of parental age predicting mathematics lifelong adaptability ratings (N = 45).

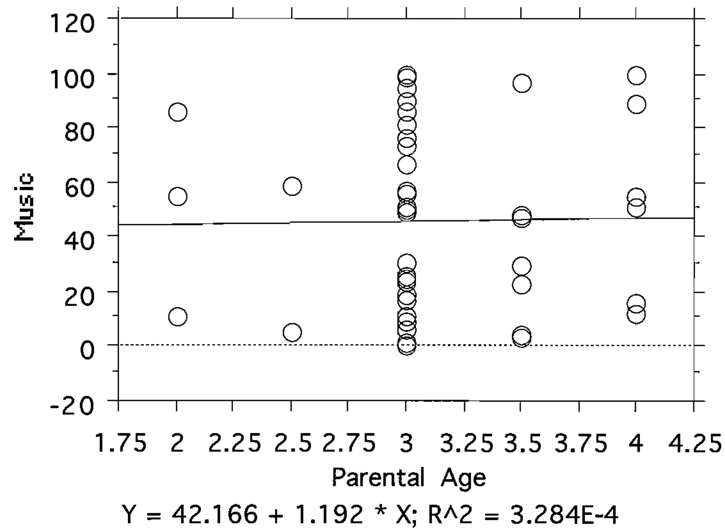


Figure 68. General Hypothesis 4A simple regression plot of parental age predicting music lifelong adaptability ratings (N = 45).

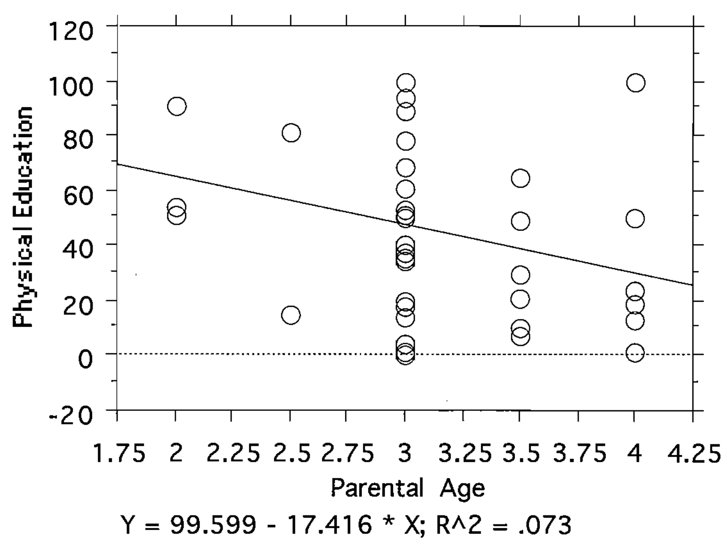


Figure 69. General Hypothesis 4A simple regression plot of parental age predicting physical education lifelong adaptability ratings (N = 45).

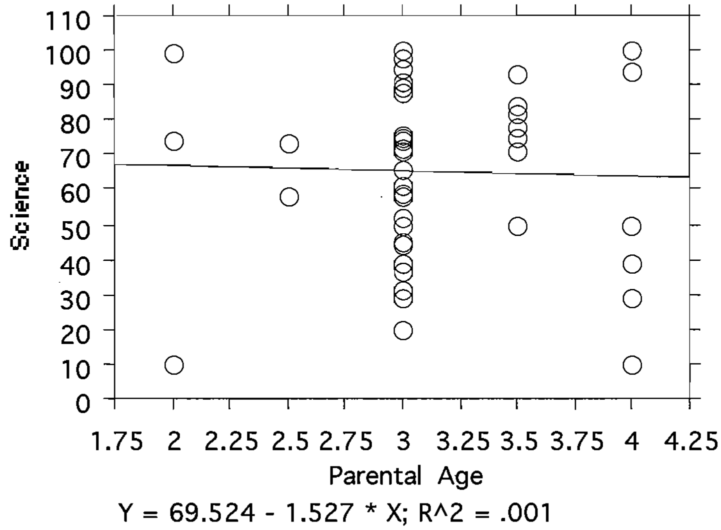


Figure 70. General Hypothesis 4A simple regression plot of parental age predicting science lifelong adaptability ratings (N = 45).

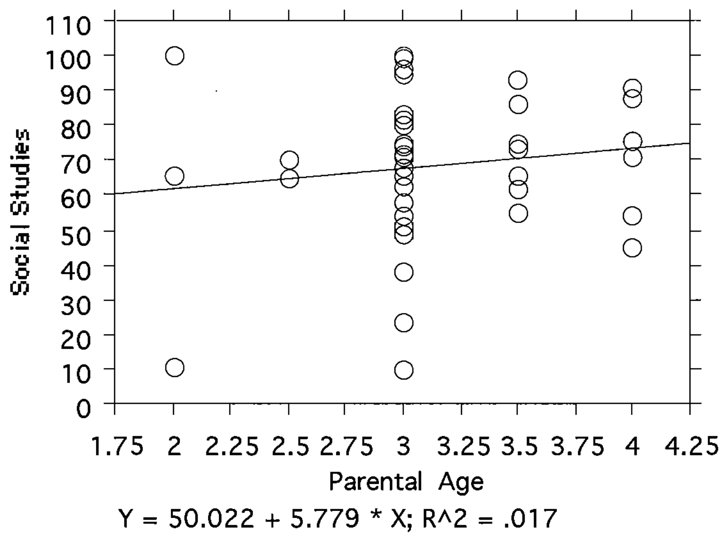


Figure 71. General Hypothesis 4A simple regression plot of parental age predicting social studies lifelong adaptability ratings (N = 45).

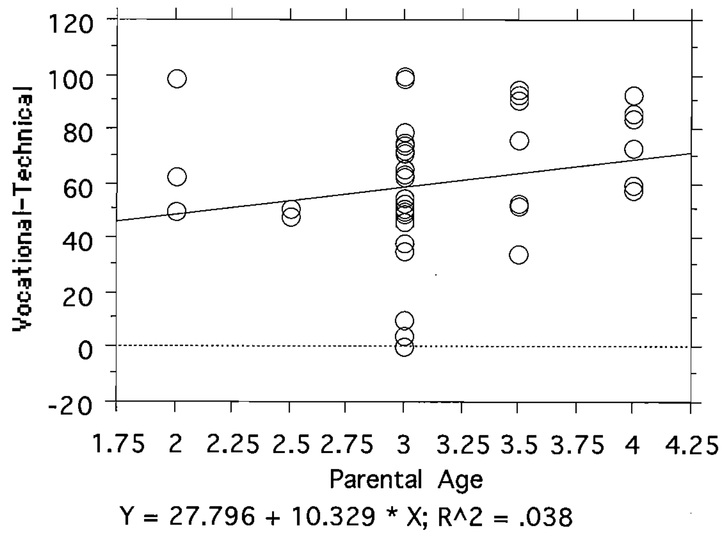


Figure 72. General Hypothesis 4A simple regression plot of parental age predicting vocational-technical lifelong adaptability ratings (N = 45).

Parental age accounted for 0.2% of the criterion variance, F (1, 43) = .102, p = .75.

R_{62}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of business. Parental age accounted for 4.0% of the criterion variance, F (1, 43) = 1.785, p = .18.

R_{63}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Parental age accounted for 3.7% of the criterion variance, F (1, 43) = 1.661, p = .20.

R_{64}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Parental age accounted for 1.2% of the criterion variance, F (1, 43) = .542, p = .46.

R_{65}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of English. Parental age accounted for 0.8% of the criterion variance, F (1, 43) = .365, p = .54.

R_{66}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Parental age accounted for 4.4% of the criterion variance, F (1, 43) = 1.976, p = .16.

R_{67}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of health. Parental age accounted for 0.6% of the criterion variance, F (1, 43) = .259, p = .61.

R_{68}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the main effect of parental age significantly enhanced prediction of students' lifelong adaptability ratings of home economics in that parental age was a significant positive predictor of students' lifelong adaptability ratings of home economics. In other words, the student with older parents assigned a higher lifelong adaptability rating to home economics. Parental age accounted for 9.8% of the criterion variance, F (1, 43) = 4.674, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{61} through R_{75}, R_{68}'s significant p value of .03 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{68}'s adjusted p value nonsignificant at .45.

R_{69}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Parental age accounted for 3.4% of the criterion variance, F (1, 43) = 1.502, p = .22.

R_{70}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Parental age accounted for 2.1% of the criterion variance, F (1, 43) = .922, p = .34.

R_{71}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of music. Parental age accounted for 0.0% of the criterion variance, F (1, 43) = .014, p = .90.

R_{72}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Nonetheless, parental age approached significance and accounted for 7.3% of the criterion variance, F (1, 43) = 3.388, p = .07.

R_{73}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of science. Parental age accounted for 0.1% of the criterion variance, F (1, 43) = .038, p = .84.

R_{74}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Parental age accounted for 1.7% of the criterion variance, F (1, 43) = .744, p = .39.

R_{75}: The main effect of parental age significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Parental age accounted for 3.8% of the criterion variance, F (1, 43) = 1.709, p = .19.

In summation, with alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{61}, R_{62}, R_{63}, R_{64}, R_{65}, R_{66}, R_{67}, R_{69}, R_{70}, R_{71}, R_{72}, R_{73}, R_{74}, and R_{75}): art, F (1, 43) = .102, p = .75; business, F (1, 43) = 1.785, p = .18; computer technology, F (1, 43) = 1.661, p = .20; driver education, F (1, 43) = .542, p = .46; English, F (1, 43) = .365, p = .54; foreign language, F (1, 43) = 1.976, p = .16; health, F (1, 43) = .259, p = .61; industrial technology, F (1, 43) = 1.502, p = .22; mathematics, F (1, 43) = .922, p = .34; music, F (1, 43) = .014, p = .90; physical education, F (1, 43) = 3.388, p = .07; science, F (1, 43) = .038, p = .84; social studies, F (1, 43) = .744, p = .39; and vocational-technical, F (1, 43) = 1.709, p = .19. Nonetheless, the main effect of parental age approached significance in the prediction of students' lifelong adaptability ratings of one of these 14 general school subjects: physical education, F (1, 43) = 3.388, p = .07. The apparent trend was for the student with older parents to assign a lower lifelong adaptability rating to physical education.

Conversely, the main effect of parental age significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{68}): home economics, F (1, 43) = 4.674, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{61} through R_{75}, this one significant simple regression equation (R_{68}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

R_{76} - R_{90}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{76} . . . art.

R_{77} . . . business.

R_{78} . . . computer technology.

R_{79} . . . driver education.

R_{80} . . . English.

R_{81} . . . foreign language.

R_{82} . . . health.

R_{83} . . . home economics.

R_{84} . . . industrial technology.

R_{85} . . . mathematics.

R_{86} . . . music.

R_{87} . . . physical education.

R_{88} . . . science.

R_{89} . . . social studies.

R_{90} . . . vocational-technical.

Fifteen simple regression equations revealed no significant findings in R_{76} through R_{90}.

Inferential statistics for General Hypothesis 4A's R_{76} through R_{90} are displayed in Table 17. For each of the 15 general school subjects, a simple regression equation (R_{76} - R_{90}) employed parental educational level as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{31} through R_{105} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1).

Table 17

General Hypothesis 4A simple regression analyses for main effect of parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{76}: Art										
Par. Ed.[b]	-3.120	2.577	-.182	-1.210	.23					NS
Regression						.033	1/43	1.465	.23	NS
R_{77}: Business										
Par. Ed.[b]	.782	1.540	.077	.508	.61					NS
Regression						.006	1/43	.258	.61	NS
R_{78}: Computer Technology										
Par. Ed.[b]	-.166	1.822	-.014	-.091	.92					NS
Regression						.000	1/43	.008	.92	NS
R_{79}: Driver Education										
Par. Ed.[b]	-1.429	2.296	-.095	-.623	.53					NS
Regression						.009	1/43	.388	.53	NS

Table 17 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	p^a	R^2	df_n/df_d	*F*	p^a	Sig.
R_{80}: English										
Par. Ed.[b]	-.981	1.802	-.083	-.544	.58					NS
Regression						.007	1/43	.296	.58	NS
R_{81}: Foreign Language										
Par. Ed.[b]	.144	2.631	.008	.055	.95					NS
Regression						.000	1/43	.003	.95	NS
R_{82}: Health										
Par. Ed.[b]	-2.327	2.146	-.163	-1.085	.28					NS
Regression						.027	1/43	1.176	.28	NS
R_{83}: Home Economics										
Par. Ed.[b]	-1.067	2.444	-.066	-.437	.66					NS
Regression						.004	1/43	.191	.66	NS

Table 17 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{84}: Industrial Technology										
Par. Ed.[b]	-1.441	2.299	-.095	-.627	.53					NS
Regression						.009	1/43	.393	.53	NS
R_{85}: Mathematics										
Par. Ed.[b]	-1.401	2.352	-.090	-.596	.55					NS
Regression						.008	1/43	.355	.55	NS
R_{86}: Music										
Par. Ed.[b]	-.894	3.004	-.045	-.297	.76					NS
Regression						.002	1/43	.088	.76	NS
R_{87}: Physical Education										
Par. Ed.[b]	-.843	2.943	-.044	-.286	.77					NS
Regression						.002	1/43	.082	.77	NS

Table 17 (continued)

General Hypothesis 4A simple regression analyses for main effect of parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{88}: Science										
Par. Ed.[b]	2.461	2.307	.161	1.067	.29					NS
Regression						.026	1/43	1.138	.29	NS
R_{89}: Social Studies										
Par. Ed.[b]	2.949	1.975	.222	1.493	.14					NS
Regression						.049	1/43	2.229	.14	NS
R_{90}: Vocational-Technical										
Par. Ed.[b]	-3.007	2.371	-.190	-1.268	.21					NS
Regression						.036	1/43	1.608	.21	NS

[a]All p values were truncated, not rounded, to the hundredths place.

[b]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses.

This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4A's results. The coefficient, standard error, standard coefficient, *t*, and *p* for the parental educational level predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place. Plots for General Hypothesis 4A's simple regressions R_{76} through R_{90} are provided respectively in Figure 73 through Figure 87.

> R_{76}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of art. Parental educational level accounted for 3.3% of the criterion variance, F (1, 43) = 1.465, p = .23.

> R_{77}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of business. Parental educational level accounted for 0.6% of the criterion variance, F (1, 43) = .258, p = .61.

> R_{78}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Parental educational level accounted for 0.0% of the criterion

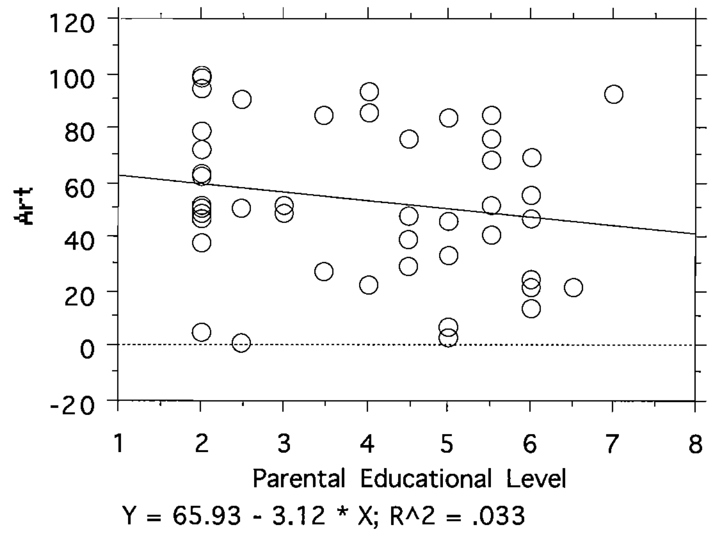


Figure 73. General Hypothesis 4A simple regression plot of parental educational level predicting art lifelong adaptability ratings (*N* = 45).

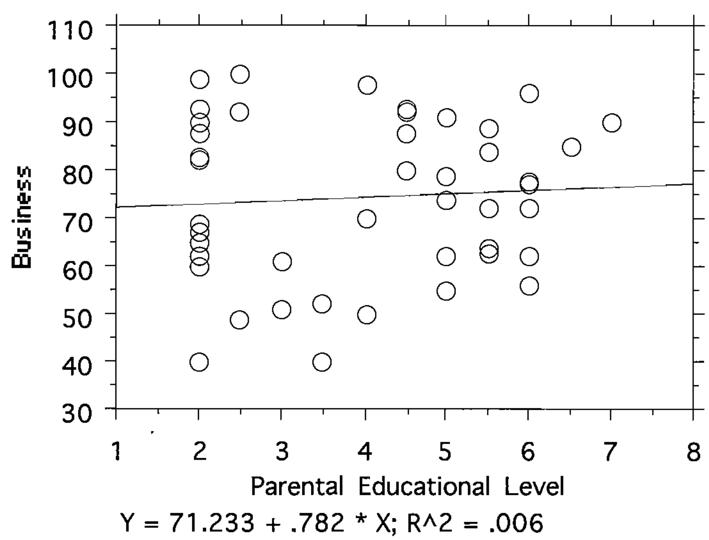


Figure 74. General Hypothesis 4A simple regression plot of parental educational level predicting business lifelong adaptability ratings (*N* = 45).

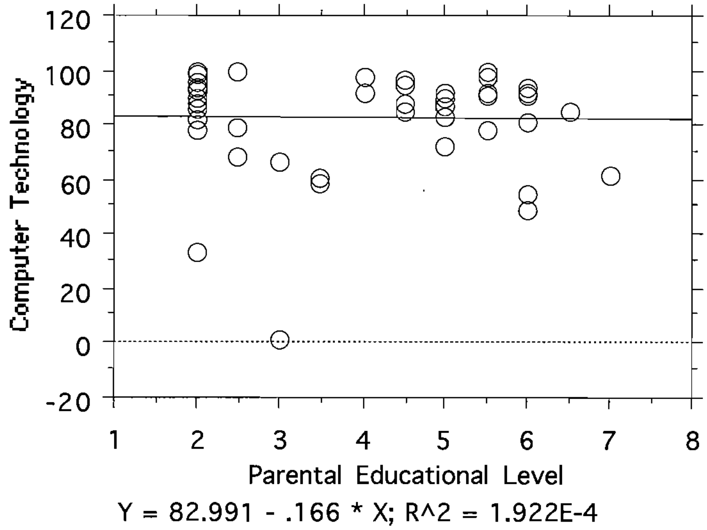


Figure 75. General Hypothesis 4A simple regression plot of parental educational level predicting computer technology lifelong adaptability ratings (N = 45).

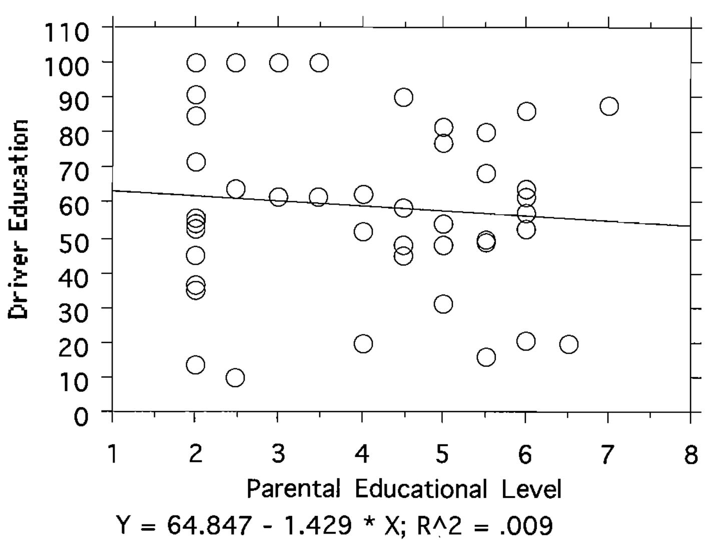


Figure 76. General Hypothesis 4A simple regression plot of parental educational level predicting driver education lifelong adaptability ratings (N = 45).

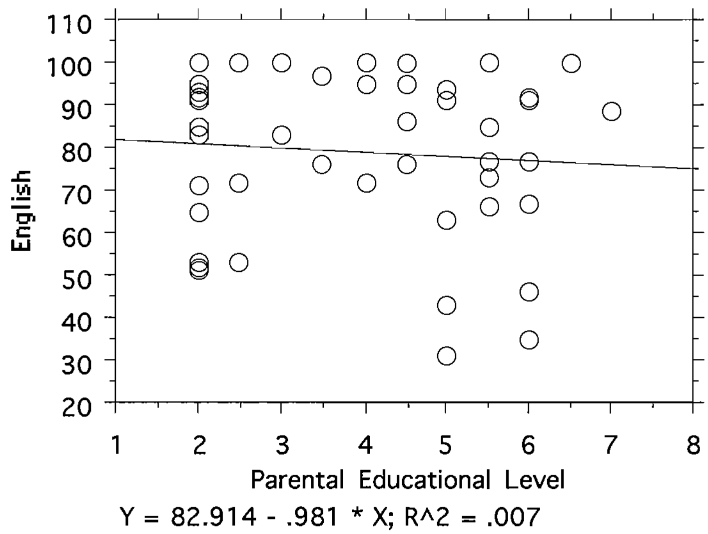


Figure 77. General Hypothesis 4A simple regression plot of parental educational level predicting English lifelong adaptability ratings (N = 45).

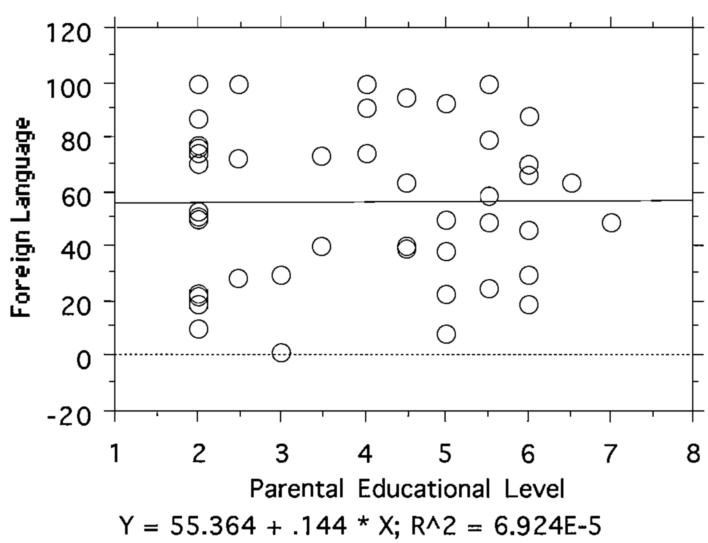


Figure 78. General Hypothesis 4A simple regression plot of parental educational level predicting foreign language lifelong adaptability ratings (N = 45).

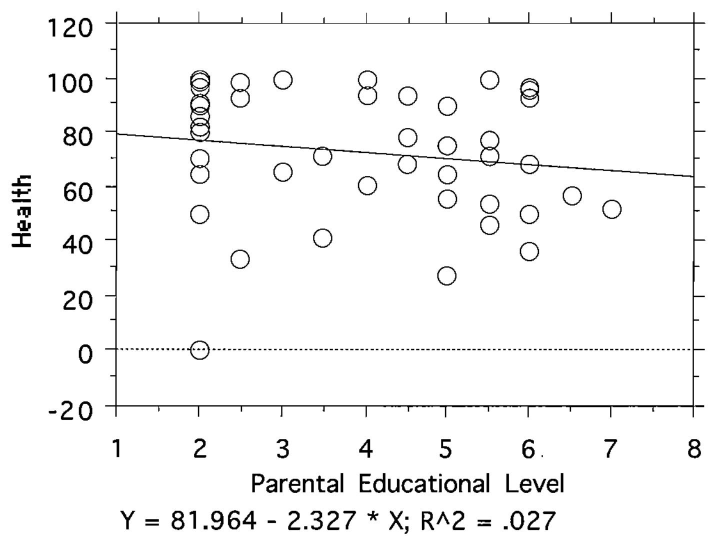


Figure 79. General Hypothesis 4A simple regression plot of parental educational level predicting health lifelong adaptability ratings (*N* = 45).

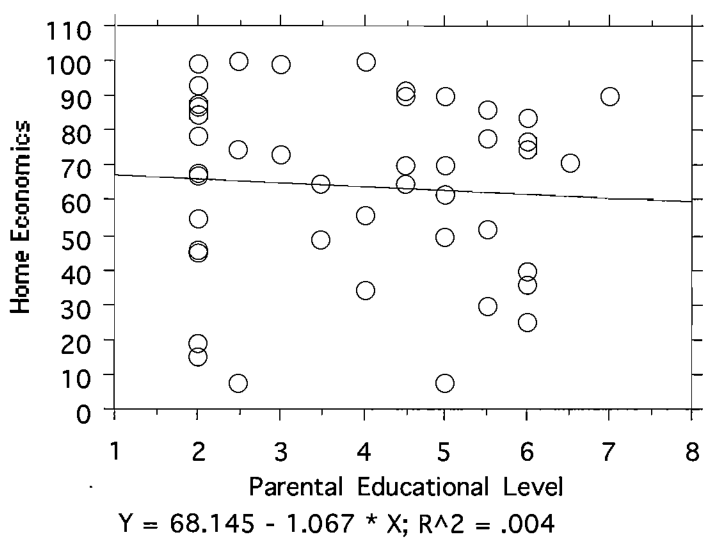


Figure 80. General Hypothesis 4A simple regression plot of parental educational level predicting home economics lifelong adaptability ratings (*N* = 45).

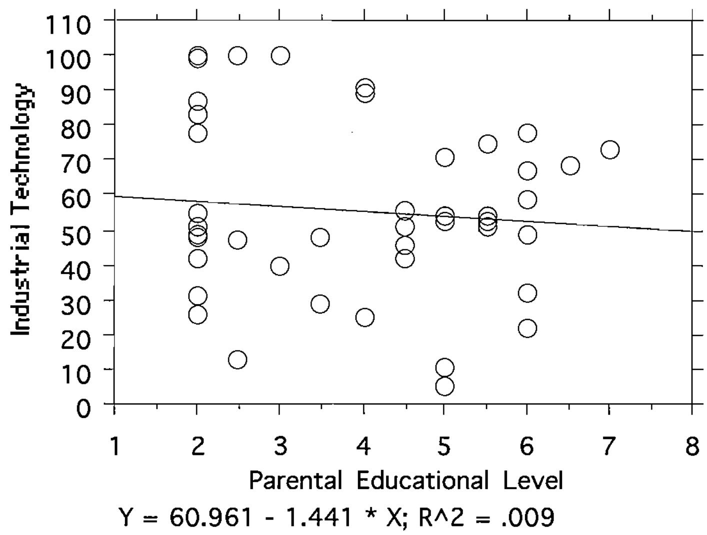


Figure 81. General Hypothesis 4A simple regression plot of parental educational level predicting industrial technology lifelong adaptability ratings (*N* = 45).

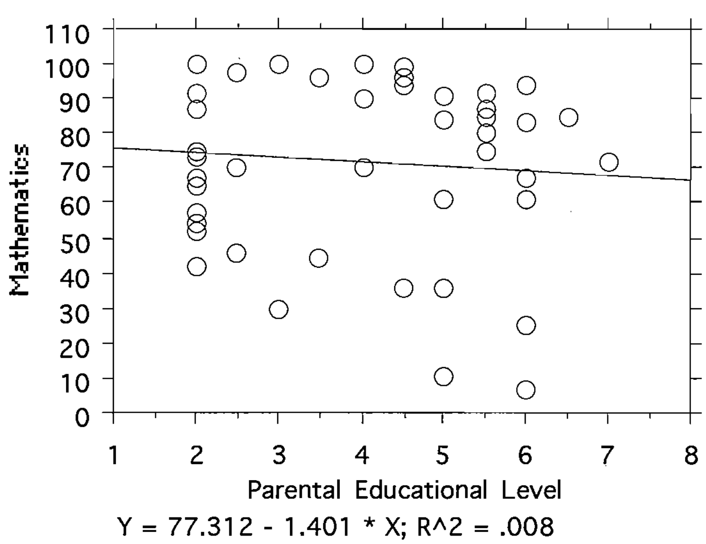


Figure 82. General Hypothesis 4A simple regression plot of parental educational level predicting mathematics lifelong adaptability ratings (*N* = 45).

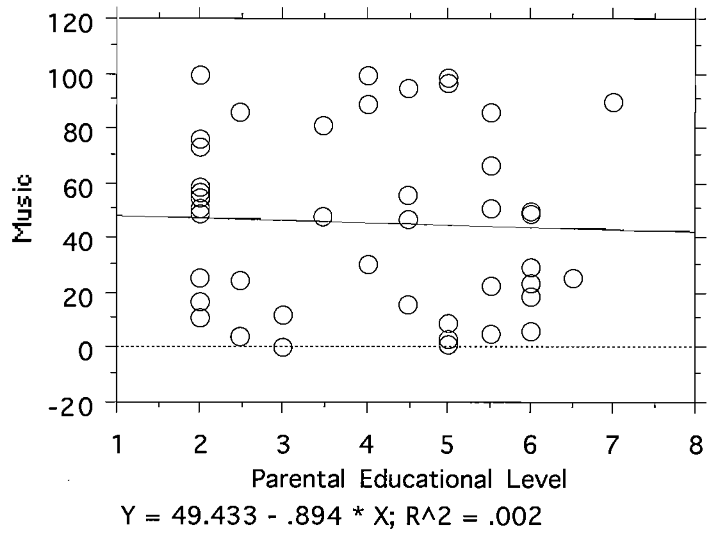


Figure 83. General Hypothesis 4A simple regression plot of parental educational level predicting music lifelong adaptability ratings (*N* = 45).

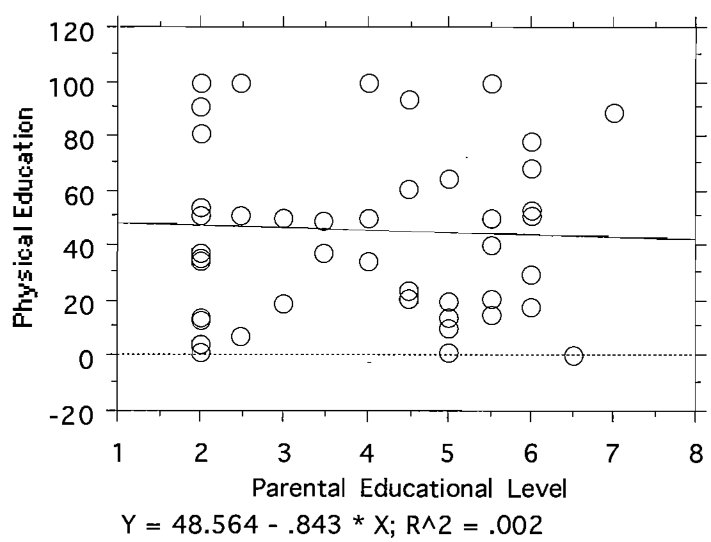


Figure 84. General Hypothesis 4A simple regression plot of parental educational level predicting physical education lifelong adaptability ratings (*N* = 45).

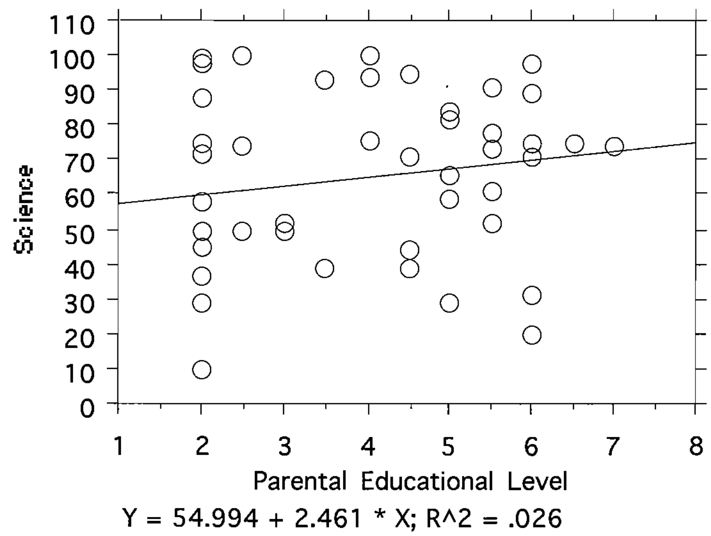


Figure 85. General Hypothesis 4A simple regression plot of parental educational level predicting science lifelong adaptability ratings (*N* = 45).

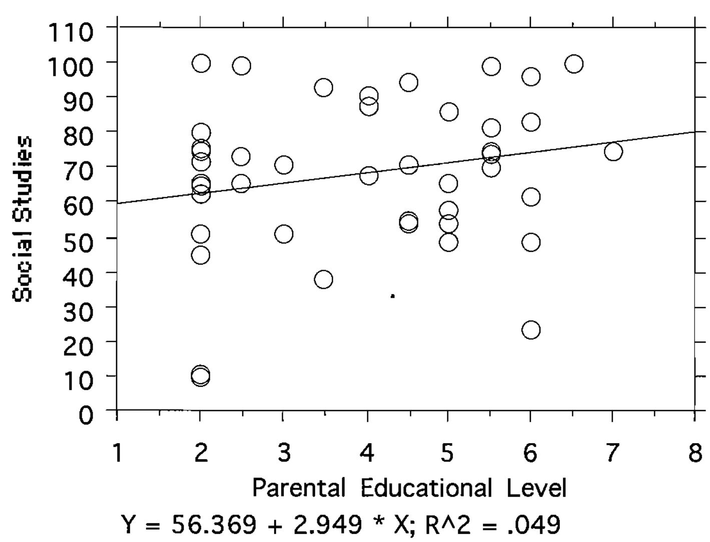


Figure 86. General Hypothesis 4A simple regression plot of parental educational level predicting social studies lifelong adaptability ratings (*N* = 45).

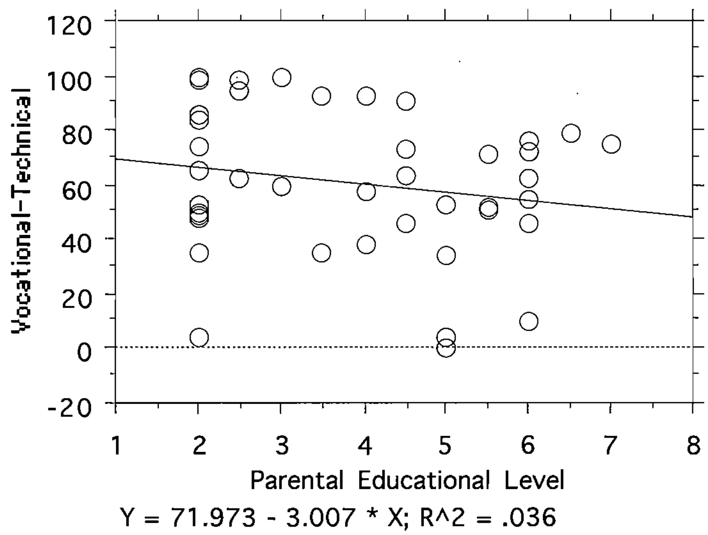


Figure 87. General Hypothesis 4A simple regression plot of parental educational level predicting vocational-technical lifelong adaptability ratings (N = 45).

variance, F (1, 43) = .008, p = .92.

> R_{79}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Parental educational level accounted for 0.9% of the criterion variance, F (1, 43) = .388, p = .53.

> R_{80}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of English. Parental educational level accounted for 0.7% of the criterion variance, F (1, 43) = .296, p = .58.

> R_{81}: The main effect of parental educational level significantly enhances

prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Parental educational level accounted for 0.0% of the criterion variance, F (1, 43) = .003, p = .95.

R_{82}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of health. Parental educational level accounted for 2.7% of the criterion variance, F (1, 43) = 1.176, p = .28.

R_{83}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Parental educational level accounted for 0.4% of the criterion variance, F (1, 43) = .191, p = .66.

R_{84}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Parental educational level accounted for 0.9% of the criterion variance, F (1, 43) = .393, p = .53.

R_{85}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Parental educational level accounted for 0.8% of the criterion variance, F (1, 43) = .355, p = .55.

R_{86}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of music. Parental educational level accounted for 0.2% of the criterion variance, F (1, 43) = .088, p = .76.

R_{87}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Parental educational level accounted for 0.2% of the criterion variance, F (1, 43) = .082, p = .77.

R_{88}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of science. Parental educational level accounted for 2.6% of the criterion variance, F (1, 43) = 1.138, p = .29.

R_{89}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Parental educational level accounted for 4.9% of the criterion variance, *F* (1, 43) = 2.229, *p* = .14.

> R_{90}: The main effect of parental educational level significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Parental educational level accounted for 3.6% of the criterion variance, *F* (1, 43) = 1.608, *p* = .21.

In summation, with alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{76}, R_{77}, R_{78}, R_{79}, R_{80}, R_{81}, R_{82}, R_{83}, R_{84}, R_{85}, R_{86}, R_{87}, R_{88}, R_{89}, and R_{90}): art, *F* (1, 43) = 1.465, *p* = .23; business, *F* (1, 43) = .258, *p* = .61; computer technology, *F* (1, 43) = .008, *p* = .92; driver education, *F* (1, 43) = .388, *p* = .53; English, *F* (1, 43) = .296, *p* = .58; foreign language, *F* (1, 43) = .003, *p* = .95; health, *F* (1, 43) = 1.176, *p* = .28; home economics, *F* (1, 43) = .191, *p* = .66; industrial technology, *F* (1, 43) = .393, *p* = .53; mathematics, *F* (1, 43) = .355, *p* = .55; music, *F* (1, 43) = .088, *p* = .76; physical education, *F* (1, 43) = .082, *p* = .77; science, *F* (1, 43) = 1.138, *p* = .29; social studies, *F* (1, 43) = 2.229, *p* = .14; and vocational-technical, *F* (1, 43) = 1.608, *p* = .21. Furthermore, the main effect of parental educational level did not approach significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

> R_{91} - R_{105}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{91} . . . art.

R_{92} . . . business.

R_{93} . . . computer technology.

R_{94} . . . driver education.

R_{95} . . . English.

R_{96} . . . foreign language.

R_{97} . . . health.

R_{98} . . . home economics.

R_{99} . . . industrial technology.

R_{100} . . . mathematics.

R_{101} . . . music.

R_{102} . . . physical education.

R_{103} . . . science.

R_{104} . . . social studies.

R_{105} . . . vocational-technical.

Fifteen simple regression equations revealed four significant findings (R_{92}, R_{95}, R_{97}, and R_{98}) in R_{91} through R_{105}. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, one of these significant findings (R_{92}) was ultimately rendered nonsignificant by the Bonferroni correction factor

(Darlington, 1990), whereas the other three significant findings (R_{95}, R_{97}, and R_{98}) remained significant after application of the Bonferroni correction factor (Darlington, 1990).

Inferential statistics for General Hypothesis 4A's R_{91} through R_{105} are displayed in Table 18. For each of the 15 general school subjects, a simple regression equation (R_{91} - R_{105}) employed student gender as the predictor variable and students' lifelong adaptability ratings of each respective general school subject as the criterion variable. With alpha established at .05 and with an *N* of 45, R_{31} through R_{105} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4A's results. The coefficient, standard error, standard coefficient, *t*, and *p* for the student gender predictor variable are displayed. The R^2, degrees of freedom, *F*, and *p* for each simple regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place. Plots for General Hypothesis 4A's simple regressions R_{91} through R_{105} are provided respectively in Figure 88 through Figure 102.

> R_{91}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of art. Student gender accounted for 0.2% of the criterion variance, F (1, 43) = .079, p = .78.

> R_{92}: The main effect of student gender significantly enhances prediction of

Table 18

General Hypothesis 4A simple regression analyses for main effect of student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{91}: Art										
Gender[b]	-2.409	8.574	-.043	-.281	.78					NS
Regression						.002	1/43	.079	.78	NS
R_{92}: Business										
Gender[b]	12.419	4.688	.375	2.649	.01					S
Regression						.140	1/43	7.017	.01	S[c]
R_{93}: Computer Technology										
Gender[b]	8.684	5.819	.222	1.492	.14					NS
Regression						.049	1/43	2.227	.14	NS
R_{94}: Driver Education										
Gender[b]	4.771	7.516	.096	.635	.52					NS
Regression						.009	1/43	.403	.52	NS

Table 18 (continued)

General Hypothesis 4A simple regression analyses for main effect of student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	*t*	*p*[a]	R^2	df_n/df_d	*F*	*p*[a]	Sig.
R_{95}: English										
Gender[b]	16.891	5.330	.435	3.169	.00					S
Regression						.189	1/43	10.042	.00	S[d]
R_{96}: Foreign Language										
Gender[b]	14.460	8.329	.256	1.736	.08					NS
Regression						.065	1/43	3.014	.08	NS
R_{97}: Health										
Gender[b]	20.581	6.392	.441	3.220	.00					S
Regression						.194	1/43	10.367	.00	S[d]
R_{98}: Home Economics										
Gender[b]	20.251	7.404	.385	2.735	.00					S
Regression						.148	1/43	7.482	.00	S[d]

Table 18 (continued)

General Hypothesis 4A simple regression analyses for main effect of student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{99}: Industrial Technology										
Gender[b]	-6.318	7.500	-.127	-.842	.40					NS
Regression						.016	1/43	.710	.40	NS
R_{100}: Mathematics										
Gender[b]	-.696	7.733	-.014	-.090	.92					NS
Regression						.000	1/43	.008	.92	NS
R_{101}: Music										
Gender[b]	-12.672	9.656	-.196	-1.312	.19					NS
Regression						.039	1/43	1.722	.19	NS
R_{102}: Physical Education										
Gender[b]	-6.630	9.593	-.105	-.691	.49					NS
Regression						.011	1/43	.478	.49	NS

Table 18 (continued)

General Hypothesis 4A simple regression analyses for main effect of student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element	Coef.	Std. Error	Std. Coef.	t	p^a	R^2	df_n/df_d	F	p^a	Sig.
R_{103}: Science										
Gender[b]	-6.071	7.596	-.121	-.799	.42					NS
Regression						.015	1/43	.639	.42	NS
R_{104}: Social Studies										
Gender[b]	9.953	6.457	.229	1.541	.13					NS
Regression						.052	1/43	2.376	.13	NS
R_{105}: Vocational-Technical										
Gender[b]	.168	7.908	.003	.021	.98					NS
Regression						.000	1/43	.000	.98	NS

[a]All *p* values were truncated, not rounded, to the hundredths place.

[b]Student gender was statistically treated as a categorical variable. In each simple regression equation, a datum for the category representing "Female Student" was entered for student gender. Dummy-variable coding was employed.

[c]Due to the presence of 15 multiple tests in H_{G4A}'s R_{91} through R_{105}, the significant *p* value in R_{92} (.01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted *p* value in R_{92} (.15).

[d]Due to the presence of 15 multiple tests in H_{G4A}'s R_{91} through R_{105}, the significant *p* values in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00) were multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby leaving significant the respective

Table 18 (continued)

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p values in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00).

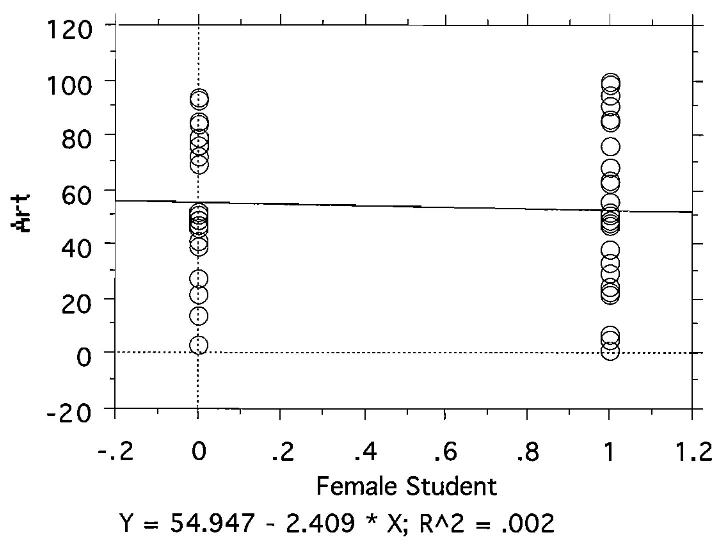

Figure 88. General Hypothesis 4A simple regression plot of student gender predicting art lifelong adaptability ratings (N = 45).

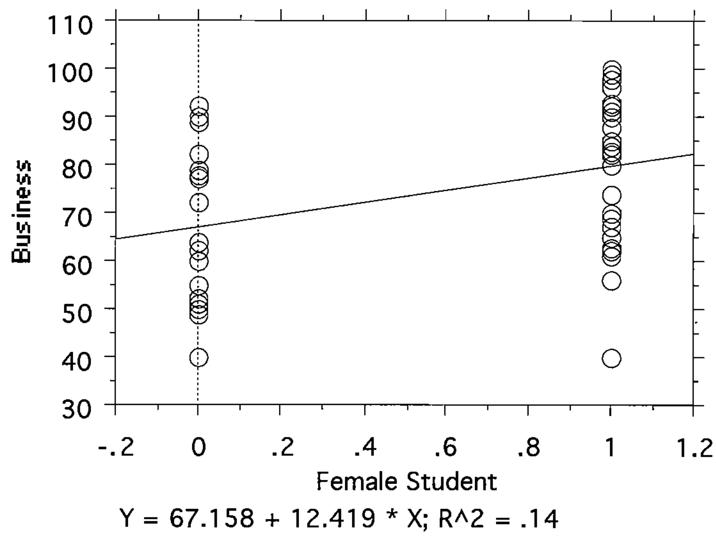

Figure 89. General Hypothesis 4A simple regression plot of student gender predicting business lifelong adaptability ratings (*N* = 45).

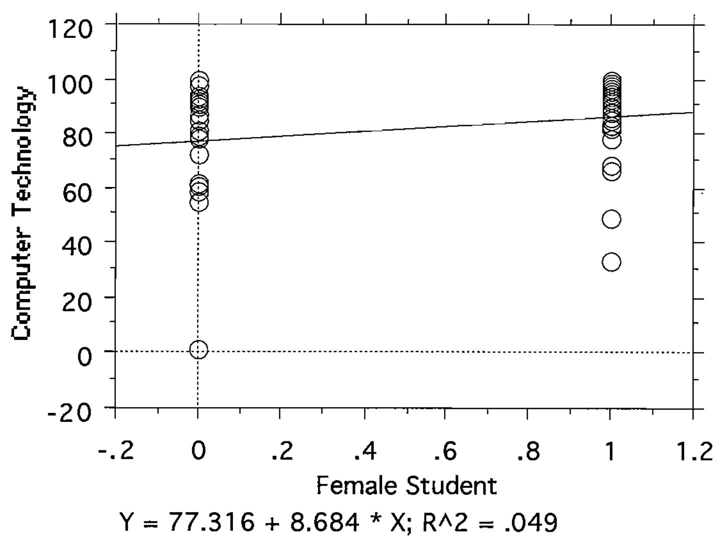

Figure 90. General Hypothesis 4A simple regression plot of student gender predicting computer technology lifelong adaptability ratings (*N* = 45).

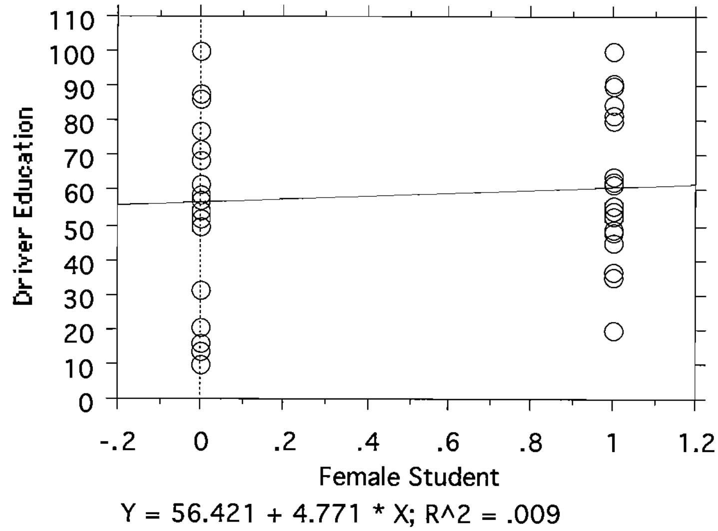

Figure 91. General Hypothesis 4A simple regression plot of student gender predicting driver education lifelong adaptability ratings (N = 45).

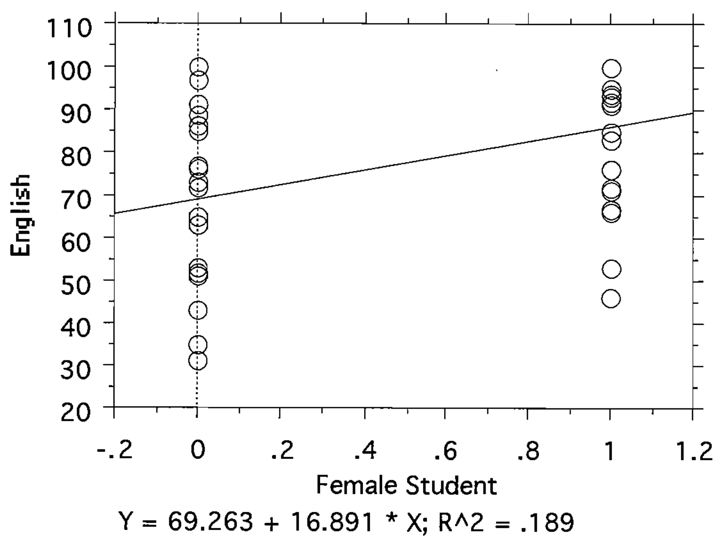

Figure 92. General Hypothesis 4A simple regression plot of student gender predicting English lifelong adaptability ratings (N = 45).

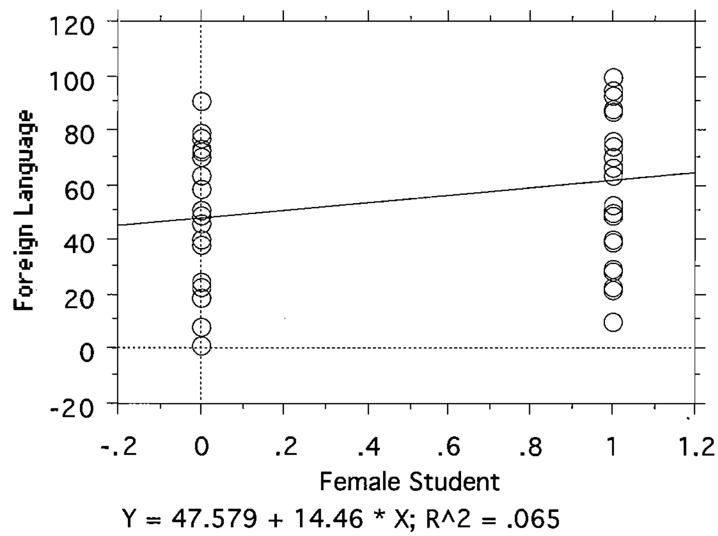

Figure 93. General Hypothesis 4A simple regression plot of student gender predicting foreign language lifelong adaptability ratings (*N* = 45).

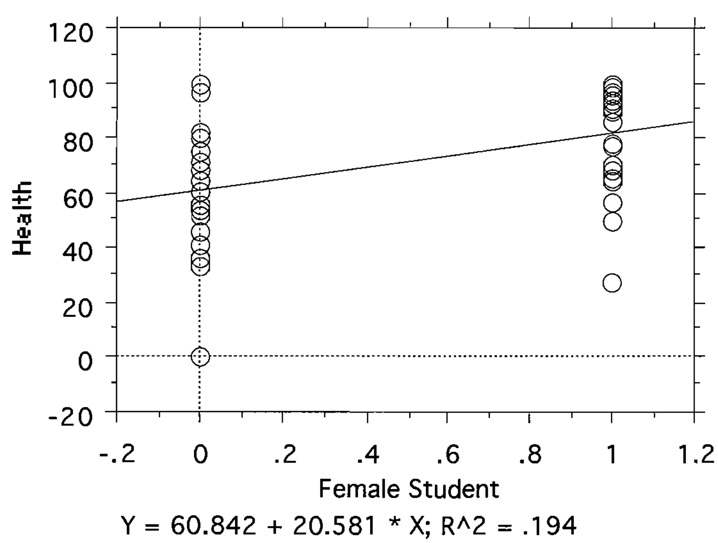

Figure 94. General Hypothesis 4A simple regression plot of student gender predicting health lifelong adaptability ratings (*N* = 45).

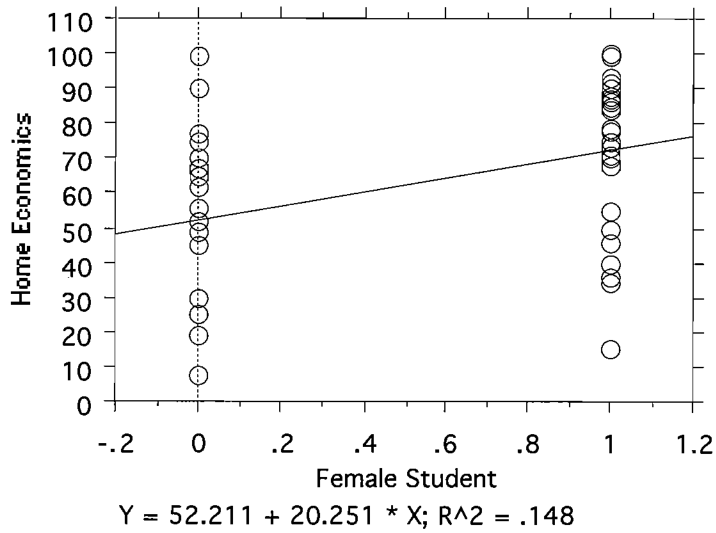

Figure 95. General Hypothesis 4A simple regression plot of student gender predicting home economics lifelong adaptability ratings (N = 45).

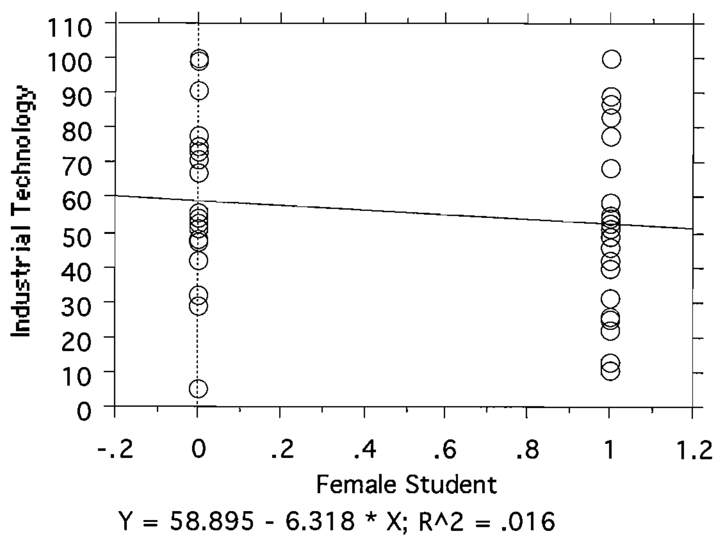

Figure 96. General Hypothesis 4A simple regression plot of student gender predicting industrial technology lifelong adaptability ratings (N = 45).

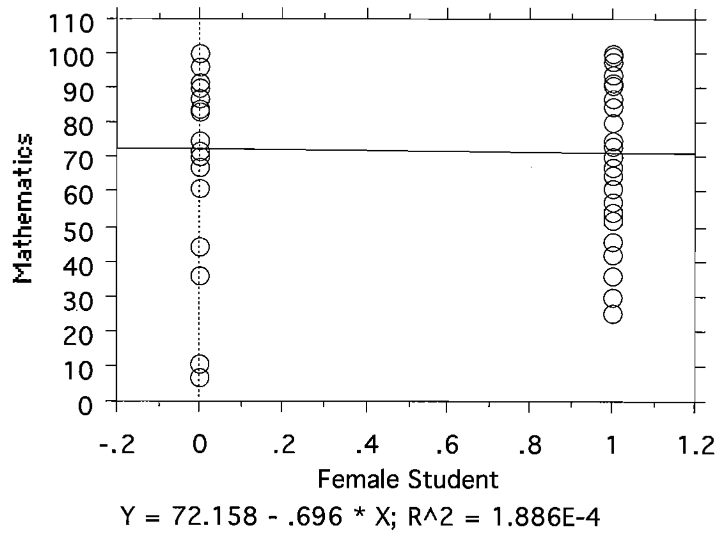

Figure 97. General Hypothesis 4A simple regression plot of student gender predicting mathematics lifelong adaptability ratings ($N = 45$).

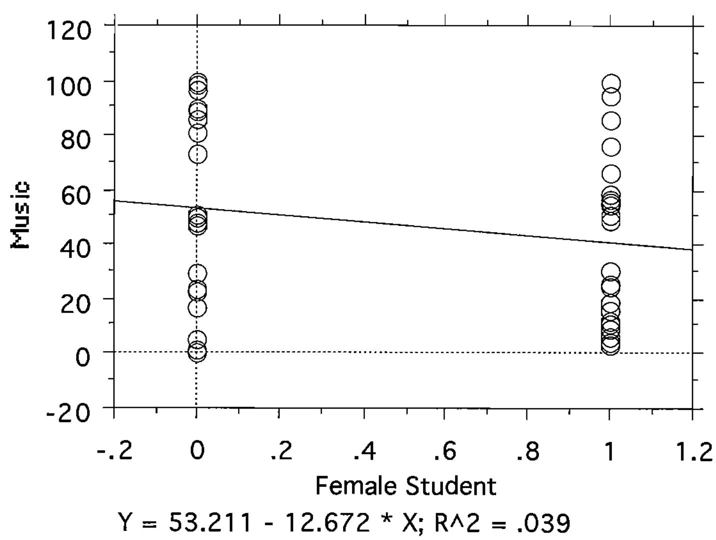

Figure 98. General Hypothesis 4A simple regression plot of student gender predicting music lifelong adaptability ratings ($N = 45$).

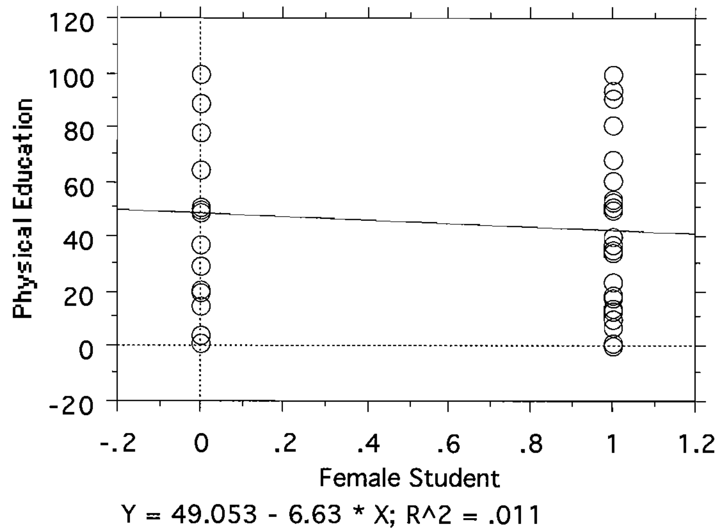

Figure 99. General Hypothesis 4A simple regression plot of student gender predicting physical education lifelong adaptability ratings (N = 45).

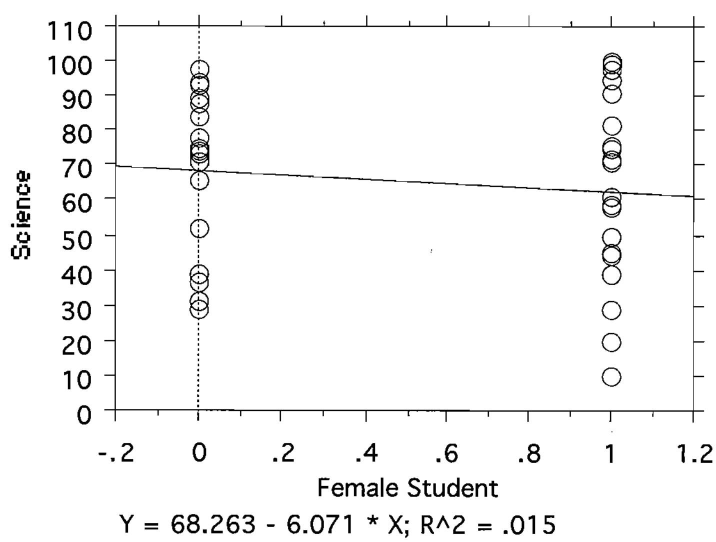

Figure 100. General Hypothesis 4A simple regression plot of student gender predicting science lifelong adaptability ratings (N = 45).

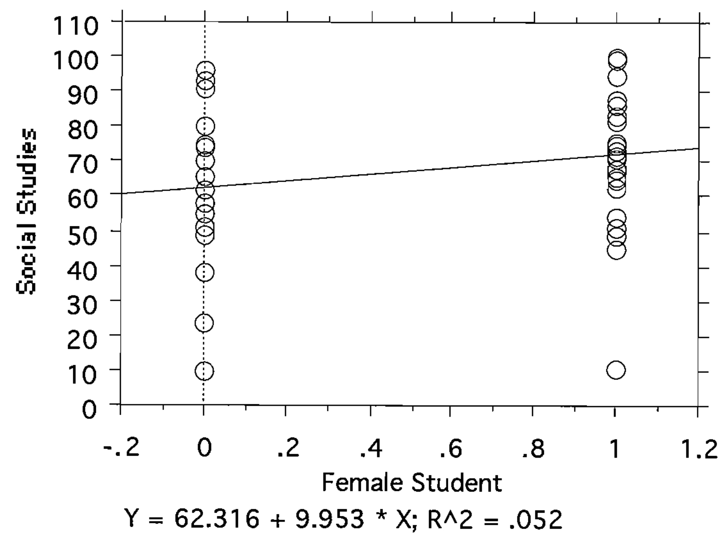

Figure 101. General Hypothesis 4A simple regression plot of student gender predicting social studies lifelong adaptability ratings (N = 45).

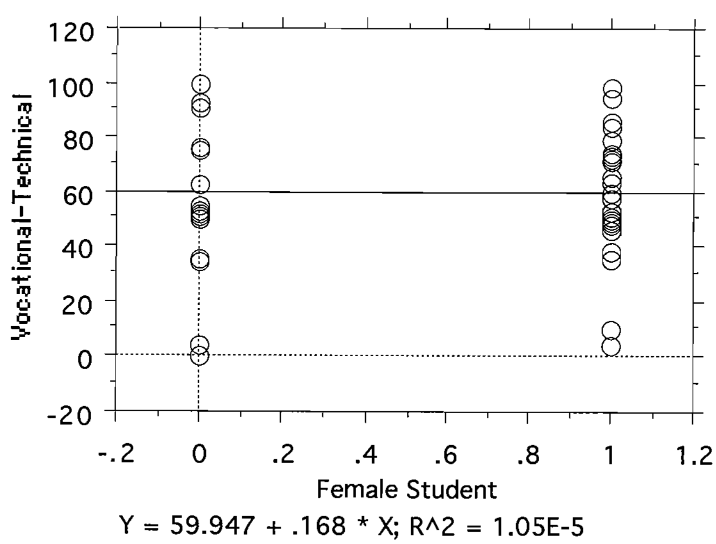

Figure 102. General Hypothesis 4A simple regression plot of student gender predicting vocational-technical lifelong adaptability ratings (N = 45).

students' lifelong adaptability ratings of business.

With alpha established at .05, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of business in that student gender was a significant positive predictor of students' lifelong adaptability ratings of business. In other words, the female student assigned a higher lifelong adaptability rating to business. Student gender accounted for 14.0% of the criterion variance, F (1, 43) = 7.017, p = .01. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, R_{92}'s significant p value of .01 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{92}'s adjusted p value nonsignificant at .15.

R_{93}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Student gender accounted for 4.9% of the criterion variance, F (1, 43) = 2.227, p = .14.

R_{94}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Student gender accounted for 0.9% of the criterion variance, F (1, 43) = .403, p = .52.

R_{95}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of English in that student gender was a significant positive predictor of students' lifelong adaptability ratings of English. In other words, the female student assigned a higher lifelong adaptability rating to English. Student gender accounted for 18.9% of the criterion variance, F (1, 43) = 10.042, p = .00. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, R_{95}'s significant p value of .00 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby leaving R_{95}'s adjusted p value significant at .00.

R_{96}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Nonetheless, student gender approached significance and accounted for 6.5% of the criterion variance, F (1, 43) = 3.014, p = .08.

R_{97}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of health in that student gender was a significant positive predictor of students' lifelong adaptability ratings of health. In other words, the female student assigned a higher lifelong adaptability rating to health. Student gender accounted for 19.4% of the criterion variance, F (1, 43) = 10.367, p = .00. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, R_{97}'s significant p value of .00 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby leaving R_{97}'s adjusted *p* value significant at .00.

R_{98}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of home economics in that student gender was a significant positive predictor of students' lifelong adaptability ratings of home economics. In other words, the female student assigned a higher lifelong adaptability rating to home economics. Student gender accounted for 14.8% of the criterion variance, $F\ (1,\ 43) = 7.482$, $p = .00$. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, R_{98}'s significant *p* value of .00 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby leaving R_{98}'s adjusted *p* value significant at .00.

R_{99}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Student gender accounted for 1.6% of the criterion variance, $F\ (1,\ 43) = .710$, $p = .40$.

R_{100}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Student gender accounted for 0.0% of the criterion variance, $F\ (1,\ 43) = .008$, $p = .92$.

R_{101}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of music. Student gender accounted for 3.9% of the criterion variance, F (1, 43) = 1.722, p = .19.

R_{102}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Student gender accounted for 1.1% of the criterion variance, F (1, 43) = .478, p = .49.

R_{103}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of science. Student gender accounted for 1.5% of the criterion variance, F (1, 43) = .639, p = .42.

R_{104}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Student gender accounted for 5.2% of the criterion variance, F (1, 43) = 2.376, p = .13.

R_{105}: The main effect of student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Student gender accounted for 0.0% of the criterion variance, F (1, 43) = .000, p = .98.

In summation, with alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 11 general school subjects in simple regression equations (R_{91}, R_{93}, R_{94}, R_{96}, R_{99}, R_{100}, R_{101}, R_{102}, R_{103}, R_{104}, and R_{105}): art, F (1, 43) = .079, p = .78; computer technology, F (1, 43) = 2.227, p = .14; driver education, F (1, 43) = .403, p = .52; foreign language, F (1, 43) = 3.014, p = .08; industrial technology, F (1, 43) = .710, p = .40; mathematics, F (1, 43) = .008, p = .92; music, F (1, 43) = 1.722, p = .19; physical education, F (1, 43) = .478, p = .49; science, F (1, 43) = .639, p = .42; social studies, F (1, 43) = 2.376, p = .13; and vocational-technical, F (1, 43) = .000, p = .98. Nonetheless, the main effect of student gender approached significance in the prediction of students' lifelong adaptability ratings of one of these 11 general school subjects: foreign language, F (1, 43) = 3.014, p = .08. The apparent trend was for the female student to assign a higher lifelong adaptability rating to foreign language.

Conversely, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of four of the 15 general school subjects in simple regression equations (R_{92}, R_{95}, R_{97}, and R_{98}): business, F (1, 43) = 7.017, p = .01; English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, the significant p values in R_{92} (.01), in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00) were multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the *p* value in R_{92} (.15) and thereby leaving significant the respective *p* values in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00). In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

General Hypothesis 4B (H_{G4B}).

H_{G4B}: There are significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Specific full and restricted regression model pairs (R_{106} - R_{255}).

R_{106} - R_{120}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{106} . . . art.

R_{107} . . . business.

R_{108} . . . computer technology.

R_{109} . . . driver education.

R_{110} . . . English.

R_{111} . . . foreign language.

R_{112} . . . health.

R_{113} . . . home economics.

R_{114} . . . industrial technology.

R_{115} . . . mathematics.

R_{116} . . . music.

R_{117} . . . physical education.

R_{118} . . . science.

R_{119} . . . social studies.

R_{120} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed one significant finding (R_{110}) in R_{106} through R_{120}. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{106} through R_{120}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of student cultural literacy main effects or of family structure main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{106} through R_{120}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{106} - R_{120}) tested the two-way interaction of student cultural literacy and family structure as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 19. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{106}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 4.6% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = .652, p = .58. Accounting for 2.3% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .497, p = .61. An *F* test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.000, p > .05 (Appendix 14).

> R_{107}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 5.7% of the criterion variance,

Table 19

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{106}: Art										
Full Model										
Two Parents	-34.919	45.039	-.455	-.775	.44					NS
Cult. Lit. x Single Parent[c]	-.295	.542	-.263	-.544	.58					NS
Cult. Lit. x Two Parents	.329	.332	.364	.992	.32					NS
Regression						.046	3/41	.652	.58	NS
Restricted Model										
Cult. Lit.	.159	.283	.090	.562	.57					NS
Two Parents	7.659	12.206	.100	.627	.53					NS
Regression						.023	2/42	.497	.61	NS
Full-versus-restricted Model							1/41	1.000	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{107}: Business										
Full Model										
Two Parents	-32.856	26.381	-.727	-1.245	.22					NS
Cult. Lit. x Single Parent[c]	-.413	.317	-.625	-1.301	.20					NS
Cult. Lit. x Two Parents	.001	.194	.001	.003	.99					NS
Regression						.057	3/41	.822	.48	NS
Restricted Model										
Cult. Lit.	-.112	.166	-.107	-.675	.50					NS
Two Parents	-4.648	7.172	-.103	-.648	.52					NS
Regression						.028	2/42	.613	.54	NS
Full-versus-restricted Model							1/41	1.261	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{108}: Computer Technology										
Full Model										
Two Parents	-24.744	31.249	-.464	-.792	.43					NS
Cult. Lit. x Single Parent[c]	.048	.376	.062	.128	.89					NS
Cult. Lit. x Two Parents	.267	.230	.426	1.162	.25					NS
Regression						.050	3/41	.719	.54	NS
Restricted Model										
Cult. Lit.	.208	.195	.168	1.067	.29					NS
Two Parents	-9.783	8.396	-.183	-1.165	.25					NS
Regression						.044	2/42	.972	.38	NS
Full-versus-restricted Model							1/41	.261	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{109}: Driver Education										
<u>Full Model</u>										
Two Parents	-21.906	40.221	-.325	-.545	.58					NS
Cult. Lit. x Single Parent[c]	-.126	.484	-.128	-.261	.79					NS
Cult. Lit. x Two Parents	.075	.296	.094	.254	.80					NS
Regression						.017	3/41	.235	.87	NS
<u>Restricted Model</u>										
Cult. Lit.	.020	.250	.013	.081	.93					NS
Two Parents	-8.159	10.791	-.121	-.756	.45					NS
Regression						.014	2/42	.296	.74	NS
<u>Full-versus-restricted Model</u>							1/41	.125	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{110}: English										
<u>Full Model</u>										
Two Parents	-44.887	28.970	-.848	-1.549	.12					NS
Cult. Lit. x Single Parent[c]	-.924	.349	-1.194	-2.650	.01					S
Cult. Lit. x Two Parents	-.087	.213	-.140	-.408	.68					NS
Regression						.170	3/41	2.803	.05	S
<u>Restricted Model</u>										
Cult. Lit.	-.315	.189	-.257	-1.669	.10					NS
Two Parents	12.207	8.148	.231	1.498	.14					NS
Regression						.085	2/42	1.960	.15	NS
<u>Full-versus-restricted Model</u>							1/41	4.250	< .05 but > .01	S[d]

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{111}: Foreign Language										
<u>Full Model</u>										
Two Parents	8.070	46.115	.105	.175	.86					NS
Cult. Lit. x Single Parent[c]	.087	.555	.077	.157	.87					NS
Cult. Lit. x Two Parents	-.100	.340	-.111	-.296	.76					NS
Regression						.007	3/41	.103	.95	NS
<u>Restricted Model</u>										
Cult. Lit.	-.049	.287	-.028	-.172	.86					NS
Two Parents	-4.713	12.366	-.061	-.381	.70					NS
Regression						.005	2/42	.116	.89	NS
<u>Full-versus-restricted Model</u>							1/41	.083	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{112}: Health										
<u>Full Model</u>										
Two Parents	1.413	36.646	.022	.039	.96					NS
Cult. Lit. x Single Parent[c]	-.202	.441	-.217	-.458	.64					NS
Cult. Lit. x Two Parents	-.352	.270	-.470	-1.304	.19					NS
Regression						.082	3/41	1.227	.31	NS
<u>Restricted Model</u>										
Cult. Lit.	-.311	.228	-.211	-1.367	.17					NS
Two Parents	-8.821	9.827	-.139	-.898	.37					NS
Regression						.081	2/42	1.839	.17	NS
<u>Full-versus-restricted Model</u>							1/41	.045	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{113}: Home Economics										
<u>Full Model</u>										
Two Parents	-5.433	42.599	-.076	-.128	.89					NS
Cult. Lit. x Single Parent[c]	-.249	.513	-.238	-.486	.62					NS
Cult. Lit. x Two Parents	-.213	.314	-.252	-.677	.50					NS
Regression						.023	3/41	.320	.81	NS
<u>Restricted Model</u>										
Cult. Lit.	-.223	.264	-.134	-.842	.40					NS
Two Parents	-2.939	11.412	-.041	-.258	.79					NS
Regression						.023	2/42	.489	.61	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{114}: Industrial Technology										
<u>Full Model</u>										
Two Parents	-25.650	40.013	-.380	-.641	.52					NS
Cult. Lit. x Single Parent[c]	-.186	.482	-.189	-.387	.70					NS
Cult. Lit. x Two Parents	.035	.295	.044	.118	.90					NS
Regression						.030	3/41	.420	.74	NS
<u>Restricted Model</u>										
Cult. Lit.	-.026	.249	-.016	-.103	.91					NS
Two Parents	-10.561	10.739	-.156	-.983	.33					NS
Regression						.026	2/42	.564	.57	NS
<u>Full-versus-restricted Model</u>							1/41	.167	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{115}: Mathematics										
Full Model										
Two Parents	-20.404	41.231	-.295	-.495	.62					NS
Cult. Lit. x Single Parent[c]	-.314	.496	-.310	-.632	.53					NS
Cult. Lit. x Two Parents	-.060	.304	-.074	-.198	.84					NS
Regression						.015	3/41	.210	.88	NS
Restricted Model										
Cult. Lit.	-.129	.256	-.081	-.503	.61					NS
Two Parents	-3.093	11.070	-.045	-.279	.78					NS
Regression						.011	2/42	.224	.79	NS
Full-versus-restricted Model							1/41	.167	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{116}: Music										
Full Model										
Two Parents	-59.605	51.077	-.677	-1.167	.25					NS
Cult. Lit. x Single Parent[c]	-.342	.615	-.266	-.556	.58					NS
Cult. Lit. x Two Parents	.579	.376	.559	1.540	.13					NS
Regression						.068	3/41	.995	.40	NS
Restricted Model										
Cult. Lit.	.328	.323	.161	1.015	.31					NS
Two Parents	3.257	13.953	.037	.233	.81					NS
Regression						.031	2/42	.665	.51	NS
Full-versus-restricted Model							1/41	1.609	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{117}: Physical Education										
Full Model										
Two Parents	18.656	51.081	.216	.365	.71					NS
Cult. Lit. x Single Parent[c]	.003	.615	.002	.004	.99					NS
Cult. Lit. x Two Parents	-.343	.376	-.338	-.913	.36					NS
Regression						.028	3/41	.400	.75	NS
Restricted Model										
Cult. Lit.	-.249	.318	-.125	-.784	.43					NS
Two Parents	-4.948	13.722	-.057	-.361	.72					NS
Regression						.023	2/42	.493	.61	NS
Full-versus-restricted Model							1/41	.208	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{118}: Science										
Full Model										
Two Parents	21.873	37.592	.320	.582	.56					NS
Cult. Lit. x Single Parent[c]	.308	.452	.308	.680	.50					NS
Cult. Lit. x Two Parents	.296	.277	.367	1.068	.29					NS
Regression						.164	3/41	2.675	.05	S
Restricted Model										
Cult. Lit.	.299	.233	.189	1.282	.20					NS
Two Parents	21.054	10.070	.308	2.091	.04					S
Regression						.164	2/42	4.111	.02	S
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{119}: Social Studies										
<u>Full Model</u>										
Two Parents	16.493	34.712	.278	.475	.63					NS
Cult. Lit. x Single Parent[c]	.175	.418	.202	.419	.67					NS
Cult. Lit. x Two Parents	.095	.256	.135	.370	.71					NS
Regression						.051	3/41	.737	.53	NS
<u>Restricted Model</u>										
Cult. Lit.	.116	.216	.085	.540	.59					NS
Two Parents	10.990	9.302	.185	1.181	.24					NS
Regression						.051	2/42	1.118	.33	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 19 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and family structure predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{120}: Vocational-Technical										
<u>Full Model</u>										
Two Parents	-20.685	42.015	-.293	-.492	.62					NS
Cult. Lit. x Single Parent[c]	-.251	.506	-.243	-.497	.62					NS
Cult. Lit. x Two Parents	-.056	.309	-.068	-.182	.85					NS
Regression						.022	3/41	.307	.82	NS
<u>Restricted Model</u>										
Cult. Lit.	-.109	.261	-.067	-.419	.67					NS
Two Parents	-7.394	11.270	-.105	-.656	.51					NS
Regression						.019	2/42	.416	.66	NS
<u>Full-versus-restricted Model</u>							1/41	.125	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All p values were truncated, not rounded, to the hundredths place, except full-versus-restricted model p values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

Table 19 (continued)

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[c]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[d]Due to the presence of 15 multiple tests in H_{G4B}'s R_{106} through R_{120}, the significant *p* value in R_{110} (< .05 but > .01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted *p* value in R_{110} (< .75 but > .15).

the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of business, F (3, 41) = .822, $p = .48$. Accounting for 2.8% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of business, F (2, 42) = .613, $p = .54$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.261, $p > .05$ (Appendix 14).

> R_{108}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 5.0% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = .719, $p = .54$. Accounting for 4.4% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = .972, p = .38. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .261, p > .05 (Appendix 14).

> R_{109}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 1.7% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .235, p = .87. Accounting for 1.4% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .296, p = .74. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .125, p > .05 (Appendix 14).

> R_{110}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of English. A manual plot for General Hypothesis 4B's two-way interaction of student cultural literacy and family structure predicting English lifelong adaptability ratings (R_{110}) is provided in Figure 103. The graph coordinates and their calculations are included in Appendix 15.

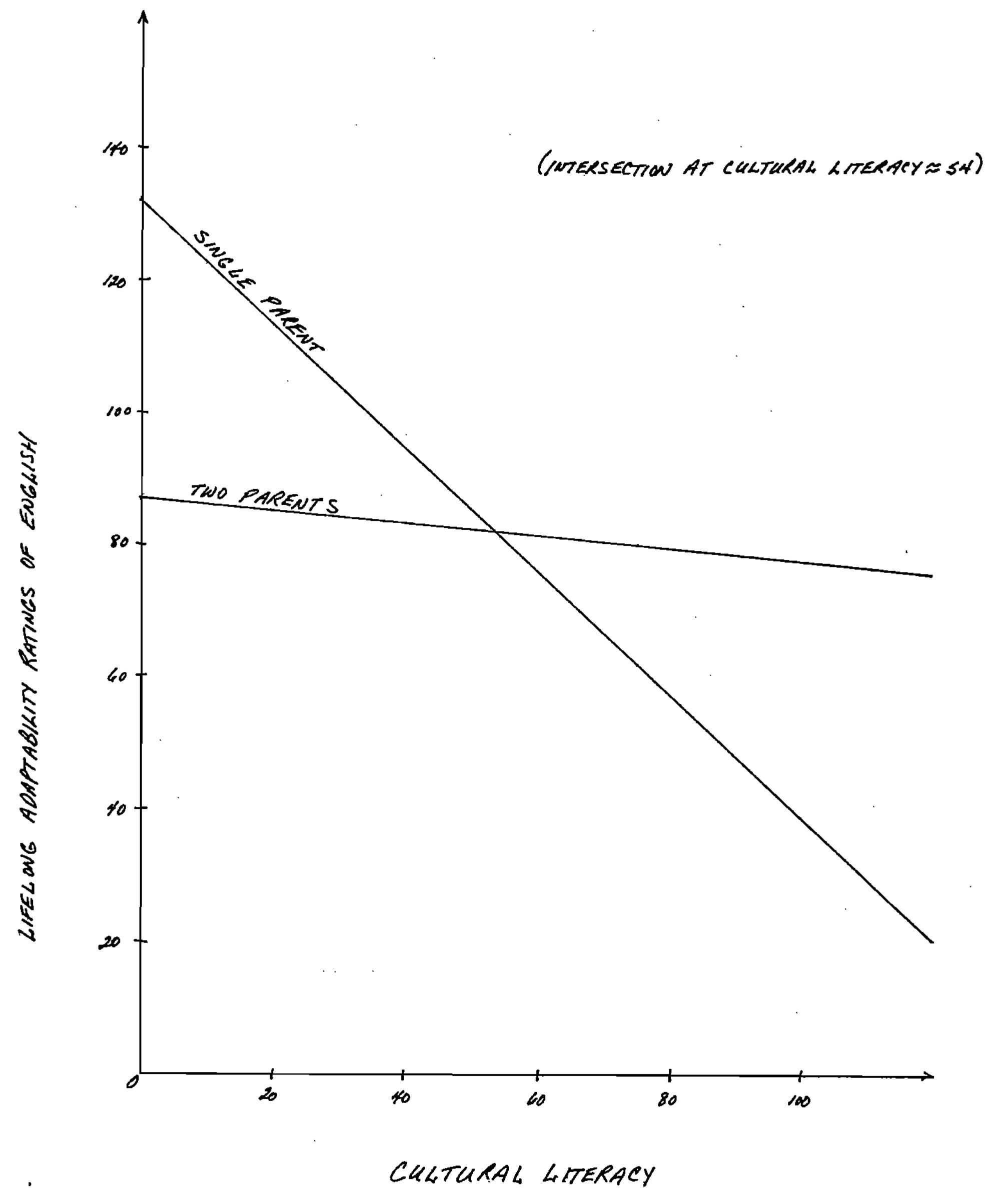

Figure 103. General Hypothesis 4B two-way interaction manual plot of student cultural literacy and family structure predicting English lifelong adaptability ratings (N = 45).

In R_{110}, only about 11% of the students had a cultural literacy score below 54, whereas about 89% of the students had a cultural literacy score equal to or above 54. Below a cultural literacy score of approximately 54, the less culturally literate students in two-parent households assigned significantly lower lifelong adaptability ratings to English than did the less culturally literate students in single-parent households, but above a cultural literacy score of approximately 54, the more culturally literate students in two-parent households assigned significantly higher lifelong adaptability ratings to English than did the more culturally literate students in single-parent households. Moreover, as cultural literacy scores increased, the difference between lifelong adaptability ratings of English increased such that the more culturally literate students in two-parent households assigned significantly higher lifelong adaptability ratings to English than did the more culturally literate students in single-parent households.

Accounting for 17.0% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents significantly predicted students' lifelong adaptability ratings of English, F (3, 41) = 2.803, $p = .05$. Accounting for 8.5% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of English, F (2, 42) = 1.960, $p = .15$. An F test of the full model versus the restricted model produced a significant finding, F (1, 41) = 4.250, $p < .05$ but > .01 (Appendix 14). However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{106} through R_{120}, R_{110}'s significant p value of < .05 but > .01 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{110}'s adjusted p value nonsignificant at < .75 but > .15.

R_{111}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 0.7% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .103, $p = .95$. Accounting for 0.5% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .116, $p = .89$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .083, $p > .05$ (Appendix 14).

R_{112}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 8.2% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = 1.227, $p = .31$. Accounting for 8.1% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = 1.839, $p = .17$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .045, $p > .05$ (Appendix 14).

R_{113}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 2.3% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of home economics, F (3, 41) = .320, p = .81. Accounting for 2.3% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of home economics, F (2, 42) = .489, p = .61. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{114}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 3.0% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .420, p = .74. Accounting for 2.6% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .564, p = .57. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .167, $p > .05$

(Appendix 14).

> R_{115}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 1.5% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = .210, $p = .88$. Accounting for 1.1% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .224, $p = .79$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .167, $p > .05$ (Appendix 14).

> R_{116}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 6.8% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .995, $p = .40$. Accounting for 3.1% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .665, $p = .51$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = 1.609$, $p > .05$ (Appendix 14).

> R_{117}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 2.8% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of physical education, $F(3, 41) = .400$, $p = .75$. Accounting for 2.3% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of physical education, $F(2, 42) = .493$, $p = .61$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = .208$, $p > .05$ (Appendix 14).

> R_{118}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 16.4% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents significantly predicted students' lifelong adaptability ratings of science, $F(3, 41) = 2.675$, $p = .05$. Accounting for 16.4% of the criterion variance, the restricted model of student cultural literacy and two parents significantly predicted students' lifelong adaptability ratings of science, $F(2, 42) = 4.111$, $p = .02$. An F test of the full model versus the restricted model produced a nonsignificant finding,

F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{119}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 5.1% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = .737, $p = .53$. Accounting for 5.1% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 1.118, $p = .33$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{120}: The two-way interaction of student cultural literacy and family structure significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 2.2% of the criterion variance, the full model of two parents, student cultural literacy x single parent, and student cultural literacy x two parents did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .307, $p = .82$. Accounting for 1.9% of the criterion variance, the restricted model of student cultural literacy and two parents did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .416, $p = .66$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .125, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{106}, R_{107}, R_{108}, R_{109}, R_{111}, R_{112}, R_{113}, R_{114}, R_{115}, R_{116}, R_{117}, R_{118}, R_{119}, and R_{120}): art, F (1, 41) = 1.000, $p > .05$; business, F (1, 41) = 1.261, $p > .05$; computer technology, F (1, 41) = .261, $p > .05$; driver education, F (1, 41) = .125, $p > .05$; foreign language, F (1, 41) = .083, $p > .05$; health, F (1, 41) = .045, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .167, $p > .05$; mathematics, F (1, 41) = .167, $p >$ .05; music, F (1, 41) = 1.609, $p > .05$; physical education, F (1, 41) = .208, $p > .05$; science, F (1, 41) = .000, $p > .05$; social studies, F (1, 41) = .000, $p > .05$; and vocational-technical, F (1, 41) = .125, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{110}): English, F (1, 41) = 4.250, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{106} through R_{120}, this one significant full and restricted regression model pair (R_{110}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

R_{121} - R_{135}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{121} . . . art.

R_{122} . . . business.

R_{123} . . . computer technology.

R_{124} . . . driver education.

R_{125} . . . English.

R_{126} . . . foreign language.

R_{127} . . . health.

R_{128} . . . home economics.

R_{129} . . . industrial technology.

R_{130} . . . mathematics.

R_{131} . . . music.

R_{132} . . . physical education.

R_{133} . . . science.

R_{134} . . . social studies.

R_{135} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{121} through R_{135}. Furthermore, there was no attenuation of student cultural literacy main effects or of parental age main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{121} through R_{135}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{121} - R_{135}) tested the two-way interaction of student cultural literacy and parental age as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 20. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{121}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 2.1% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = .300, p = .82. Accounting for 1.5% of the criterion variance, the restricted model of student

Table 20

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{121}: Art										
Full Model										
Cult. Lit.	1.135	1.794	.639	.633	.53					NS
Parental Age[c]	21.420	38.384	.374	.558	.57					NS
Cult. Lit. x Parental Age	-.285	.542	-.676	-.527	.60					NS
Regression						.021	3/41	.300	.82	NS
Restricted Model										
Cult. Lit.	.201	.276	.113	.730	.46					NS
Parental Age	1.758	8.891	.031	.198	.84					NS
Regression						.015	2/42	.317	.73	NS
Full-versus-restricted Model							1/41	.250	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{122}: Business										
Full Model										
Cult. Lit.	.258	1.039	.246	.248	.80					NS
Parental Age[c]	1.634	22.235	.048	.074	.94					NS
Cult. Lit. x Parental Age	-.113	.314	-.456	-.361	.72					NS
Regression						.054	3/41	.783	.51	NS
Restricted Model										
Cult. Lit.	-.113	.159	-.108	-.708	.48					NS
Parental Age	-6.169	5.141	-.183	-1.200	.23					NS
Regression						.051	2/42	1.133	.33	NS
Full-versus-restricted Model							1/41	.130	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{123}: Computer Technology										
Full Model										
Cult. Lit.	1.072	1.215	.868	.882	.38					NS
Parental Age[c]	10.052	26.003	.252	.387	.70					NS
Cult. Lit. x Parental Age	-.271	.367	-.924	-.739	.46					NS
Regression						.071	3/41	1.051	.38	NS
Restricted Model										
Cult. Lit.	.185	.187	.150	.988	.32					NS
Parental Age	-8.632	6.043	-.217	-1.428	.16					NS
Regression						.059	2/42	1.318	.27	NS
Full-versus-restricted Model							1/41	.522	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{124}: Driver Education										
<u>Full Model</u>										
Cult. Lit.	-.001	1.584	-.001	-.001	.99					NS
Parental Age[c]	7.249	33.902	.144	.214	.83					NS
Cult. Lit. x Parental Age	-.019	.479	-.051	-.039	.96					NS
Regression						.014	3/41	.195	.89	NS
<u>Restricted Model</u>										
Cult. Lit.	-.063	.243	-.040	-.260	.79					NS
Parental Age	5.948	7.827	.118	.760	.45					NS
Regression						.014	2/42	.299	.74	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{125}: English										
Full Model										
Cult. Lit.	-1.790	1.194	-1.461	-1.500	.14					NS
Parental Age[c]	-27.322	25.546	-.691	-1.070	.29					NS
Cult. Lit. x Parental Age	.468	.361	1.609	1.299	.20					NS
Regression						.089	3/41	1.338	.27	NS
Restricted Model										
Cult. Lit.	-.258	.187	-.211	-1.385	.17					NS
Parental Age	4.944	6.018	.125	.822	.41					NS
Regression						.052	2/42	1.145	.32	NS
Full-versus-restricted Model							1/41	1.682	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{126}: Foreign Language										
Full Model										
Cult. Lit.	-1.222	1.770	-.685	-.690	.49					NS
Parental Age[c]	-37.224	37.875	-.647	-.983	.33					NS
Cult. Lit. x Parental Age	.367	.535	.866	.686	.49					NS
Regression						.055	3/41	.795	.50	NS
Restricted Model										
Cult. Lit.	-.022	.273	-.012	-.081	.93					NS
Parental Age	-11.953	8.794	-.208	-1.359	.18					NS
Regression						.044	2/42	.969	.38	NS
Full-versus-restricted Model							1/41	.478	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{127}: Health										
<u>Full Model</u>										
Cult. Lit.	-1.110	1.441	-.753	-.770	.44					NS
Parental Age[c]	-9.300	30.842	-.195	-.302	.76					NS
Cult. Lit. x Parental Age	.218	.435	.622	.501	.61					NS
Regression						.083	3/41	1.229	.31	NS
<u>Restricted Model</u>										
Cult. Lit.	-.398	.221	-.270	-1.796	.07					NS
Parental Age	5.710	7.142	.120	.800	.42					NS
Regression						.077	2/42	1.750	.18	NS
<u>Full-versus-restricted Model</u>							1/41	.273	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{128}: Home Economics										
Full Model										
Cult. Lit.	-.373	1.575	-.225	-.237	.81					NS
Parental Age[c]	17.619	33.693	.329	.523	.60					NS
Cult. Lit. x Parental Age	.012	.476	.031	.026	.97					NS
Regression						.137	3/41	2.172	.10	NS
Restricted Model										
Cult. Lit.	-.332	.241	-.200	-1.379	.17					NS
Parental Age	18.474	7.779	.345	2.375	.02					S
Regression						.137	2/42	3.337	.04	S
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{129}: Industrial Technology										
Full Model										
Cult. Lit.	.480	1.561	.306	.307	.76					NS
Parental Age[c]	23.163	33.398	.459	.694	.49					NS
Cult. Lit. x Parental Age	-.191	.471	-.513	-.405	.68					NS
Regression						.046	3/41	.657	.58	NS
Restricted Model										
Cult. Lit.	-.145	.239	-.092	-.604	.54					NS
Parental Age	10.016	7.726	.198	1.296	.20					NS
Regression						.042	2/42	.922	.40	NS
Full-versus-restricted Model							1/41	.174	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{130}: Mathematics										
Full Model										
Cult. Lit.	-1.116	1.605	-.697	-.695	.49					NS
Parental Age[c]	-27.949	34.344	-.541	-.814	.42					NS
Cult. Lit. x Parental Age	.306	.485	.804	.631	.53					NS
Regression						.035	3/41	.502	.68	NS
Restricted Model										
Cult. Lit.	-.116	.247	-.072	-.469	.64					NS
Parental Age	-6.892	7.967	-.133	-.865	.39					NS
Regression						.026	2/42	.563	.57	NS
Full-versus-restricted Model							1/41	.375	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{131}: Music										
Full Model										
Cult. Lit.	2.379	2.025	1.167	1.175	.24					NS
Parental Age[c]	42.057	43.328	.639	.971	.33					NS
Cult. Lit. x Parental Age	-.619	.612	-1.279	-1.013	.31					NS
Regression						.053	3/41	.768	.51	NS
Restricted Model										
Cult. Lit.	.353	.314	.173	1.124	.26					NS
Parental Age	-.606	10.127	-.009	-.060	.95					NS
Regression						.030	2/42	.639	.53	NS
Full-versus-restricted Model							1/41	1.000	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{132}: Physical Education										
Full Model										
Cult. Lit.	-2.449	1.919	-1.226	-1.276	.20					NS
Parental Age[c]	-63.715	41.072	-.989	-1.551	.12					NS
Cult. Lit. x Parental Age	.687	.580	1.448	1.185	.24					NS
Regression						.113	3/41	1.747	.17	NS
Restricted Model										
Cult. Lit.	-.202	.299	-.101	-.675	.50					NS
Parental Age	-16.388	9.643	-.254	-1.699	.09					NS
Regression						.083	2/42	1.900	.16	NS
Full-versus-restricted Model							1/41	1.364	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{133}: Science										
<u>Full Model</u>										
Cult. Lit.	.445	1.549	.281	.288	.77					NS
Parental Age[c]	-4.114	33.146	-.080	-.124	.90					NS
Cult. Lit. x Parental Age	.004	.468	.010	.008	.99					NS
Regression						.082	3/41	1.224	.31	NS
<u>Restricted Model</u>										
Cult. Lit.	.458	.237	.289	1.929	.06					NS
Parental Age	-3.859	7.652	-.076	-.504	.61					NS
Regression						.082	2/42	1.881	.16	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{134}: Social Studies										
Full Model										
Cult. Lit.	.723	1.377	.527	.525	.60					NS
Parental Age[c]	16.692	29.463	.377	.567	.57					NS
Cult. Lit. x Parental Age	-.171	.416	-.523	-.410	.68					NS
Regression						.035	3/41	.497	.68	NS
Restricted Model										
Cult. Lit.	.165	.211	.120	.782	.43					NS
Parental Age	4.937	6.816	.111	.724	.47					NS
Regression						.031	2/42	.674	.51	NS
Full-versus-restricted Model							1/41	.167	> .05	NS

Table 20 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{135}: Vocational-Technical										
<u>Full Model</u>										
Cult. Lit.	-.663	1.623	-.405	-.408	.68					NS
Parental Age[c]	1.979	34.730	.037	.057	.95					NS
Cult. Lit. x Parental Age	.137	.490	.352	.280	.78					NS
Regression						.057	3/41	.822	.48	NS
<u>Restricted Model</u>										
Cult. Lit.	-.214	.249	-.131	-.861	.39					NS
Parental Age	11.421	8.025	.216	1.423	.16					NS
Regression						.055	2/42	1.220	.30	NS
<u>Full-versus-restricted Model</u>							1/41	.087	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

[c]Parental age was a household average. From eight possible age ranges available in the

Table 20 (continued)

Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5*.

cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .317, $p = .73$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .250, $p > .05$ (Appendix 14).

> R_{122}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 5.4% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of business, F (3, 41) = .783, $p = .51$. Accounting for 5.1% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of business, F (2, 42) = 1.133, $p = .33$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .130, $p > .05$ (Appendix 14).

> R_{123}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of computer technology. Accounting for 7.1% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = 1.051, $p = .38$. Accounting for 5.9% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 1.318, $p = .27$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .522, $p > .05$ (Appendix 14).

> R_{124}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 1.4% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .195, $p = .89$. Accounting for 1.4% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .299, $p = .74$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

> R_{125}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of English. Accounting for 8.9% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of English, F (3, 41) = 1.338, $p = .27$. Accounting for 5.2% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of English, F (2, 42) = 1.145, $p = .32$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.682, $p > .05$ (Appendix 14).

R_{126}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 5.5% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .795, $p = .50$. Accounting for 4.4% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .969, $p = .38$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .478, $p > .05$ (Appendix 14).

R_{127}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of health. Accounting for 8.3% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = 1.229, $p = .31$. Accounting for 7.7% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = 1.750, $p = .18$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .273, $p > .05$ (Appendix 14).

> R_{128}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 13.7% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of home economics, F (3, 41) = 2.172, $p = .10$. Accounting for 13.7% of the criterion variance, the restricted model of student cultural literacy and parental age significantly predicted students' lifelong adaptability ratings of home economics, F (2, 42) = 3.337, $p = .04$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

> R_{129}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of industrial technology. Accounting for 4.6% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .657, p = .58. Accounting for 4.2% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .922, p = .40. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .174, $p > .05$ (Appendix 14).

> R_{130}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 3.5% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = .502, p = .68. Accounting for 2.6% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .563, p = .57. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .375, $p > .05$ (Appendix 14).

> R_{131}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of music. Accounting for 5.3% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .768, p = .51. Accounting for 3.0% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .639, p = .53. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.000, p > .05 (Appendix 14).

R_{132}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 11.3% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = 1.747, p = .17. Accounting for 8.3% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = 1.900, p = .16. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.364, p > .05 (Appendix 14).

R_{133}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of science. Accounting for 8.2% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of science, F (3, 41) = 1.224, p = .31. Accounting for 8.2% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of science, F (2, 42) = 1.881, p = .16. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, p > .05 (Appendix 14).

> R_{134}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 3.5% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = .497, p = .68. Accounting for 3.1% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = .674, p = .51. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .167, p > .05 (Appendix 14).

> R_{135}: The two-way interaction of student cultural literacy and parental age significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong

adaptability ratings of vocational-technical. Accounting for 5.7% of the criterion variance, the full model of student cultural literacy, parental age, and student cultural literacy x parental age did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .822, p = .48. Accounting for 5.5% of the criterion variance, the restricted model of student cultural literacy and parental age did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = 1.220, p = .30. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .087, p > .05 (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{121}, R_{122}, R_{123}, R_{124}, R_{125}, R_{126}, R_{127}, R_{128}, R_{129}, R_{130}, R_{131}, R_{132}, R_{133}, R_{134}, and R_{135}): art, F (1, 41) = .250, p > .05; business, F (1, 41) = .130, p > .05; computer technology, F (1, 41) = .522, p > .05; driver education, F (1, 41) = .000, p > .05; English, F (1, 41) = 1.682, p > .05; foreign language, F (1, 41) = .478, p > .05; health, F (1, 41) = .273, p > .05; home economics, F (1, 41) = .000, p > .05; industrial technology, F (1, 41) = .174, p > .05; mathematics, F (1, 41) = .375, p > .05; music, F (1, 41) = 1.000, p > .05; physical education, F (1, 41) = 1.364, p > .05; science, F (1, 41) = .000, p > .05; social studies, F (1, 41) = .167, p > .05; and vocational-technical, F (1, 41) = .087, p > .05.

R_{136} - R_{150}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{136} . . . art.

R_{137} . . . business.

R_{138} . . . computer technology.

R_{139} . . . driver education.

R_{140} . . . English.

R_{141} . . . foreign language.

R_{142} . . . health.

R_{143} . . . home economics.

R_{144} . . . industrial technology.

R_{145} . . . mathematics.

R_{146} . . . music.

R_{147} . . . physical education.

R_{148} . . . science.

R_{149} . . . social studies.

R_{150} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed one significant finding (R_{139}) in R_{136} through R_{150}. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{136} through R_{150}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of student cultural literacy main effects or of parental educational level main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{136} through R_{150}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{136} - R_{150}) tested the two-way interaction of student cultural literacy and parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 21. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{136}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 8.9% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict

Table 21

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{136}: Art										
Full Model										
Cult. Lit.	.983	.757	.553	1.298	.20					NS
Parental Educ. Lev.[c]	8.199	14.909	.477	.550	.58					NS
Cult. Lit. x Parental Educ. Lev.	-.168	.194	-.926	-.863	.39					NS
Regression						.089	3/41	1.329	.27	NS
Restricted Model										
Cult. Lit.	.377	.284	.212	1.330	.19					NS
Parental Educ. Lev.	-4.448	2.743	-.259	-1.622	.11					NS
Regression						.072	2/42	1.631	.20	NS
Full-versus-restricted Model							1/41	.773	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{137}: Business										
<u>Full Model</u>										
Cult. Lit.	-.820	.446	-.783	-1.837	.07					NS
Parental Educ. Lev.[c]	-11.489	8.790	-1.135	-1.307	.19					NS
Cult. Lit. x Parental Educ. Lev.	.172	.115	1.611	1.501	.14					NS
Regression						.087	3/41	1.309	.28	NS
<u>Restricted Model</u>										
Cult. Lit.	-.199	.170	-.190	-1.168	.24					NS
Parental Educ. Lev.	1.481	1.646	.146	.900	.37					NS
Regression						.037	2/42	.812	.45	NS
<u>Full-versus-restricted Model</u>							1/41	2.273	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{138}: Computer Technology										
Full Model										
Cult. Lit.	.432	.545	.349	.792	.43					NS
Parental Educ. Lev.[c]	4.656	10.734	.390	.434	.66					NS
Cult. Lit. x Parental Educ. Lev.	-.072	.140	-.571	-.514	.60					NS
Regression						.023	3/41	.325	.80	NS
Restricted Model										
Cult. Lit.	.172	.203	.139	.846	.40					NS
Parental Educ. Lev.	-.770	1.963	-.064	-.392	.69					NS
Regression						.017	2/42	.362	.69	NS
Full-versus-restricted Model							1/41	.250	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{139}: Driver Education										
<u>Full Model</u>										
Cult. Lit.	-1.241	.661	-.794	-1.877	.06					NS
Parental Educ. Lev.[c]	-27.913	13.020	-1.846	-2.144	.03					S
Cult. Lit. x Parental Educ. Lev.	.350	.170	2.196	2.063	.04					S
Regression						.102	3/41	1.558	.21	NS
<u>Restricted Model</u>										
Cult. Lit.	.023	.258	.015	.089	.92					NS
Parental Educ. Lev.	-1.510	2.494	-.100	-.606	.54					NS
Regression						.009	2/42	.193	.82	NS
<u>Full-versus-restricted Model</u>							1/41	4.227	< .05 but > .01	S[d]

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{140}: English										
Full Model										
Cult. Lit.	-.238	.537	-.194	-.443	.65					NS
Parental Educ. Lev.[c]	-.408	10.574	-.034	-.039	.96					NS
Cult. Lit. x Parental Educ. Lev.	.003	.138	.024	.022	.98					NS
Regression						.037	3/41	.520	.67	NS
Restricted Model										
Cult. Lit.	-.227	.199	-.185	-1.140	.26					NS
Parental Educ. Lev.	-.181	1.928	-.015	-.094	.92					NS
Regression						.037	2/42	.799	.45	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{141}: Foreign Language										
Full Model										
Cult. Lit.	-.086	.795	-.048	-.108	.91					NS
Parental Educ. Lev.[c]	.767	15.659	.044	.049	.96					NS
Cult. Lit. x Parental Educ. Lev.	-.004	.204	-.020	-.018	.98					NS
Regression						.003	3/41	.038	.99	NS
Restricted Model										
Cult. Lit.	-.099	.295	-.056	-.336	.73					NS
Parental Educ. Lev.	.493	2.855	.029	.173	.86					NS
Regression						.003	2/42	.058	.94	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{142}: Health										
<u>Full Model</u>										
Cult. Lit.	-1.322	.612	-.897	-2.160	.03					S
Parental Educ. Lev.[c]	-22.010	12.059	-1.543	-1.825	.07					NS
Cult. Lit. x Parental Educ. Lev.	.276	.157	1.837	1.757	.08					NS
Regression						.134	3/41	2.116	.11	NS
<u>Restricted Model</u>										
Cult. Lit.	-.325	.236	-.221	-1.380	.17					NS
Parental Educ. Lev.	-1.182	2.280	-.083	-.519	.60					NS
Regression						.069	2/42	1.552	.22	NS
<u>Full-versus-restricted Model</u>							1/41	3.095	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{143}: Home Economics										
<u>Full Model</u>										
Cult. Lit.	-.926	.724	-.558	-1.280	.20					NS
Parental Educ. Lev.[c]	-14.738	14.256	-.917	-1.034	.30					NS
Cult. Lit. x Parental Educ. Lev.	.192	.186	1.135	1.034	.30					NS
Regression						.046	3/41	.664	.57	NS
<u>Restricted Model</u>										
Cult. Lit.	-.233	.272	-.140	-.855	.39					NS
Parental Educ. Lev.	-.248	2.633	-.015	-.094	.92					NS
Regression						.021	2/42	.460	.63	NS
<u>Full-versus-restricted Model</u>							1/41	1.087	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{144}: Industrial Technology										
Full Model										
Cult. Lit.	-.962	.678	-.614	-1.419	.16					NS
Parental Educ. Lev.[c]	-20.367	13.353	-1.345	-1.525	.13					NS
Cult. Lit. x Parental Educ. Lev.	.253	.174	1.586	1.455	.15					NS
Regression						.058	3/41	.849	.47	NS
Restricted Model										
Cult. Lit.	-.048	.258	-.030	-.185	.85					NS
Parental Educ. Lev.	-1.274	2.496	-.084	-.510	.61					NS
Regression						.010	2/42	.209	.81	NS
Full-versus-restricted Model							1/41	2.087	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{145}: Mathematics										
Full Model										
Cult. Lit.	-.231	.710	-.144	-.325	.74					NS
Parental Educ. Lev.[c]	-3.490	13.981	-.225	-.250	.80					NS
Cult. Lit. x Parental Educ. Lev.	.033	.182	.202	.181	.85					NS
Regression						.013	3/41	.183	.90	NS
Restricted Model										
Cult. Lit.	-.112	.264	-.070	-.424	.67					NS
Parental Educ. Lev.	-1.007	2.550	-.065	-.395	.69					NS
Regression						.012	2/42	.264	.76	NS
Full-versus-restricted Model							1/41	.042	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{146}: Music										
<u>Full Model</u>										
Cult. Lit.	1.062	.884	.521	1.202	.23					NS
Parental Educ. Lev.[c]	10.506	17.412	.533	.603	.54					NS
Cult. Lit. x Parental Educ. Lev.	-.172	.227	-.826	-.757	.45					NS
Regression						.056	3/41	.811	.49	NS
<u>Restricted Model</u>										
Cult. Lit.	.442	.330	.217	1.338	.18					NS
Parental Educ. Lev.	-2.450	3.197	-.124	-.766	.44					NS
Regression						.043	2/42	.940	.39	NS
<u>Full-versus-restricted Model</u>							1/41	.565	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{147}: Physical Education										
<u>Full Model</u>										
Cult. Lit.	-.280	.882	-.140	-.317	.75					NS
Parental Educ. Lev.[c]	.358	17.379	.019	.021	.98					NS
Cult. Lit. x Parental Educ. Lev.	-.002	.227	-.012	-.011	.99					NS
Regression						.020	3/41	.279	.84	NS
<u>Restricted Model</u>										
Cult. Lit.	-.288	.328	-.144	-.881	.38					NS
Parental Educ. Lev.	.173	3.168	.009	.055	.95					NS
Regression						.020	2/42	.429	.65	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{148}: Science										
Full Model										
Cult. Lit.	.616	.677	.389	.910	.36					NS
Parental Educ. Lev.[c]	5.591	13.331	.365	.419	.67					NS
Cult. Lit. x Parental Educ. Lev.	-.060	.174	-.372	-.346	.73					NS
Regression						.083	3/41	1.244	.30	NS
Restricted Model										
Cult. Lit.	.399	.252	.252	1.585	.12					NS
Parental Educ. Lev.	1.056	2.434	.069	.434	.66					NS
Regression						.081	2/42	1.846	.17	NS
Full-versus-restricted Model							1/41	.091	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{149}: Social Studies										
<u>Full Model</u>										
Cult. Lit.	-.484	.589	-.352	-.822	.41					NS
Parental Educ. Lev.[c]	-9.358	11.592	-.704	-.807	.42					NS
Cult. Lit. x Parental Educ. Lev.	.159	.151	1.135	1.052	.29					NS
Regression						.078	3/41	1.155	.33	NS
<u>Restricted Model</u>										
Cult. Lit.	.090	.221	.066	.408	.68					NS
Parental Educ. Lev.	2.631	2.142	.198	1.228	.22					NS
Regression						.053	2/42	1.176	.31	NS
<u>Full-versus-restricted Model</u>							1/41	1.136	> .05	NS

Table 21 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{150}: Vocational-Technical										
<u>Full Model</u>										
Cult. Lit.	-1.182	.691	-.722	-1.709	.09					NS
Parental Educ. Lev.[c]	-26.418	13.617	-1.668	-1.940	.05					S
Cult. Lit. x Parental Educ. Lev.	.313	.178	1.874	1.763	.08					NS
Regression						.105	3/41	1.600	.20	NS
<u>Restricted Model</u>										
Cult. Lit.	-.052	.266	-.032	-.196	.84					NS
Parental Educ. Lev.	-2.824	2.575	-.178	-1.097	.27					NS
Regression						.037	2/42	.805	.45	NS
<u>Full-versus-restricted Model</u>							1/41	3.091	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as

Table 21 (continued)

= .05, or as > .05 without truncation or rounding.

[c]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

[d]Due to the presence of 15 multiple tests in H_{G4B}'s R_{136} through R_{150}, the significant *p* value in R_{139} (< .05 but > .01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted *p* value in R_{139} (< .75 but > .15).

students' lifelong adaptability ratings of art, $F\ (3, 41) = 1.329$, $p = .27$. Accounting for 7.2% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of art, $F\ (2, 42) = 1.631$, $p = .20$. An *F* test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = .773$, $p > .05$ (Appendix 14).

> R_{137}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 8.7% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of business, $F\ (3, 41) = 1.309$, $p = .28$. Accounting for 3.7% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of business, *F* (2, 42) = .812, *p* = .45. An *F* test of the full model versus the restricted model produced a nonsignificant finding, *F* (1, 41) = 2.273, *p*> .05 (Appendix 14).

> R_{138}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 2.3% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, *F* (3, 41) = .325, *p* = .80. Accounting for 1.7% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, *F* (2, 42) = .362, *p* = .69. An *F* test of the full model versus the restricted model produced a nonsignificant finding, *F* (1, 41) = .250, *p* > .05 (Appendix 14).

> R_{139}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of driver education. A manual plot for General Hypothesis 4B's two-way interaction of student cultural literacy and parental educational level predicting driver education lifelong adaptability ratings (R_{139}) is provided in Figure

104. The graph coordinates and their calculations are included in Appendix 15.

In R_{139}, after demonstration of significant interaction of two continuous predictor variables, cultural literacy and parental educational level, and only for purposes of interpretation, one of the continuous predictor variables was redefined as a categorical predictor variable with three categories: Cultural Literacy Low (n = 6, about 13.3% of students), Cultural Literacy Medium (n = 19, about 42.2% of students), and Cultural Literacy High (n = 20, about 44.4% of students). As parental educational level increased for students of low cultural literacy, their lifelong adaptability ratings of driver education sharply decreased. As parental educational level increased for students of medium cultural literacy, their lifelong adaptability ratings of driver education also decreased but not as sharply as those ratings assigned by students of low cultural literacy. As parental educational level increased for students of high cultural literacy, their lifelong adaptability ratings of driver education increased. In other words, as parental educational level increased, students' lifelong adaptability ratings of driver education significantly changed depending on student cultural literacy such that students of low cultural literacy assigned sharply lower lifelong adaptability ratings to driver education, students of medium cultural literacy assigned lower lifelong adaptability ratings to driver education, and students of high cultural literacy assigned higher lifelong adaptability ratings to driver education.

Accounting for 10.2% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = 1.558, p = .21. Accounting for 0.9% of the criterion variance, the restricted model of student cultural literacy and parental educational level

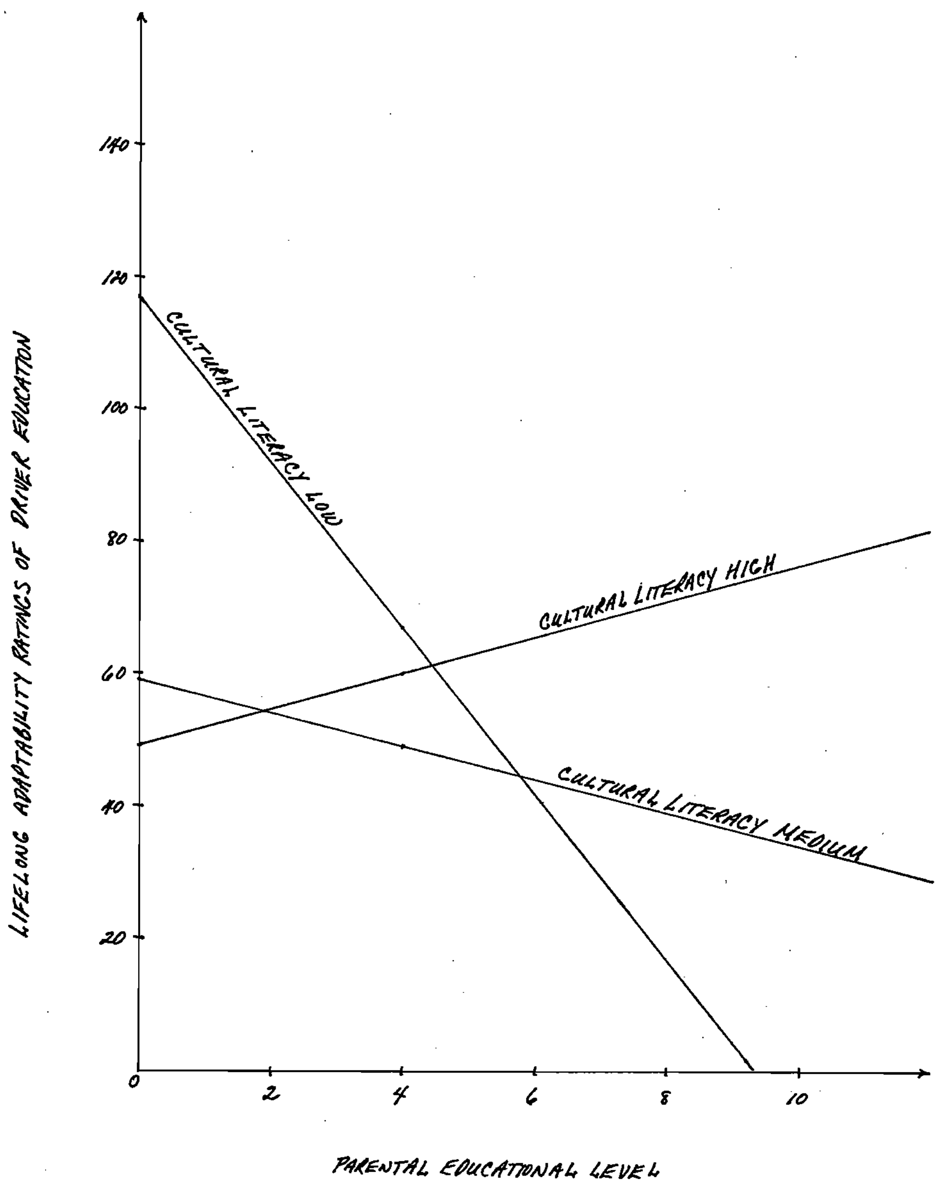

Figure 104. General Hypothesis 4B two-way interaction manual plot of student cultural literacy and parental educational level predicting driver education lifelong adaptability ratings (N = 45).

did not significantly predict students' lifelong adaptability ratings of driver education, *F* (2, 42) = .193, $p = .82$. An *F* test of the full model versus the restricted model produced a significant finding, $F\ (1, 41) = 4.227$, $p < .05$ but $> .01$ (Appendix 14). However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{136} through R_{150}, R_{139}'s significant *p* value of $< .05$ but $> .01$ was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{139}'s adjusted *p* value nonsignificant at $< .75$ but $> .15$.

> R_{140}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 3.7% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of English, $F\ (3, 41) = .520$, $p = .67$. Accounting for 3.7% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of English, $F\ (2, 42) = .799$, $p = .45$. An *F* test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = .000$, $p > .05$ (Appendix 14).

> R_{141}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 0.3% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .038, p = .99. Accounting for 0.3% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .058, p = .94. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{142}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 13.4% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = 2.116, p = .11. Accounting for 6.9% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = 1.552, p = .22. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 3.095, $p > .05$ (Appendix 14).

R_{143}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 4.6% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of home economics, F (3, 41) = .664, p = .57. Accounting for 2.1% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of home economics, F (2, 42) = .460, p = .63. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.087, $p > .05$ (Appendix 14).

R_{144}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 5.8% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .849, p = .47. Accounting for 1.0% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .209, p = .81. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = 2.087$, $p > .05$ (Appendix 14).

> R_{145}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 1.3% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, $F(3, 41) = .183$, $p = .90$. Accounting for 1.2% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, $F(2, 42) = .264$, $p = .76$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = .042$, $p > .05$ (Appendix 14).

> R_{146}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 5.6% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of music, $F(3, 41) = .811$, $p = .49$. Accounting for 4.3% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .940, p = .39. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .565, $p > .05$ (Appendix 14).

R_{147}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 2.0% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = .279, p = .84. Accounting for 2.0% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = .429, p = .65. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{148}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 8.3% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of science, F (3, 41) = 1.244, p = .30.

Accounting for 8.1% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of science, F (2, 42) = 1.846, $p = .17$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .091, $p > .05$ (Appendix 14).

> R_{149}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 7.8% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = 1.155, $p = .33$. Accounting for 5.3% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 1.176, $p = .31$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.136, $p > .05$ (Appendix 14).

> R_{150}: The two-way interaction of student cultural literacy and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 10.5% of the criterion variance, the full model of student cultural literacy, parental educational level, and student cultural literacy x parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = 1.600, $p = .20$. Accounting for 3.7% of the criterion variance, the restricted model of student cultural literacy and parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .805, $p =$ .45. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 3.091, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{136}, R_{137}, R_{138}, R_{140}, R_{141}, R_{142}, R_{143}, R_{144}, R_{145}, R_{146}, R_{147}, R_{148}, R_{149}, and R_{150}): art, F (1, 41) = .773, $p > .05$; business, F (1, 41) = 2.273, $p > .05$; computer technology, F (1, 41) = .250, $p > .05$; English, F (1, 41) = .000, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = 3.095, $p > .05$; home economics, F (1, 41) = 1.087, $p > .05$; industrial technology, F (1, 41) = 2.087, $p > .05$; mathematics, F (1, 41) = .042, $p > .05$; music, F (1, 41) = .565, $p > .05$; physical education, F (1, 41) = .000, $p > .05$; science, F (1, 41) = .091, $p > .05$; social studies, F (1, 41) = 1.136, $p > .05$; and vocational-technical, F (1, 41) = 3.091, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{139}): driver education, F (1, 41) = 4.227, $p < .05$ but $> .01$. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{136} through R_{150}, this one significant full and restricted regression model pair (R_{139}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

R_{151} - R_{165}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{151} . . . art.

R_{152} . . . business.

R_{153} . . . computer technology.

R_{154} . . . driver education.

R_{155} . . . English.

R_{156} . . . foreign language.

R_{157} . . . health.

R_{158} . . . home economics.

R_{159} . . . industrial technology.

R_{160} . . . mathematics.

R_{161} . . . music.

R_{162} . . . physical education.

R_{163} . . . science.

R_{164} . . . social studies.

R_{165} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{151} through R_{165}. Furthermore, there was no attenuation of student cultural literacy main effects or of student gender main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{151} through R_{165}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{151} - R_{165}) tested the two-way interaction of student cultural literacy and student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 22. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as $< .01$, as $= .01$, as $< .05$ but $> .01$, as $= .05$, or as $> .05$ without truncation or rounding.

R_{151}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of art.

Table 22

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{151}: Art										
Full Model										
Female Student	-81.916	45.510	-1.456	-1.800	.07					NS
Cult. Lit. x Female Student[c]	.572	.342	.770	1.674	.10					NS
Cult. Lit. x Male Student	-.480	.466	-.702	-1.029	.30					NS
Regression						.088	3/41	1.315	.28	NS
Restricted Model										
Cult. Lit.	.204	.283	.115	.722	.47					NS
Female Student	-.631	8.967	-.011	-.070	.94					NS
Regression						.014	2/42	.300	.74	NS
Full-versus-restricted Model							1/41	3.364	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{152}: Business										
Full Model										
Female Student	58.309	24.950	1.759	2.337	.02					S
Cult. Lit. x Female Student[c]	-.247	.187	-.565	-1.320	.19					NS
Cult. Lit. x Male Student	.351	.256	.871	1.373	.17					NS
Regression						.210	3/41	3.637	.02	S
Restricted Model										
Cult. Lit.	-.038	.156	-.036	-.245	.80					NS
Female Student	12.087	4.930	.365	2.452	.01					S
Regression						.142	2/42	3.462	.04	S
Full-versus-restricted Model							1/41	3.579	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{153}: Computer Technology										
Full Model										
Female Student	56.511	30.885	1.444	1.830	.07					NS
Cult. Lit. x Female Student[c]	.029	.232	.056	.124	.90					NS
Cult. Lit. x Male Student	.621	.316	1.306	1.963	.05					S
Regression						.131	3/41	2.065	.11	NS
Restricted Model										
Cult. Lit.	.236	.190	.191	1.242	.22					NS
Female Student	10.736	6.014	.274	1.785	.08					NS
Regression						.083	2/42	1.899	.16	NS
Full-versus-restricted Model							1/41	2.286	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{154}: Driver Education										
Full Model										
Female Student	20.551	41.656	.415	.493	.62					NS
Cult. Lit. x Female Student[c]	-.063	.313	-.096	-.201	.84					NS
Cult. Lit. x Male Student	.140	.427	.233	.329	.74					NS
Regression						.013	3/41	.178	.91	NS
Restricted Model										
Cult. Lit.	.008	.250	.005	.032	.97					NS
Female Student	4.842	7.909	.098	.612	.54					NS
Regression						.009	2/42	.197	.82	NS
Full-versus-restricted Model							1/41	.167	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{155}: English										
<u>Full Model</u>										
Female Student	7.474	29.463	.193	.254	.80					NS
Cult. Lit. x Female Student[c]	-.056	.221	-.109	-.252	.80					NS
Cult. Lit. x Male Student	-.167	.302	-.354	-.553	.58					NS
Regression						.197	3/41	3.344	.02	S
<u>Restricted Model</u>										
Cult. Lit.	-.095	.176	-.077	-.537	.59					NS
Female Student	16.067	5.590	.414	2.874	.00					S
Regression						.195	2/42	5.082	.01	S
<u>Full-versus-restricted Model</u>							1/41	.100	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{156}: Foreign Language										
Full Model										
Female Student	11.081	46.227	.196	.240	.81					NS
Cult. Lit. x Female Student[c]	.066	.347	.088	.189	.85					NS
Cult. Lit. x Male Student	.016	.473	.024	.035	.97					NS
Regression						.066	3/41	.971	.41	NS
Restricted Model										
Cult. Lit.	.048	.277	.027	.175	.86					NS
Female Student	14.881	8.762	.263	1.698	.09					NS
Regression						.066	2/42	1.488	.23	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{157}: Health										
<u>Full Model</u>										
Female Student	13.142	35.077	.281	.375	.70					NS
Cult. Lit. x Female Student[c]	-.181	.263	-.294	-.688	.49					NS
Cult. Lit. x Male Student	-.254	.359	-.448	-.708	.48					NS
Regression						.213	3/41	3.698	.01	S
<u>Restricted Model</u>										
Cult. Lit.	-.207	.210	-.140	-.985	.33					NS
Female Student	18.782	6.650	.402	2.824	.00					S
Regression						.212	2/42	5.665	.00	S
<u>Full-versus-restricted Model</u>							1/41	.053	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{158}: Home Economics										
Full Model										
Female Student	-15.312	40.688	-.291	-.376	.70					NS
Cult. Lit. x Female Student[c]	.086	.306	.124	.283	.77					NS
Cult. Lit. x Male Student	-.366	.417	-.572	-.878	.38					NS
Regression						.166	3/41	2.711	.05	S
Restricted Model										
Cult. Lit.	-.072	.246	-.043	-.292	.77					NS
Female Student	19.627	7.783	.373	2.522	.01					S
Regression						.150	2/42	3.704	.03	S
Full-versus-restricted Model							1/41	.800	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{159}: Industrial Technology										
Full Model										
Female Student	-63.387	40.474	-1.278	-1.566	.12					NS
Cult. Lit. x Female Student[c]	.089	.304	.136	.294	.77					NS
Cult. Lit. x Male Student	-.631	.415	-1.047	-1.522	.13					NS
Regression						.071	3/41	1.040	.38	NS
Restricted Model										
Cult. Lit.	-.163	.248	-.104	-.656	.51					NS
Female Student	-7.733	7.852	-.156	-.985	.33					NS
Regression						.026	2/42	.565	.57	NS
Full-versus-restricted Model							1/41	1.957	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{160}: Mathematics										
Full Model										
Female Student	-44.265	42.187	-.873	-1.049	.30					NS
Cult. Lit. x Female Student[c]	.022	.317	.033	.070	.94					NS
Cult. Lit. x Male Student	-.523	.432	-.848	-1.210	.23					NS
Regression						.035	3/41	.492	.68	NS
Restricted Model										
Cult. Lit.	-.168	.256	-.105	-.659	.51					NS
Female Student	-2.161	8.096	-.043	-.267	.79					NS
Regression						.010	2/42	.221	.80	NS
Full-versus-restricted Model							1/41	1.042	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{161}: Music										
Full Model										
Female Student	-76.576	52.145	-1.186	-1.469	.14					NS
Cult. Lit. x Female Student[c]	.559	.392	.655	1.427	.16					NS
Cult. Lit. x Male Student	-.297	.534	-.379	-.557	.58					NS
Regression						.091	3/41	1.361	.26	NS
Restricted Model										
Cult. Lit.	.260	.318	.127	.815	.41					NS
Female Student	-10.414	10.082	-.161	-1.033	.30					NS
Regression						.053	2/42	1.187	.31	NS
Full-versus-restricted Model							1/41	1.727	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{162}: Physical Education										
<u>Full Model</u>										
Female Student	-74.713	51.391	-1.181	-1.454	.15					NS
Cult. Lit. x Female Student[c]	-.074	.386	-.088	-.190	.84					NS
Cult. Lit. x Male Student	-.913	.526	-1.188	-1.735	.09					NS
Regression						.079	3/41	1.179	.32	NS
<u>Restricted Model</u>										
Cult. Lit.	-.367	.314	-.184	-1.171	.24					NS
Female Student	-9.824	9.935	-.155	-.989	.32					NS
Regression						.042	2/42	.926	.40	NS
<u>Full-versus-restricted Model</u>							1/41	1.682	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{163}: Science										
Full Model										
Female Student	-28.238	40.570	-.563	-.696	.49					NS
Cult. Lit. x Female Student[c]	.534	.305	.806	1.753	.08					NS
Cult. Lit. x Male Student	.200	.416	.329	.482	.63					NS
Regression						.088	3/41	1.322	.28	NS
Restricted Model										
Cult. Lit.	.418	.244	.264	1.711	.09					NS
Female Student	-2.438	7.728	-.049	-.316	.75					NS
Regression						.079	2/42	1.797	.17	NS
Full-versus-restricted Model							1/41	.409	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{164}: Social Studies										
<u>Full Model</u>										
Female Student	-22.383	34.576	-.515	-.647	.52					NS
Cult. Lit. x Female Student[c]	.456	.260	.794	1.757	.08					NS
Cult. Lit. x Male Student	.004	.354	.008	.012	.99					NS
Regression						.119	3/41	1.841	.15	NS
<u>Restricted Model</u>										
Cult. Lit.	.298	.210	.217	1.423	.16					NS
Female Student	12.548	6.637	.288	1.891	.06					NS
Regression						.096	2/42	2.229	.12	NS
<u>Full-versus-restricted Model</u>							1/41	1.095	> .05	NS

Table 22 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of student cultural literacy and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{165}: Vocational-Technical										
Full Model										
Female Student	-35.139	43.358	-.678	-.810	.42					NS
Cult. Lit. x Female Student[c]	-.017	.326	-.024	-.051	.95					NS
Cult. Lit. x Male Student	-.454	.444	-.721	-1.023	.31					NS
Regression						.025	3/41	.350	.78	NS
Restricted Model										
Cult. Lit.	-.170	.261	-.104	-.649	.51					NS
Female Student	-1.308	8.281	-.025	-.158	.87					NS
Regression						.010	2/42	.211	.81	NS
Full-versus-restricted Model							1/41	.625	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

Table 22 (continued)

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[c]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 8.8% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = 1.315, $p = .28$. Accounting for 1.4% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .300, $p = .74$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 3.364, $p > .05$ (Appendix 14).

R_{152}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 21.0% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student significantly predicted students' lifelong adaptability ratings of business, F (3, 41) = 3.637, $p = .02$. Accounting for 14.2% of the criterion variance, the restricted model of student cultural literacy and female student significantly predicted students' lifelong adaptability ratings of business, F (2, 42) = 3.462, $p = .04$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 3.579, $p > .05$ (Appendix 14).

R_{153}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 13.1% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = 2.065, $p = .11$. Accounting for 8.3% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 1.899, $p = .16$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.286, $p > .05$ (Appendix 14).

R_{154}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 1.3% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .178, $p = .91$. Accounting for

0.9% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .197, p = .82. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .167, p > .05 (Appendix 14).

R_{155}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 19.7% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student significantly predicted students' lifelong adaptability ratings of English, F (3, 41) = 3.344, p = .02. Accounting for 19.5% of the criterion variance, the restricted model of student cultural literacy and female student significantly predicted students' lifelong adaptability ratings of English, F (2, 42) = 5.082, p = .01. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .100, p > .05 (Appendix 14).

R_{156}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 6.6% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .971, p = .41. Accounting for 6.6% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = 1.488, p = .23. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{157}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 21.3% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student significantly predicted students' lifelong adaptability ratings of health, F (3, 41) = 3.698, p = .01. Accounting for 21.2% of the criterion variance, the restricted model of student cultural literacy and female student significantly predicted students' lifelong adaptability ratings of health, F (2, 42) = 5.665, p = .00. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .053, $p > .05$ (Appendix 14).

R_{158}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 16.6% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student significantly predicted students' lifelong adaptability ratings of home economics, F (3, 41) = 2.711, $p = .05$. Accounting for 15.0% of the criterion variance, the restricted model of student cultural literacy and female student significantly predicted students' lifelong adaptability ratings of home economics, F (2, 42) = 3.704, $p = .03$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .800, $p > .05$ (Appendix 14).

> R_{159}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 7.1% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = 1.040, $p = .38$. Accounting for 2.6% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .565, $p = .57$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.957, $p >$ .05 (Appendix 14).

> R_{160}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 3.5% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = .492, p = .68. Accounting for 1.0% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .221, p = .80. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.042, $p > .05$ (Appendix 14).

> R_{161}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 9.1% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = 1.361, p = .26. Accounting for 5.3% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = 1.187, p = .31. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.727, $p > .05$ (Appendix 14).

> R_{162}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 7.9% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = 1.179, p = .32. Accounting for 4.2% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = .926, p = .40. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.682, p> .05 (Appendix 14).

R_{163}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 8.8% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of science, F (3, 41) = 1.322, p = .28. Accounting for 7.9% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of science, F (2, 42) = 1.797, p = .17. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .409, p > .05 (Appendix 14).

R_{164}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 11.9% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = 1.841, $p = .15$. Accounting for 9.6% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 2.229, $p = .12$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.095, $p > .05$ (Appendix 14).

> R_{165}: The two-way interaction of student cultural literacy and student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 2.5% of the criterion variance, the full model of female student, student cultural literacy x female student, and student cultural literacy x male student did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .350, $p = .78$. Accounting for 1.0% of the criterion variance, the restricted model of student cultural literacy and female student did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .211, $p = .81$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .625, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{151}, R_{152}, R_{153}, R_{154}, R_{155}, R_{156}, R_{157}, R_{158}, R_{159}, R_{160}, R_{161}, R_{162}, R_{163}, R_{164}, and R_{165}): art, F (1, 41) = 3.364, $p > .05$; business, F (1, 41) = 3.579, $p > .05$; computer technology, F (1, 41) = 2.286, $p > .05$; driver education, F (1, 41) = .167, $p > .05$; English, F (1, 41) = .100, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = .053, $p > .05$; home economics, F (1, 41) = .800, $p > .05$; industrial technology, F (1, 41) = 1.957, $p > .05$; mathematics, F (1, 41) = 1.042, $p > .05$; music, F (1, 41) = 1.727, $p > .05$; physical education, F (1, 41) = 1.682, $p > .05$; science, F (1, 41) = .409, $p > .05$; social studies, F (1, 41) = 1.095, $p > .05$; and vocational-technical, F (1, 41) = .625, $p > .05$.

R_{166} - R_{180}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{166} . . . art.

R_{167} . . . business.

R_{168} . . . computer technology.

R_{169} . . . driver education.

R_{170} . . . English.

R_{171} . . . foreign language.

R_{172} . . . health.

R_{173} . . . home economics.

R_{174} . . . industrial technology.

R_{175} . . . mathematics.

R_{176} . . . music.

R_{177} . . . physical education.

R_{178} . . . science.

R_{179} . . . social studies.

R_{180} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{166} through R_{180}. Furthermore, there was no attenuation of family structure main effects or of parental age main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{166} through R_{180}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{166} - R_{180}) tested the two-way interaction of family structure and parental age as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 23. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are

Table 23

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{166}: Art										
Full Model										
Two Parents	-26.677	60.555	-.348	-.441	.66					NS
Single Parent[c] x Parental Age[d]	-7.550	17.011	-.289	-.444	.65					NS
Two Parents x Parental Age	4.645	10.762	.203	.432	.66					NS
Regression						.025	3/41	.348	.79	NS
Restricted Model										
Parental Age	1.159	9.026	.020	.128	.89					NS
Two Parents	9.260	12.074	.121	.767	.44					NS
Regression						.016	2/42	.344	.71	NS
Full-versus-restricted Model							1/41	.375	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{167}: Business										
Full Model										
Two Parents	-22.027	35.141	-.487	-.627	.53					NS
Single Parent[c] x Parental Age[d]	-10.350	9.872	-.674	-1.048	.30					NS
Two Parents x Parental Age	-4.282	6.246	-.318	-.686	.49					NS
Regression						.054	3/41	.781	.51	NS
Restricted Model										
Parental Age	-6.017	5.232	-.178	-1.150	.25					NS
Two Parents	-4.145	6.999	-.092	-.592	.55					NS
Regression						.048	2/42	1.055	.35	NS
Full-versus-restricted Model							1/41	.261	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{168}: Computer Technology										
Full Model										
Two Parents	-8.191	41.654	-.154	-.197	.84					NS
Single Parent[c] x Parental Age[d]	-7.550	11.702	-.416	-.645	.52					NS
Two Parents x Parental Age	-6.496	7.403	-.409	-.877	.38					NS
Regression						.046	3/41	.658	.58	NS
Restricted Model										
Parental Age	-6.797	6.182	-.170	-1.100	.27					NS
Two Parents	-5.084	8.269	-.095	-.615	.54					NS
Regression						.046	2/42	1.008	.37	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{169}: Driver Education										
Full Model										
Two Parents	-35.301	52.876	-.523	-.668	.50					NS
Single Parent[c] x Parental Age[d]	1.350	14.854	.059	.091	.92					NS
Two Parents x Parental Age	9.854	9.398	.490	1.049	.30					NS
Regression						.040	3/41	.565	.64	NS
Restricted Model										
Parental Age	7.423	7.869	.147	.943	.35					NS
Two Parents	-10.240	10.526	-.152	-.973	.33					NS
Regression						.034	2/42	.744	.48	NS
Full-versus-restricted Model							1/41	.261	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{170}: English										
<u>Full Model</u>										
Two Parents	-53.871	40.541	-1.018	-1.329	.19					NS
Single Parent[c] x Parental Age[d]	-12.600	11.389	-.700	-1.106	.27					NS
Two Parents x Parental Age	8.258	7.205	.524	1.146	.25					NS
Regression						.082	3/41	1.214	.31	NS
<u>Restricted Model</u>										
Parental Age	2.296	6.189	.058	.371	.71					NS
Two Parents	7.595	8.279	.144	.917	.36					NS
Regression						.028	2/42	.603	.55	NS
<u>Full-versus-restricted Model</u>							1/41	2.455	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{171}: Foreign Language										
Full Model										
Two Parents	-49.157	59.710	-.638	-.823	.41					NS
Single Parent[c] x Parental Age[d]	-23.300	16.774	-.890	-1.389	.17					NS
Two Parents x Parental Age	-7.171	10.612	-.313	-.676	.50					NS
Regression						.060	3/41	.865	.46	NS
Restricted Model										
Parental Age	-11.781	8.932	-.205	-1.319	.19					NS
Two Parents	-1.625	11.948	-.021	-.136	.89					NS
Regression						.044	2/42	.975	.38	NS
Full-versus-restricted Model							1/41	.696	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{172}: Health										
Full Model										
Two Parents	-70.126	48.643	-1.102	-1.442	.15					NS
Single Parent[c] x Parental Age[d]	-7.200	13.665	-.333	-.527	.60					NS
Two Parents x Parental Age	11.633	8.645	.614	1.346	.18					NS
Regression						.086	3/41	1.289	.29	NS
Restricted Model										
Parental Age	6.250	7.337	.131	.852	.39					NS
Two Parents	-14.627	9.815	-.230	-1.490	.14					NS
Regression						.056	2/42	1.244	.29	NS
Full-versus-restricted Model							1/41	1.364	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{173}: Home Economics										
<u>Full Model</u>										
Two Parents	-10.204	53.688	-.142	-.190	.85					NS
Single Parent[c] x Parental Age[d]	19.150	15.082	.786	1.270	.21					NS
Two Parents x Parental Age	18.678	9.542	.874	1.958	.05					S
Regression						.123	3/41	1.913	.14	NS
<u>Restricted Model</u>										
Parental Age	18.813	7.967	.351	2.361	.02					S
Two Parents	-11.594	10.658	-.162	-1.088	.28					NS
Regression						.123	2/42	2.939	.06	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{174}: Industrial Technology										
<u>Full Model</u>										
Two Parents	-26.721	51.852	-.395	-.515	.60					NS
Single Parent[c] x Parental Age[d]	8.900	14.566	.387	.611	.54					NS
Two Parents x Parental Age	13.016	9.216	.646	1.412	.16					NS
Regression						.079	3/41	1.174	.33	NS
<u>Restricted Model</u>										
Parental Age	11.839	7.700	.234	1.538	.13					NS
Two Parents	-14.592	10.300	-.216	-1.417	.16					NS
Regression						.078	2/42	1.772	.18	NS
<u>Full-versus-restricted Model</u>							1/41	.045	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{175}: Mathematics										
<u>Full Model</u>										
Two Parents	-63.344	53.777	-.917	-1.178	.24					NS
Single Parent[c] x Parental Age[d]	-21.800	15.107	-.928	-1.443	.15					NS
Two Parents x Parental Age	-1.145	9.558	-.056	-.120	.90					NS
Regression						.053	3/41	.765	.52	NS
<u>Restricted Model</u>										
Parental Age	-7.049	8.109	-.136	-.869	.38					NS
Two Parents	-2.475	10.848	-.036	-.228	.82					NS
Regression						.022	2/42	.477	.62	NS
<u>Full-versus-restricted Model</u>							1/41	1.348	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{176}: Music										
Full Model										
Two Parents	43.430	69.890	.494	.621	.53					NS
Single Parent[c] x Parental Age[d]	8.650	19.634	.289	.441	.66					NS
Two Parents x Parental Age	-3.596	12.422	-.137	-.290	.77					NS
Regression						.014	3/41	.188	.90	NS
Restricted Model										
Parental Age	-.096	10.406	-.001	-.009	.99					NS
Two Parents	7.342	13.921	.083	.527	.60					NS
Regression						.007	2/42	.146	.86	NS
Full-versus-restricted Model							1/41	.292	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{177}: Physical Education										
Full Model										
Two Parents	-48.343	65.932	-.561	-.733	.46					NS
Single Parent[c] x Parental Age[d]	-28.000	18.522	-.955	-1.512	.13					NS
Two Parents x Parental Age	-12.514	11.718	-.487	-1.068	.29					NS
Regression						.085	3/41	1.271	.29	NS
Restricted Model										
Parental Age	-16.941	9.843	-.263	-1.721	.09					NS
Two Parents	-2.708	13.168	-.031	-.206	.83					NS
Regression						.074	2/42	1.678	.19	NS
Full-versus-restricted Model							1/41	.500	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{178}: Science										
Full Model										
Two Parents	-27.314	49.822	-.399	-.548	.58					NS
Single Parent[c] x Parental Age[d]	-19.300	13.996	-.830	-1.379	.17					NS
Two Parents x Parental Age	-.971	8.855	-.048	-.110	.91					NS
Regression						.170	3/41	2.794	.05	S
Restricted Model										
Parental Age	-6.211	7.503	-.122	-.828	.41					NS
Two Parents	26.698	10.037	.390	2.660	.01					S
Regression						.145	2/42	3.560	.03	S
Full-versus-restricted Model							1/41	1.250	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{179}: Social Studies										
Full Model										
Two Parents	-16.657	45.963	-.281	-.362	.71					NS
Single Parent[c] x Parental Age[d]	-2.950	12.912	-.146	-.228	.82					NS
Two Parents x Parental Age	6.514	8.169	.369	.797	.42					NS
Regression						.060	3/41	.868	.46	NS
Restricted Model										
Parental Age	3.809	6.853	.086	.556	.58					NS
Two Parents	11.233	9.167	.189	1.225	.22					NS
Regression						.051	2/42	1.127	.33	NS
Full-versus-restricted Model							1/41	.391	> .05	NS

Table 23 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental age predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{180}: Vocational-Technical										
Full Model										
Two Parents	-58.092	54.053	-.822	-1.075	.28					NS
Single Parent[c] x Parental Age[d]	1.550	15.185	.064	.102	.91					NS
Two Parents x Parental Age	16.959	9.607	.805	1.765	.08					NS
Regression						.085	3/41	1.271	.29	NS
Restricted Model										
Parental Age	12.554	8.093	.238	1.551	.12					NS
Two Parents	-12.685	10.826	-.179	-1.172	.24					NS
Regression						.069	2/42	1.548	.22	NS
Full-versus-restricted Model							1/41	.727	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

Table 23 (continued)

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[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

[c]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[d]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5.*

displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{166}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 2.5% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = .348, p = .79. Accounting for 1.6% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .344, p = .71. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .375, p > .05 (Appendix 14).

> R_{167}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 5.4% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of business, F (3, 41) = .781, p = .51. Accounting for 4.8% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of business, F (2, 42) = 1.055, p = .35. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .261, p > .05 (Appendix 14).

> R_{168}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 4.6% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = .658, p = .58. Accounting for 4.6% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 1.008, p = .37. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1,\ 41) = .000$, $p > .05$ (Appendix 14).

> R_{169}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 4.0% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of driver education, $F\ (3,\ 41) = .565$, $p = .64$. Accounting for 3.4% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of driver education, $F\ (2,\ 42) = .744$, $p = .48$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1,\ 41) = .261$, $p > .05$ (Appendix 14).

> R_{170}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 8.2% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of English, $F\ (3,\ 41) = 1.214$, $p = .31$. Accounting for 2.8% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of English, $F\ (2,\ 42) = .603$, $p = .55$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.455, $p > .05$ (Appendix 14).

> R_{171}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 6.0% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .865, $p = .46$. Accounting for 4.4% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .975, $p = .38$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .696, $p > .05$ (Appendix 14).

> R_{172}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 8.6% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = 1.289, $p = .29$. Accounting for 5.6% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = 1.244, $p = .29$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = 1.364$, $p > .05$ (Appendix 14).

> R_{173}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 12.3% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of home economics, $F\ (3, 41) = 1.913$, $p = .14$. Accounting for 12.3% of the criterion variance, the restricted model of parental age and two parents approached significance in the prediction of students' lifelong adaptability ratings of home economics, $F\ (2, 42) = 2.939$, $p = .06$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = .000$, $p > .05$ (Appendix 14).

> R_{174}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 7.9% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of industrial technology, $F\ (3, 41) = 1.174$, $p = .33$. Accounting for 7.8% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of industrial technology, $F\ (2, 42) = 1.772$, $p = .18$. An F

test of the full model versus the restricted model produced a nonsignificant finding, F $(1, 41) = .045$, $p > .05$ (Appendix 14).

> R_{175}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 5.3% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of mathematics, F $(3, 41) = .765$, $p = .52$. Accounting for 2.2% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of mathematics, F $(2, 42) = .477$, $p = .62$. An F test of the full model versus the restricted model produced a nonsignificant finding, F $(1, 41) = 1.348$, $p > .05$ (Appendix 14).

> R_{176}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 1.4% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of music, F $(3, 41) = .188$, $p = .90$. Accounting for 0.7% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of music, F $(2, 42) = .146$, $p = .86$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .292, $p > .05$ (Appendix 14).

> R_{177}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 8.5% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = 1.271, $p = .29$. Accounting for 7.4% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = 1.678, $p = .19$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .500, $p > .05$ (Appendix 14).

> R_{178}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 17.0% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age significantly predicted students' lifelong adaptability ratings of science, F (3, 41) = 2.794, $p = .05$. Accounting for 14.5% of the criterion variance, the restricted model of parental age and two parents significantly predicted students' lifelong adaptability ratings of science, F (2, 42) = 3.560, $p = .03$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.250, $p > .05$ (Appendix 14).

R_{179}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 6.0% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = .868, p = .46. Accounting for 5.1% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 1.127, p = .33. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .391, $p > .05$ (Appendix 14).

R_{180}: The two-way interaction of family structure and parental age significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 8.5% of the criterion variance, the full model of two parents, single parent x parental age, and two parents x parental age did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = 1.271, p = .29. Accounting for 6.9% of the criterion variance, the restricted model of parental age and two parents did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = 1.548, p = .22. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .727, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{166}, R_{167}, R_{168}, R_{169}, R_{170}, R_{171}, R_{172}, R_{173}, R_{174}, R_{175}, R_{176}, R_{177}, R_{178}, R_{179}, and R_{180}): art, F (1, 41) = .375, $p > .05$; business, F (1, 41) = .261, $p > .05$; computer technology, F (1, 41) = .000, $p > .05$; driver education, F (1, 41) = .261, $p > .05$; English, F (1, 41) = 2.455, $p > .05$; foreign language, F (1, 41) = .696, $p > .05$; health, F (1, 41) = 1.364, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .045, $p > .05$; mathematics, F (1, 41) = 1.348, $p > .05$; music, F (1, 41) = .292, $p > .05$; physical education, F (1, 41) = .500, $p > .05$; science, F (1, 41) = 1.250, $p > .05$; social studies, F (1, 41) = .391, $p > .05$; and vocational-technical, F (1, 41) = .727, $p > .05$.

R_{181} - R_{195}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{181} . . . art.

R_{182} . . . business.

R_{183} . . . computer technology.

R_{184} . . . driver education.

R_{185} . . . English.

R_{186} . . . foreign language.

R_{187} . . . health.

R_{188} . . . home economics.

R_{189} . . . industrial technology.

R_{190} . . . mathematics.

R_{191} . . . music.

R_{192} . . . physical education.

R_{193} . . . science.

R_{194} . . . social studies.

R_{195} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed one significant finding (R_{185}) in R_{181} through R_{195}. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{181} through R_{195}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of family structure main effects or of parental educational level main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{181} through R_{195}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{181} - R_{195}) tested the two-way interaction of family structure and parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 24. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{181}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 11.4% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = 1.754, p = .17. Accounting for 8.1% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = 1.845, p = .17. An *F* test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.500, p > .05 (Appendix 14).

> R_{182}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong

Table 24

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{181}: Art										
Full Model										
Two Parents	-14.294	29.186	-.186	-.490	.62					NS
Single Parent[c] x Parental Educ. Lev.[d]	-16.500	9.870	-.577	-1.672	.10					NS
Two Parents x Parental Educ. Lev.	-3.801	2.884	-.286	-1.318	.19					NS
Regression						.114	3/41	1.754	.17	NS
Restricted Model										
Parental Educ. Lev.	-4.800	2.785	-.279	-1.723	.09					NS
Two Parents	18.366	12.428	.239	1.478	.14					NS
Regression						.081	2/42	1.845	.17	NS
Full-versus-restricted Model							1/41	1.500	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{182}: Business										
Full Model										
Two Parents	-32.334	17.450	-.716	-1.853	.07					NS
Single Parent[c] x Parental Educ. Lev.[d]	-6.778	5.901	-.403	-1.149	.25					NS
Two Parents x Parental Educ. Lev.	2.315	1.724	.296	1.343	.18					NS
Regression						.087	3/41	1.308	.28	NS
Restricted Model										
Parental Educ. Lev.	1.600	1.678	.158	.954	.34					NS
Two Parents	-8.949	7.488	-.198	-1.195	.23					NS
Regression						.039	2/42	.844	.43	NS
Full-versus-restricted Model							1/41	2.182	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{183}: Computer Technology										
Full Model										
Two Parents	-11.506	21.332	-.216	-.539	.59					NS
Single Parent[c] x Parental Educ. Lev.[d]	-.556	7.214	-.028	-.077	.93					NS
Two Parents x Parental Educ. Lev.	.692	2.108	.075	.328	.74					NS
Regression						.021	3/41	.294	.82	NS
Restricted Model										
Parental Educ. Lev.	.593	1.999	.050	.297	.76					NS
Two Parents	-8.299	8.922	-.156	-.930	.35					NS
Regression						.020	2/42	.437	.64	NS
Full-versus-restricted Model							1/41	.042	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{184}: Driver Education										
Full Model										
Two Parents	8.093	26.940	.120	.300	.76					NS
Single Parent[c] x Parental Educ. Lev.[d]	4.333	9.110	.172	.476	.63					NS
Two Parents x Parental Educ. Lev.	-1.289	2.662	-.110	-.484	.63					NS
Regression						.025	3/41	.346	.79	NS
Restricted Model										
Parental Educ. Lev.	-.847	2.535	-.056	-.334	.74					NS
Two Parents	-6.367	11.312	-.094	-.563	.57					NS
Regression						.016	2/42	.349	.70	NS
Full-versus-restricted Model							1/41	.375	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{185}: English										
Full Model										
Two Parents	-26.550	19.743	-.502	-1.345	.18					NS
Single Parent[c] x Parental Educ. Lev.[d]	-15.944	6.677	-.809	-2.388	.02					S
Two Parents x Parental Educ. Lev.	-.907	1.951	-.099	-.465	.64					NS
Regression						.148	3/41	2.369	.08	NS
Restricted Model										
Parental Educ. Lev.	-2.090	1.953	-.176	-1.070	.29					NS
Two Parents	12.122	8.713	.229	1.391	.17					NS
Regression						.051	2/42	1.119	.33	NS
Full-versus-restricted Model							1/41	4.619	< .05 but > .01	S[e]

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{186}: Foreign Language										
Full Model										
Two Parents	-33.160	30.691	-.431	-1.080	.28					NS
Single Parent[c] x Parental Educ. Lev.[d]	-8.722	10.379	-.304	-.840	.40					NS
Two Parents x Parental Educ. Lev.	1.566	3.032	.117	.516	.60					NS
Regression						.028	3/41	.391	.75	NS
Restricted Model										
Parental Educ. Lev.	.757	2.907	.044	.260	.79					NS
Two Parents	-6.701	12.973	-.087	-.517	.60					NS
Regression						.006	2/42	.135	.87	NS
Full-versus-restricted Model							1/41	.917	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{187}: Health										
Full Model										
Two Parents	-15.347	25.089	-.241	-.612	.54					NS
Single Parent[c] x Parental Educ. Lev.[d]	-3.278	8.484	-.138	-.386	.70					NS
Two Parents x Parental Educ. Lev.	-1.242	2.479	-.113	-.501	.61					NS
Regression						.049	3/41	.703	.55	NS
Restricted Model										
Parental Educ. Lev.	-1.402	2.352	-.098	-.596	.55					NS
Two Parents	-10.112	10.497	-.159	-.963	.34					NS
Regression						.048	2/42	1.051	.35	NS
Full-versus-restricted Model							1/41	.043	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{188}: Home Economics										
Full Model										
Two Parents	-9.948	28.853	-.139	-.345	.73					NS
Single Parent[c] x Parental Educ. Lev.[d]	-2.611	9.757	-.098	-.268	.79					NS
Two Parents x Parental Educ. Lev.	-.490	2.851	-.039	-.172	.86					NS
Regression						.009	3/41	.121	.94	NS
Restricted Model										
Parental Educ. Lev.	-.656	2.705	-.041	-.243	.80					NS
Two Parents	-4.492	12.070	-.063	-.372	.71					NS
Regression						.008	2/42	.163	.85	NS
Full-versus-restricted Model							1/41	.042	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{189}: Industrial Technology										
Full Model										
Two Parents	-20.811	26.881	-.308	-.774	.44					NS
Single Parent[c] x Parental Educ. Lev.[d]	-4.444	9.090	-.177	-.489	.62					NS
Two Parents x Parental Educ. Lev.	-.202	2.656	-.017	-.076	.93					NS
Regression						.032	3/41	.447	.72	NS
Restricted Model										
Parental Educ. Lev.	-.536	2.525	-.035	-.212	.83					NS
Two Parents	-9.900	11.267	-.147	-.879	.38					NS
Regression						.027	2/42	.582	.56	NS
Full-versus-restricted Model							1/41	.208	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{190}: Mathematics										
Full Model										
Two Parents	-42.419	26.946	-.614	-1.574	.12					NS
Single Parent[c] x Parental Educ. Lev.[d]	-15.444	9.112	-.600	-1.695	.09					NS
Two Parents x Parental Educ. Lev.	.053	2.662	.004	.020	.98					NS
Regression						.070	3/41	1.025	.39	NS
Restricted Model										
Parental Educ. Lev.	-1.166	2.606	-.075	-.448	.65					NS
Two Parents	-2.564	11.627	-.037	-.221	.82					NS
Regression						.009	2/42	.198	.82	NS
Full-versus-restricted Model							1/41	2.652	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{191}: Music										
Full Model										
Two Parents	-26.065	34.745	-.296	-.750	.45					NS
Single Parent[c] x Parental Educ. Lev.[d]	-15.056	11.749	-.459	-1.281	.20					NS
Two Parents x Parental Educ. Lev.	-.750	3.433	-.049	-.218	.82					NS
Regression						.046	3/41	.662	.58	NS
Restricted Model										
Parental Educ. Lev.	-1.875	3.309	-.095	-.567	.57					NS
Two Parents	10.727	14.767	.122	.726	.47					NS
Regression						.014	2/42	.308	.73	NS
Full-versus-restricted Model							1/41	1.391	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{192}: Physical Education										
Full Model										
Two Parents	-42.163	34.188	-.489	-1.233	.22					NS
Single Parent[c] x Parental Educ. Lev.[d]	-12.444	11.561	-.387	-1.076	.28					NS
Two Parents x Parental Educ. Lev.	.921	3.378	.062	.273	.78					NS
Regression						.038	3/41	.534	.66	NS
Restricted Model										
Parental Educ. Lev.	-.130	3.251	-.007	-.040	.96					NS
Two Parents	-7.790	14.507	-.090	-.537	.59					NS
Regression						.009	2/42	.184	.83	NS
Full-versus-restricted Model							1/41	1.261	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{193}: Science										
<u>Full Model</u>										
Two Parents	7.530	25.603	.110	.294	.77					NS
Single Parent[c] x Parental Educ. Lev.[d]	-5.778	8.658	-.227	-.667	.50					NS
Two Parents x Parental Educ. Lev.	.750	2.530	.063	.296	.76					NS
Regression						.142	3/41	2.265	.09	NS
<u>Restricted Model</u>										
Parental Educ. Lev.	.236	2.414	.015	.098	.92					NS
Two Parents	24.318	10.773	.356	2.257	.02					S
Regression						.131	2/42	3.171	.05	S
<u>Full-versus-restricted Model</u>							1/41	.524	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{194}: Social Studies										
Full Model										
Two Parents	-6.906	23.004	-.117	-.300	.76					NS
Single Parent[c] x Parental Educ. Lev.[d]	-3.333	7.779	-.151	-.428	.67					NS
Two Parents x Parental Educ. Lev.	2.645	2.273	.258	1.164	.25					NS
Regression						.079	3/41	1.164	.33	NS
Restricted Model										
Parental Educ. Lev.	2.174	2.170	.164	1.002	.32					NS
Two Parents	8.468	9.682	.143	.875	.38					NS
Regression						.066	2/42	1.491	.23	NS
Full-versus-restricted Model							1/41	.591	> .05	NS

Table 24 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{195}: Vocational-Technical										
<u>Full Model</u>										
Two Parents	-12.190	27.976	-.172	-.436	.66					NS
Single Parent[c] x Parental Educ. Lev.[d]	-5.611	9.461	-.213	-.593	.55					NS
Two Parents x Parental Educ. Lev.	-2.396	2.764	-.196	-.867	.39					NS
Regression						.041	3/41	.586	.62	NS
<u>Restricted Model</u>										
Parental Educ. Lev.	-2.648	2.625	-.167	-1.009	.31					NS
Two Parents	-3.920	11.712	-.055	-.335	.73					NS
Regression						.039	2/42	.844	.43	NS
<u>Full-versus-restricted Model</u>							1/41	.087	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of

Table 24 (continued)

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two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

[c]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[d]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

[e]Due to the presence of 15 multiple tests in H_{G4B}'s R_{181} through R_{195}, the significant *p* value in R_{185} (< .05 but > .01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted *p* value in R_{185} (< .75 but > .15).

adaptability ratings of business. Accounting for 8.7% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of business, F (3, 41) = 1.308, $p = .28$. Accounting for 3.9% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of business, F (2, 42) = .844, $p = .43$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.182, $p > .05$ (Appendix 14).

R_{183}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 2.1% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = .294, $p = .82$. Accounting for 2.0% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = .437, $p = .64$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .042, $p > .05$ (Appendix 14).

R_{184}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 2.5% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .346, $p = .79$. Accounting for 1.6% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .349, $p = .70$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .375, $p > .05$ (Appendix 14).

R_{185}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of English. A manual plot for General Hypothesis 4B's two-way interaction of family structure and parental educational level predicting English lifelong adaptability ratings (R_{185}) is provided in Figure 105. The graph coordinates and their calculations are included in Appendix 15.

In R_{185}, no students had a parental educational level below a high school diploma or its equivalent. Above a parental educational level of almost a high school diploma or its equivalent, students in two-parent households with more highly educated parents assigned significantly higher lifelong adaptability ratings to English than did students in single-parent households with more highly educated parents. Moreover, as parental educational level increased, the difference between lifelong adaptability ratings of English increased such that students in two-parent households with more highly educated parents assigned significantly higher lifelong adaptability ratings to English than did students in single-parent households with more highly educated parents.

Accounting for 14.8% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level approached significance in the prediction of students' lifelong adaptability ratings of English, F (3, 41) = 2.369, p = .08. Accounting for 5.1% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of English, F (2, 42) = 1.119, p = .33. An F test of the full model versus the restricted model produced a significant finding, F

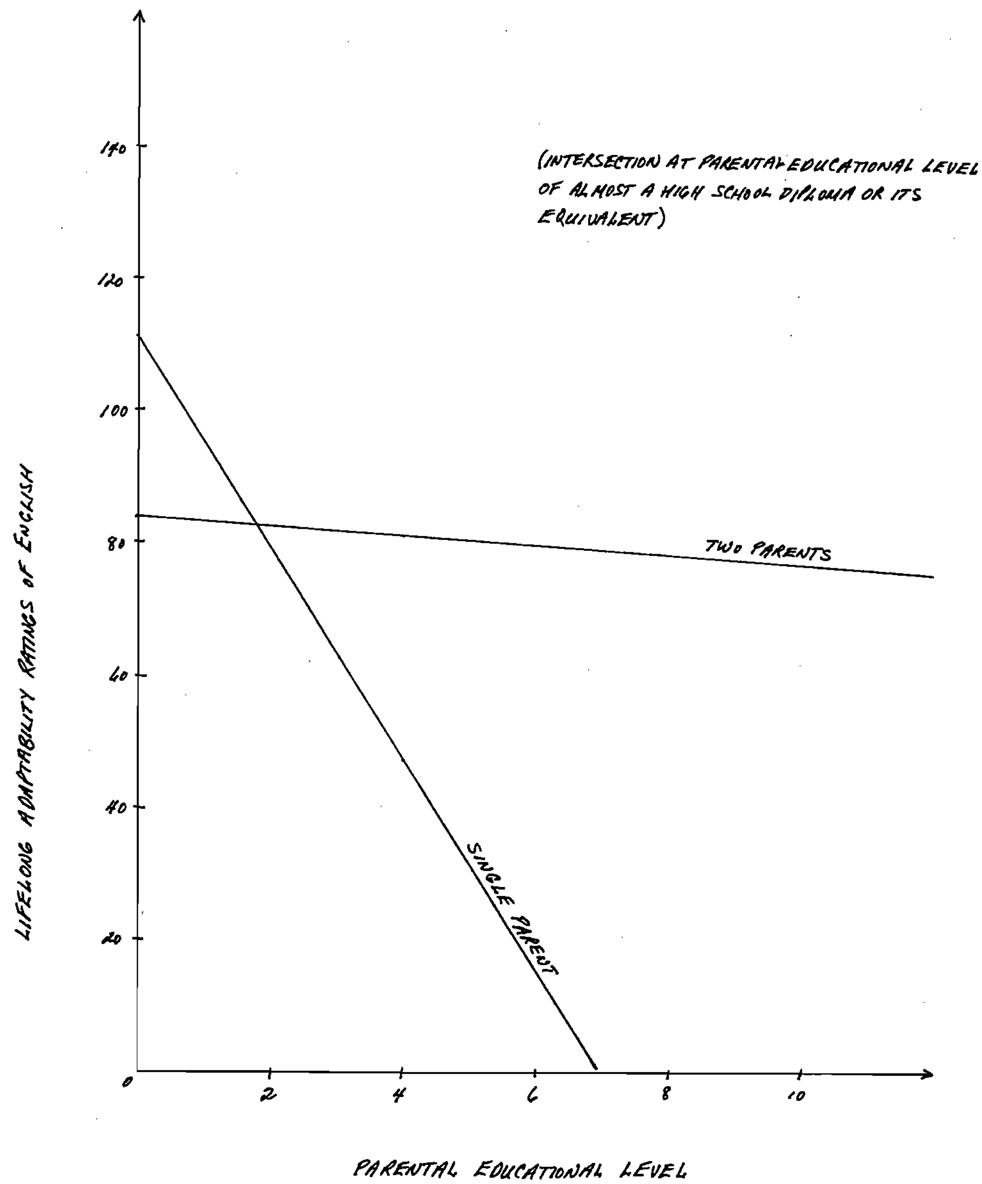

Figure 105. General Hypothesis 4B two-way interaction manual plot of family structure and parental educational level predicting English lifelong adaptability ratings (N = 45).

(1, 41) = 4.619, $p < .05$ but > .01 (Appendix 14). However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{181} through R_{195}, R_{185}'s significant p value of < .05 but > .01 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{185}'s adjusted p value nonsignificant at < .75 but > .15.

R_{186}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 2.8% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = .391, $p = .75$. Accounting for 0.6% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .135, $p = .87$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .917, $p > .05$ (Appendix 14).

R_{187}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 4.9% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = .703, p = .55. Accounting for 4.8% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = 1.051, p = .35. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .043, p > .05 (Appendix 14).

R_{188}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 0.9% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of home economics, F (3, 41) = .121, p = .94. Accounting for 0.8% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of home economics, F (2, 42) = .163, p = .85. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .042, p > .05 (Appendix 14).

R_{189}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 3.2% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .447, p = .72. Accounting for 2.7% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .582, p = .56. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .208, $p > .05$ (Appendix 14).

R_{190}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 7.0% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = 1.025, p = .39. Accounting for 0.9% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .198, p = .82. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.652, $p > .05$ (Appendix 14).

R_{191}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 4.6% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .662, p = .58. Accounting for 1.4% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .308, p = .73. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.391, p > .05 (Appendix 14).

> R_{192}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 3.8% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = .534, p = .66. Accounting for 0.9% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = .184, p = .83. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.261, p > .05 (Appendix 14).

> R_{193}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong

adaptability ratings of science. Accounting for 14.2% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level approached significance in the prediction of students' lifelong adaptability ratings of science, F (3, 41) = 2.265, p = .09. Accounting for 13.1% of the criterion variance, the restricted model of parental educational level and two parents significantly predicted students' lifelong adaptability ratings of science, F (2, 42) = 3.171, p = .05. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .524, p > .05 (Appendix 14).

> R_{194}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 7.9% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = 1.164, p = .33. Accounting for 6.6% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 1.491, p = .23. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .591, p > .05 (Appendix 14).

> R_{195}: The two-way interaction of family structure and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong

adaptability ratings of vocational-technical. Accounting for 4.1% of the criterion variance, the full model of two parents, single parent x parental educational level, and two parents x parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .586, p = .62. Accounting for 3.9% of the criterion variance, the restricted model of parental educational level and two parents did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .844, p = .43. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .087, p > .05 (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{181}, R_{182}, R_{183}, R_{184}, R_{186}, R_{187}, R_{188}, R_{189}, R_{190}, R_{191}, R_{192}, R_{193}, R_{194}, and R_{195}): art, F (1, 41) = 1.500, p > .05; business, F (1, 41) = 2.182, p > .05; computer technology, F (1, 41) = .042, p > .05; driver education, F (1, 41) = .375, p > .05; foreign language, F (1, 41) = .917, p > .05; health, F (1, 41) = .043, p > .05; home economics, F (1, 41) = .042, p > .05; industrial technology, F (1, 41) = .208, p > .05; mathematics, F (1, 41) = 2.652, p> .05; music, F (1, 41) = 1.391, p > .05; physical education, F (1, 41) = 1.261, p> .05; science, F (1, 41) = .524, p > .05; social studies, F (1, 41) = .591, p > .05; and vocational-technical, F (1, 41) = .087, p > .05.

Conversely, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{185}): English, $F(1, 41) = 4.619$, $p < .05$ but $> .01$. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{181} through R_{195}, this one significant full and restricted regression model pair (R_{185}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

R_{196} - R_{210}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{196} . . . art.

R_{197} . . . business.

R_{198} . . . computer technology.

R_{199} . . . driver education.

R_{200} . . . English.

R_{201} . . . foreign language.

R_{202} . . . health.

R_{203} . . . home economics.

R_{204} . . . industrial technology.

R_{205} . . . mathematics.

R_{206} . . . music.

R_{207} . . . physical education.

R_{208} . . . science.

R_{209} . . . social studies.

R_{210} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{196} through R_{210}. Furthermore, there was no attenuation of family structure main effects or of student gender main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{196} through R_{210}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{196} - R_{210}) tested the two-way interaction of family structure and student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 25. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

R_{196}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

Table 25

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{196}: Art										
Full Model										
Single Parent[c] x Female Student[d]	11.100	24.066	.126	.461	.64					NS
Two Parents x Female Student	15.976	21.286	.287	.751	.45					NS
Two Parents x Male Student	19.500	21.503	.340	.907	.36					NS
Regression						.024	3/41	.338	.79	NS
Restricted Model										
Female Student	-1.594	8.672	-.028	-.184	.85					NS
Two Parents	9.366	11.818	.122	.793	.43					NS
Regression						.017	2/42	.353	.70	NS
Full-versus-restricted Model							1/41	.292	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{197}: Business										
Full Model										
Single Parent[c] x Female Student[d]	24.400	13.084	.468	1.865	.06					NS
Two Parents x Female Student	15.952	11.573	.486	1.378	.17					NS
Two Parents x Male Student	5.765	11.691	.171	.493	.62					NS
Regression						.169	3/41	2.782	.05	S
Restricted Model										
Female Student	12.064	4.755	.364	2.537	.01					S
Two Parents	-4.084	6.480	-.090	-.630	.53					NS
Regression						.148	2/42	3.658	.03	S
Full-versus-restricted Model							1/41	1.050	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{198}: Computer Technology										
<u>Full Model</u>										
Single Parent[c] x Female Student[d]	-2.900	16.309	-.047	-.178	.85					NS
Two Parents x Female Student	-4.881	14.425	-.126	-.338	.73					NS
Two Parents x Male Student	-14.735	14.572	-.370	-1.011	.31					NS
Regression						.073	3/41	1.081	.36	NS
<u>Restricted Model</u>										
Female Student	8.171	5.892	.209	1.387	.17					NS
Two Parents	-5.897	8.030	-.111	-.734	.46					NS
Regression						.061	2/42	1.371	.26	NS
<u>Full-versus-restricted Model</u>							1/41	.522	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{199}: Driver Education										
<u>Full Model</u>										
Single Parent[c] x Female Student[d]	-12.100	21.039	-.155	-.575	.56					NS
Two Parents x Female Student	-13.595	18.608	-.277	-.731	.46					NS
Two Parents x Male Student	-20.206	18.798	-.401	-1.075	.28					NS
Regression						.037	3/41	.522	.66	NS
<u>Restricted Model</u>										
Female Student	4.141	7.615	.084	.544	.58					NS
Two Parents	-7.240	10.377	-.107	-.698	.48					NS
Regression						.021	2/42	.442	.64	NS
<u>Full-versus-restricted Model</u>							1/41	.696	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{200}: English										
Full Model										
Single Parent[c] x Female Student[d]	43.400	14.077	.711	3.083	.00					S
Two Parents x Female Student	45.571	12.451	1.186	3.660	.00					S
Two Parents x Male Student	31.588	12.578	.799	2.511	.01					S
Regression						.298	3/41	5.813	.00	S
Restricted Model										
Female Student	17.866	5.281	.460	3.383	.00					S
Two Parents	11.204	7.197	.212	1.557	.12					NS
Regression						.234	2/42	6.399	.00	S
Full-versus-restricted Model							1/41	3.765	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{201}: Foreign Language										
Full Model										
Single Parent[c] x Female Student[d]	22.300	23.588	.251	.945	.35					NS
Two Parents x Female Student	16.405	20.863	.293	.786	.43					NS
Two Parents x Male Student	3.441	21.075	.060	.163	.87					NS
Regression						.070	3/41	1.030	.38	NS
Restricted Model										
Female Student	14.196	8.481	.251	1.674	.10					NS
Two Parents	-3.028	11.558	-.039	-.262	.79					NS
Regression						.067	2/42	1.508	.23	NS
Full-versus-restricted Model							1/41	.130	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{202}: Health										
Full Model										
Single Parent[c] x Female Student[d]	6.900	17.768	.094	.388	.69					NS
Two Parents x Female Student	1.976	15.716	.043	.126	.90					NS
Two Parents x Male Student	-19.735	15.876	-.415	-1.243	.22					NS
Regression						.227	3/41	4.024	.01	S
Restricted Model										
Female Student	19.757	6.425	.423	3.075	.00					S
Two Parents	-9.472	8.756	-.149	-1.082	.28					NS
Regression						.216	2/42	5.789	.00	S
Full-versus-restricted Model							1/41	.579	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{203}: Home Economics										
Full Model										
Single Parent[c] x Female Student[d]	5.900	20.869	.071	.283	.77					NS
Two Parents x Female Student	8.452	18.459	.162	.458	.64					NS
Two Parents x Male Student	-13.735	18.647	-.256	-.737	.46					NS
Regression						.160	3/41	2.607	.06	NS
Restricted Model										
Female Student	20.038	7.539	.381	2.658	.01					S
Two Parents	-2.449	10.274	-.034	-.238	.81					NS
Regression						.149	2/42	3.687	.03	S
Full-versus-restricted Model							1/41	.550	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{204}: Industrial Technology										
Full Model										
Single Parent[c] x Female Student[d]	-16.200	20.896	-.208	-.775	.44					NS
Two Parents x Female Student	-25.143	18.482	-.512	-1.360	.18					NS
Two Parents x Male Student	-19.118	18.670	-.378	-1.024	.31					NS
Regression						.052	3/41	.756	.52	NS
Restricted Model										
Female Student	-7.368	7.520	-.149	-.980	.33					NS
Two Parents	-12.067	10.247	-.179	-1.178	.24					NS
Regression						.048	2/42	1.051	.35	NS
Full-versus-restricted Model							1/41	.174	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{205}: Mathematics										
Full Model										
Single Parent[c] x Female Student[d]	10.800	21.808	.136	.495	.62					NS
Two Parents x Female Student	1.714	19.289	.034	.089	.92					NS
Two Parents x Male Student	4.647	19.485	.090	.238	.81					NS
Regression						.013	3/41	.185	.90	NS
Restricted Model										
Female Student	-1.120	7.861	-.022	-.143	.88					NS
Two Parents	-4.869	10.712	-.070	-.455	.65					NS
Regression						.005	2/42	.107	.89	NS
Full-versus-restricted Model							1/41	.333	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{206}: Music										
Full Model										
Single Parent[c] x Female Student[d]	-15.100	27.357	-.149	-.552	.58					NS
Two Parents x Female Student	-8.738	24.197	-.137	-.361	.71					NS
Two Parents x Male Student	3.029	24.443	.046	.124	.90					NS
Regression						.042	3/41	.606	.61	NS
Restricted Model										
Female Student	-12.207	9.821	-.189	-1.243	.22					NS
Two Parents	5.339	13.384	.061	.399	.69					NS
Regression						.042	2/42	.924	.40	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{207}: Physical Education										
Full Model										
Single Parent[c] x Female Student[d]	-11.200	27.071	-.113	-.414	.68					NS
Two Parents x Female Student	-19.095	23.944	-.305	-.797	.42					NS
Two Parents x Male Student	-12.235	24.188	-.190	-.506	.61					NS
Regression						.023	3/41	.319	.81	NS
Restricted Model										
Female Student	-7.433	9.720	-.118	-.765	.44					NS
Two Parents	-9.228	13.246	-.107	-.697	.48					NS
Regression						.022	2/42	.479	.62	NS
Full-versus-restricted Model							1/41	.042	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{208}: Science										
Full Model										
Single Parent[c] x Female Student[d]	15.200	19.920	.193	.763	.44					NS
Two Parents x Female Student	32.524	17.619	.655	1.846	.07					NS
Two Parents x Male Student	39.412	17.799	.771	2.214	.03					S
Regression						.159	3/41	2.585	.06	NS
Restricted Model										
Female Student	-3.973	7.243	-.079	-.548	.58					NS
Two Parents	24.106	9.870	.353	2.442	.01					S
Regression						.137	2/42	3.339	.04	S
Full-versus-restricted Model							1/41	1.048	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{209}: Social Studies										
Full Model										
Single Parent[c] x Female Student[d]	10.600	17.773	.155	.596	.55					NS
Two Parents x Female Student	25.048	15.720	.582	1.593	.11					NS
Two Parents x Male Student	13.765	15.880	.311	.867	.39					NS
Regression						.109	3/41	1.677	.18	NS
Restricted Model										
Female Student	11.193	6.380	.257	1.754	.08					NS
Two Parents	14.238	8.694	.240	1.638	.10					NS
Regression						.109	2/42	2.575	.08	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 25 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of family structure and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{210}: Vocational-Technical										
Full Model										
Single Parent[c] x Female Student[d]	-12.700	22.184	-.156	-.572	.57					NS
Two Parents x Female Student	-17.262	19.622	-.336	-.880	.38					NS
Two Parents x Male Student	-18.500	19.821	-.350	-.933	.35					NS
Regression						.024	3/41	.330	.80	NS
Restricted Model										
Female Student	-.602	7.996	-.012	-.075	.94					NS
Two Parents	-8.842	10.897	-.125	-.811	.42					NS
Regression						.015	2/42	.329	.72	NS
Full-versus-restricted Model							1/41	.375	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure,

Table 25 (continued)

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parental age, parental educational level, and student gender).

[b]All p values were truncated, not rounded, to the hundredths place, except full-versus-restricted model p values, which were reported as $< .01$, as $= .01$, as $< .05$ but $> .01$, as $= .05$, or as $> .05$ without truncation or rounding.

[c]Family structure was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Two Parents" (i.e., "Both Female and Male" family structure) was entered for family structure, except in interactions in which one interaction vector employed a datum for the category representing "Two Parents" and in which another interaction vector employed a datum for the category representing "Single Parent." Dummy-variable coding was employed.

[d]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

ratings of art.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 2.4% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of art, $F(3, 41) = .338$, $p = .79$. Accounting for 1.7% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of art, $F(2, 42) = .353$, $p = .70$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = .292$, $p > .05$ (Appendix 14).

R_{197}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of business.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 16.9% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student significantly predicted students' lifelong adaptability ratings of business, F (3, 41) = 2.782, p = .05. Accounting for 14.8% of the criterion variance, the restricted model of female student and two parents significantly predicted students' lifelong adaptability ratings of business, F (2, 42) = 3.658, p = .03. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.050, $p >$ .05 (Appendix 14).

R_{198}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 7.3% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = 1.081, p = .36. Accounting for 6.1% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 1.371, p = .26. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .522, $p >$ .05 (Appendix 14).

R_{199}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of driver education.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 3.7% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of driver education, $F\ (3,\ 41) = .522$, $p = .66$. Accounting for 2.1% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of driver education, $F\ (2,\ 42) = .442$, $p = .64$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1,\ 41) = .696$, $p > .05$ (Appendix 14).

R_{200}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 29.8% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student significantly predicted students' lifelong adaptability ratings of English, $F\ (3,\ 41) = 5.813$, $p = .00$. Accounting for 23.4% of the criterion variance, the restricted model of female student and two parents significantly predicted students' lifelong adaptability ratings of English, $F\ (2,\ 42) = 6.399$, $p = .00$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1,\ 41) = 3.765$, $p >$ .05 (Appendix 14).

R_{201}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of foreign language.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 7.0% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = 1.030, p = .38. Accounting for 6.7% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = 1.508, p = .23. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .130, p > .05 (Appendix 14).

R_{202}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 22.7% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student significantly predicted students' lifelong adaptability ratings of health, F (3, 41) = 4.024, p = .01. Accounting for 21.6% of the criterion variance, the restricted model of female student and two parents significantly predicted students' lifelong adaptability ratings of health, F (2, 42) = 5.789, p = .00. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .579, p > .05 (Appendix 14).

R_{203}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of home economics.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 16.0% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student approached significance in the prediction of students' lifelong adaptability ratings of home economics, F (3, 41) = 2.607, $p = .06$. Accounting for 14.9% of the criterion variance, the restricted model of female student and two parents significantly predicted students' lifelong adaptability ratings of home economics, F (2, 42) = 3.687, $p = .03$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .550, $p > .05$ (Appendix 14).

R_{204}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 5.2% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .756, $p = .52$. Accounting for 4.8% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = 1.051, $p = .35$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .174, $p > .05$ (Appendix 14).

R_{205}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of mathematics.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 1.3% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = .185, p = .90. Accounting for 0.5% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .107, p = .89. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .333, p > .05 (Appendix 14).

R_{206}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 4.2% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .606, p = .61. Accounting for 4.2% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .924, p = .40. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, p > .05 (Appendix 14).

R_{207}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of physical education.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 2.3% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = .319, p = .81. Accounting for 2.2% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = .479, p = .62. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .042, p > .05 (Appendix 14).

R_{208}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 15.9% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student approached significance in the prediction of students' lifelong adaptability ratings of science, F (3, 41) = 2.585, p = .06. Accounting for 13.7% of the criterion variance, the restricted model of female student and two parents significantly predicted students' lifelong adaptability ratings of science, F (2, 42) = 3.339, p = .04. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.048, p > .05 (Appendix 14).

R_{209}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability

ratings of social studies.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 10.9% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = 1.677, $p = .18$. Accounting for 10.9% of the criterion variance, the restricted model of female student and two parents approached significance in the prediction of students' lifelong adaptability ratings of social studies, F (2, 42) = 2.575, $p = .08$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

> R_{210}: The two-way interaction of family structure and student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 2.4% of the criterion variance, the full model of single parent x female student, two parents x female student, and two parents x male student did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .330, $p = .80$. Accounting for 1.5% of the criterion variance, the restricted model of female student and two parents did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .329, $p = .72$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .375, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{196}, R_{197}, R_{198}, R_{199}, R_{200}, R_{201}, R_{202}, R_{203}, R_{204}, R_{205}, R_{206}, R_{207}, R_{208}, R_{209}, and R_{210}): art, F (1, 41) = .292, $p > .05$; business, F (1, 41) = 1.050, $p > .05$; computer technology, F (1, 41) = .522, $p > .05$; driver education, F (1, 41) = .696, $p > .05$; English, F (1, 41) = 3.765, $p > .05$; foreign language, F (1, 41) = .130, $p > .05$; health, F (1, 41) = .579, $p > .05$; home economics, F (1, 41) = .550, $p > .05$; industrial technology, F (1, 41) = .174, $p > .05$; mathematics, F (1, 41) = .333, $p > .05$; music, F (1, 41) = .000, $p > .05$; physical education, F (1, 41) = .042, $p > .05$; science, F (1, 41) = 1.048, $p > .05$; social studies, F (1, 41) = .000, $p > .05$; and vocational-technical, F (1, 41) = .375, $p > .05$.

R_{211} - R_{225}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{211} . . . art.

R_{212} . . . business.

R_{213} . . . computer technology.

R_{214} . . . driver education.

R_{215} . . . English.

R_{216} . . . foreign language.

R_{217} . . . health.

R_{218} . . . home economics.

R_{219} . . . industrial technology.

R_{220} . . . mathematics.

R_{221} . . . music.

R_{222} . . . physical education.

R_{223} . . . science.

R_{224} . . . social studies.

R_{225} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{211} through R_{225}. Furthermore, there was no attenuation of parental age main effects or of parental educational level main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{211} through R_{225}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{211} - R_{225}) tested the two-way interaction of parental age and parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 26. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or

Table 26

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{211}: Art										
<u>Full Model</u>										
Parental Age[c]	-2.306	24.525	-.040	-.094	.92					NS
Parental Educ. Lev.[d]	-9.275	22.685	-.540	-.409	.68					NS
Parental Age x Parental Educ. Lev.	1.988	7.413	.380	.268	.78					NS
Regression						.039	3/41	.556	.64	NS
<u>Restricted Model</u>										
Parental Age	3.832	8.720	.067	.439	.66					NS
Parental Educ. Lev.	-3.231	2.614	-.188	-1.236	.22					NS
Regression						.037	2/42	.815	.44	NS
<u>Full-versus-restricted Model</u>							1/41	.087	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{212}: Business										
Full Model										
Parental Age[c]	-16.732	14.281	-.495	-1.172	.24					NS
Parental Educ. Lev.[d]	-8.531	13.210	-.842	-.646	.52					NS
Parental Age x Parental Educ. Lev.	3.132	4.317	1.015	.725	.47					NS
Regression						.061	3/41	.893	.45	NS
Restricted Model										
Parental Age	-7.064	5.106	-.209	-1.384	.17					NS
Parental Educ. Lev.	.988	1.531	.098	.645	.52					NS
Regression						.049	2/42	1.089	.34	NS
Full-versus-restricted Model							1/41	.522	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{213}: Computer Technology										
<u>Full Model</u>										
Parental Age[c]	-31.586	16.597	-.792	-1.903	.06					NS
Parental Educ. Lev.[d]	-23.449	15.352	-1.962	-1.527	.13					NS
Parental Age x Parental Educ. Lev.	7.735	5.017	2.124	1.542	.13					NS
Regression						.090	3/41	1.351	.27	NS
<u>Restricted Model</u>										
Parental Age	-7.708	6.065	-.193	-1.271	.21					NS
Parental Educ. Lev.	.059	1.818	.005	.033	.97					NS
Regression						.037	2/42	.812	.45	NS
<u>Full-versus-restricted Model</u>							1/41	2.409	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{214}: Driver Education										
Full Model										
Parental Age[c]	11.956	21.730	.237	.550	.58					NS
Parental Educ. Lev.[d]	4.108	20.100	.272	.204	.83					NS
Parental Age x Parental Educ. Lev.	-1.881	6.568	-.408	-.286	.77					NS
Regression						.026	3/41	.359	.78	NS
Restricted Model										
Parental Age	6.149	7.728	.122	.796	.43					NS
Parental Educ. Lev.	-1.609	2.317	-.106	-.694	.49					NS
Regression						.024	2/42	.509	.60	NS
Full-versus-restricted Model							1/41	.083	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{215}: English										
Full Model										
Parental Age[c]	-3.510	17.066	-.089	-.206	.83					NS
Parental Educ. Lev.[d]	-8.476	15.786	-.715	-.537	.59					NS
Parental Age x Parental Educ. Lev.	2.428	5.159	.672	.471	.64					NS
Regression						.022	3/41	.310	.81	NS
Restricted Model										
Parental Age	3.984	6.079	.101	.655	.51					NS
Parental Educ. Lev.	-1.097	1.822	-.093	-.602	.55					NS
Regression						.017	2/42	.361	.69	NS
Full-versus-restricted Model							1/41	.208	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{216}: Foreign Language										
<u>Full Model</u>										
Parental Age[c]	-46.174	23.884	-.802	-1.933	.06					NS
Parental Educ. Lev.[d]	-32.919	22.092	-1.908	-1.490	.14					NS
Parental Age x Parental Educ. Lev.	10.996	7.219	2.091	1.523	.13					NS
Regression						.096	3/41	1.450	.24	NS
<u>Restricted Model</u>										
Parental Age	-12.229	8.722	-.212	-1.402	.16					NS
Parental Educ. Lev.	.500	2.615	.029	.191	.84					NS
Regression						.045	2/42	.984	.38	NS
<u>Full-versus-restricted Model</u>							1/41	2.318	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{217}: Health										
Full Model										
Parental Age[c]	5.588	20.388	.117	.274	.78					NS
Parental Educ. Lev.[d]	-1.369	18.859	-.096	-.073	.94					NS
Parental Age x Parental Educ. Lev.	-.358	6.163	-.082	-.058	.95					NS
Regression						.035	3/41	.503	.68	NS
Restricted Model										
Parental Age	4.482	7.243	.094	.619	.53					NS
Parental Educ. Lev.	-2.458	2.171	-.172	-1.132	.26					NS
Regression						.035	2/42	.771	.46	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{218}: Home Economics										
Full Model										
Parental Age[c]	43.523	21.653	.812	2.010	.05					S
Parental Educ. Lev.[d]	24.256	20.028	1.510	1.211	.23					NS
Parental Age x Parental Educ. Lev.	-8.498	6.545	-1.736	-1.298	.20					NS
Regression						.143	3/41	2.276	.09	NS
Restricted Model										
Parental Age	17.290	7.849	.323	2.203	.03					S
Parental Educ. Lev.	-1.572	2.353	-.098	-.668	.50					NS
Regression						.108	2/42	2.530	.09	NS
Full-versus-restricted Model							1/41	1.667	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{219}: Industrial Technology										
Full Model										
Parental Age[c]	-3.531	21.408	-.070	-.165	.86					NS
Parental Educ. Lev.[d]	-14.893	19.801	-.983	-.752	.45					NS
Parental Age x Parental Educ. Lev.	4.332	6.471	.939	.669	.50					NS
Regression						.057	3/41	.825	.48	NS
Restricted Model										
Parental Age	9.840	7.647	.195	1.287	.20					NS
Parental Educ. Lev.	-1.728	2.292	-.114	-.754	.45					NS
Regression						.047	2/42	1.028	.36	NS
Full-versus-restricted Model							1/41	.435	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{220}: Mathematics										
<u>Full Model</u>										
Parental Age[c]	-46.240	21.254	-.895	-2.176	.03					S
Parental Educ. Lev.[d]	-39.731	19.660	-2.565	-2.021	.04					S
Parental Age x Parental Educ. Lev.	12.680	6.425	2.686	1.974	.05					S
Regression						.111	3/41	1.712	.17	NS
<u>Restricted Model</u>										
Parental Age	-7.096	7.901	-.137	-.898	.37					NS
Parental Educ. Lev.	-1.194	2.369	-.077	-.504	.61					NS
Regression						.027	2/42	.580	.56	NS
<u>Full-versus-restricted Model</u>							1/41	3.818	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{221}: Music										
Full Model										
Parental Age[c]	-11.153	28.595	-.170	-.390	.69					NS
Parental Educ. Lev.[d]	-13.390	26.449	-.679	-.506	.61					NS
Parental Age x Parental Educ. Lev.	4.097	8.643	.682	.474	.63					NS
Regression						.008	3/41	.110	.95	NS
Restricted Model										
Parental Age	1.496	10.186	.023	.147	.88					NS
Parental Educ. Lev.	-.937	3.054	-.048	-.307	.76					NS
Regression						.003	2/42	.054	.94	NS
Full-versus-restricted Model							1/41	.208	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{222}: Physical Education										
Full Model										
Parental Age[c]	-50.826	26.484	-.789	-1.919	.06					NS
Parental Educ. Lev.[d]	-33.338	24.497	-1.726	-1.361	.18					NS
Parental Age x Parental Educ. Lev.	10.858	8.005	1.844	1.356	.18					NS
Regression						.113	3/41	1.743	.17	NS
Restricted Model										
Parental Age	-17.306	9.618	-.269	-1.799	.07					NS
Parental Educ. Lev.	-.338	2.883	-.017	-.117	.90					NS
Regression						.073	2/42	1.662	.20	NS
Full-versus-restricted Model							1/41	1.818	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{223}: Science										
Full Model										
Parental Age[c]	-35.805	21.270	-.700	-1.683	.09					NS
Parental Educ. Lev.[d]	-30.409	19.674	-1.984	-1.546	.12					NS
Parental Age x Parental Educ. Lev.	10.838	6.429	2.321	1.686	.09					NS
Regression						.091	3/41	1.366	.26	NS
Restricted Model										
Parental Age	-2.348	7.814	-.046	-.301	.76					NS
Parental Educ. Lev.	2.529	2.342	.165	1.080	.28					NS
Regression						.028	2/42	.602	.55	NS
Full-versus-restricted Model							1/41	2.864	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{224}: Social Studies										
Full Model										
Parental Age[c]	5.185	18.737	.117	.277	.78					NS
Parental Educ. Lev.[d]	3.119	17.331	.235	.180	.85					NS
Parental Age x Parental Educ. Lev.	-.103	5.664	-.025	-.018	.98					NS
Regression						.061	3/41	.892	.45	NS
Restricted Model										
Parental Age	4.868	6.657	.110	.731	.46					NS
Parental Educ. Lev.	2.807	1.996	.211	1.407	.16					NS
Regression						.061	2/42	1.370	.26	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 26 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and parental educational level predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{225}: Vocational-Technical										
Full Model										
Parental Age[c]	2.254	22.033	.043	.102	.91					NS
Parental Educ. Lev.[d]	-12.357	20.380	-.780	-.606	.54					NS
Parental Age x Parental Educ. Lev.	2.967	6.660	.615	.445	.65					NS
Regression						.087	3/41	1.297	.28	NS
Restricted Model										
Parental Age	11.413	7.846	.216	1.455	.15					NS
Parental Educ. Lev.	-3.340	2.352	-.211	-1.420	.16					NS
Regression						.082	2/42	1.883	.16	NS
Full-versus-restricted Model							1/41	.227	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

Table 26 (continued)

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[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

[c]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5*.

[d]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{211}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 3.9% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = .556, $p = .64$. Accounting for 3.7% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .815, p = .44. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .087, $p > .05$ (Appendix 14).

R_{212}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 6.1% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of business, F (3, 41) = .893, p = .45. Accounting for 4.9% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of business, F (2, 42) = 1.089, p = .34. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .522, $p > .05$ (Appendix 14).

R_{213}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 9.0% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = 1.351, p = .27. Accounting for 3.7% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = .812, p = .45. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.409, p > .05 (Appendix 14).

R_{214}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 2.6% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .359, p = .78. Accounting for 2.4% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .509, p = .60. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .083, p > .05 (Appendix 14).

R_{215}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 2.2% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of English, F (3, 41) = .310, p = .81. Accounting for 1.7% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of English, F (2, 42) = .361, p = .69. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .208, p > .05 (Appendix 14).

R_{216}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 9.6% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = 1.450, p = .24. Accounting for 4.5% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = .984, p = .38. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.318, p > .05 (Appendix 14).

R_{217}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 3.5% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of health, F (3, 41) = .503, p = .68. Accounting for 3.5% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of health, F (2, 42) = .771, p = .46. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, p > .05 (Appendix 14).

R_{218}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 14.3% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level approached significance in the prediction of students' lifelong adaptability ratings of home economics, F (3, 41) = 2.276, p = .09. Accounting for 10.8% of the criterion variance, the restricted model of parental age and parental educational level approached significance in the prediction of students' lifelong adaptability ratings of home economics, F (2, 42) = 2.530, p = .09. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.667, p > .05 (Appendix 14).

R_{219}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 5.7% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .825, p = .48. Accounting for 4.7% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, $F\ (2, 42) = 1.028$, $p = .36$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = .435$, $p > .05$ (Appendix 14).

R_{220}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 11.1% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, $F\ (3, 41) = 1.712$, $p = .17$. Accounting for 2.7% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, $F\ (2, 42) = .580$, $p = .56$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F\ (1, 41) = 3.818$, $p > .05$ (Appendix 14).

R_{221}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 0.8% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of music, F (3,

41) = .110, $p = .95$. Accounting for 0.3% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .054, $p = .94$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .208, $p > .05$ (Appendix 14).

> R_{222}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 11.3% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = 1.743, $p = .17$. Accounting for 7.3% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = 1.662, $p = .20$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.818, $p > .05$ (Appendix 14).

> R_{223}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 9.1% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of science, F (3,

41) = 1.366, $p = .26$. Accounting for 2.8% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of science, F (2, 42) = .602, $p = .55$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.864, $p > .05$ (Appendix 14).

> R_{224}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 6.1% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = .892, $p = .45$. Accounting for 6.1% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of social studies, F (2, 42) = 1.370, $p = .26$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

> R_{225}: The two-way interaction of parental age and parental educational level significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 8.7% of the criterion variance, the full model of parental age, parental educational level, and parental age x parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = 1.297, p = .28. Accounting for 8.2% of the criterion variance, the restricted model of parental age and parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = 1.883, p = .16. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .227, p > .05 (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{211}, R_{212}, R_{213}, R_{214}, R_{215}, R_{216}, R_{217}, R_{218}, R_{219}, R_{220}, R_{221}, R_{222}, R_{223}, R_{224}, and R_{225}): art, F (1, 41) = .087, p > .05; business, F (1, 41) = .522, p > .05; computer technology, F (1, 41) = 2.409, p > .05; driver education, F (1, 41) = .083, p > .05; English, F (1, 41) = .208, p > .05; foreign language, F (1, 41) = 2.318, p > .05; health, F (1, 41) = .000, p > .05; home economics, F (1, 41) = 1.667, p > .05; industrial technology, F (1, 41) = .435, p> .05; mathematics, F (1, 41) = 3.818, p > .05; music, F (1, 41) = .208, p > .05; physical education, F (1, 41) = 1.818, p > .05; science, F (1, 41) = 2.864, p > .05; social studies, F (1, 41) = .000, p > .05; and vocational-technical, F (1, 41) = .227, p > .05.

R_{226} - R_{240}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{226} . . . art.

R_{227} . . . business.

R_{228} . . . computer technology.

R_{229} . . . driver education.

R_{230} . . . English.

R_{231} . . . foreign language.

R_{232} . . . health.

R_{233} . . . home economics.

R_{234} . . . industrial technology.

R_{235} . . . mathematics.

R_{236} . . . music.

R_{237} . . . physical education.

R_{238} . . . science.

R_{239} . . . social studies.

R_{240} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed one significant finding (R_{235}) in R_{226} through R_{240}. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{226} through R_{240}, this one significant finding was ultimately rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of parental age main effects or of student gender main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{226} through R_{240}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{226} - R_{240}) tested the two-way interaction of parental age and student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 27. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{226}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 1.7% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of art, $F\ (3, 41) = .243$, $p = .86$. Accounting for 0.4% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of art, $F\ (2, 42) = .091$, $p = .91$. An *F* test of the full model versus the

Table 27

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{226}: Art										
Full Model										
Female Student[c]	41.769	60.353	.742	.692	.49					NS
Parental Age[d] x Female Student	-1.564	10.698	-.090	-.146	.88					NS
Parental Age x Male Student	12.648	15.914	.709	.795	.43					NS
Regression						.017	3/41	.243	.86	NS
Restricted Model										
Female Student	-2.493	8.668	-.044	-.288	.77					NS
Parental Age	2.860	8.831	.050	.324	.74					NS
Regression						.004	2/42	.091	.91	NS
Full-versus-restricted Model							1/41	.542	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{227}: Business										
Full Model										
Female Student[c]	26.557	32.316	.801	.822	.41					NS
Parental Age[d] x Female Student	-8.520	5.728	-.832	-1.487	.14					NS
Parental Age x Male Student	-4.048	8.521	-.385	-.475	.63					NS
Regression						.189	3/41	3.176	.03	S
Restricted Model										
Female Student	12.628	4.621	.381	2.733	.00					S
Parental Age	-7.128	4.708	-.211	-1.514	.13					NS
Regression						.185	2/42	4.760	.01	S
Full-versus-restricted Model							1/41	.200	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{228}: Computer Technology										
Full Model										
Female Student[c]	57.794	39.669	1.477	1.457	.15					NS
Parental Age[d] x Female Student	-12.845	7.032	-1.063	-1.827	.07					NS
Parental Age x Male Student	2.848	10.460	.229	.272	.78					NS
Regression						.122	3/41	1.904	.14	NS
Restricted Model										
Female Student	8.918	5.766	.228	1.547	.12					NS
Parental Age	-7.961	5.874	-.200	-1.355	.18					NS
Regression						.089	2/42	2.054	.14	NS
Full-versus-restricted Model							1/41	1.571	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{229}: Driver Education										
<u>Full Model</u>										
Female Student[c]	5.448	53.006	.110	.103	.91					NS
Parental Age[d] x Female Student	5.403	9.396	.353	.575	.56					NS
Parental Age x Male Student	5.672	13.977	.361	.406	.68					NS
Regression						.021	3/41	.295	.82	NS
<u>Restricted Model</u>										
Female Student	4.610	7.563	.093	.610	.54					NS
Parental Age	5.487	7.704	.109	.712	.48					NS
Regression						.021	2/42	.453	.63	NS
<u>Full-versus-restricted Model</u>							1/41	.000	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	p^b	R^2	df_n/df_d	*F*	p^b	Sig.
R_{230}: English										
<u>Full Model</u>										
Female Student[c]	68.654	36.773	1.769	1.867	.06					NS
Parental Age[d] x Female Student	-2.066	6.518	-.172	-.317	.75					NS
Parental Age x Male Student	14.584	9.696	1.185	1.504	.14					NS
Regression						.233	3/41	4.163	.01	S
<u>Restricted Model</u>										
Female Student	16.799	5.375	.433	3.125	.00					S
Parental Age	3.116	5.476	.079	.569	.57					NS
Regression						.196	2/42	5.104	.01	S
<u>Full-versus-restricted Model</u>							1/41	1.947	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{231}: Foreign Language										
Full Model										
Female Student[c]	84.960	56.510	1.504	1.503	.14					NS
Parental Age[d] x Female Student	-19.527	10.017	-1.119	-1.949	.05					S
Parental Age x Male Student	2.992	14.901	.167	.201	.84					NS
Regression						.146	3/41	2.328	.08	NS
Restricted Model										
Female Student	14.827	8.216	.262	1.805	.07					NS
Parental Age	-12.518	8.370	-.217	-1.496	.14					NS
Regression						.113	2/42	2.669	.08	NS
Full-versus-restricted Model							1/41	1.571	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{232}: Health										
<u>Full Model</u>										
Female Student[c]	53.828	44.929	1.153	1.198	.23					NS
Parental Age[d] x Female Student	-.272	7.964	-.019	-.034	.97					NS
Parental Age x Male Student	10.432	11.847	.704	.881	.38					NS
Regression						.209	3/41	3.616	.02	S
<u>Restricted Model</u>										
Female Student	20.491	6.454	.439	3.175	.00					S
Parental Age	3.060	6.575	.064	.465	.64					NS
Regression						.198	2/42	5.197	.00	S
<u>Full-versus-restricted Model</u>							1/41	.579	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{233}: Home Economics										
Full Model										
Female Student[c]	12.718	49.629	.242	.256	.79					NS
Parental Age[d] x Female Student	16.882	8.797	1.039	1.919	.06					NS
Parental Age x Male Student	14.616	13.086	.876	1.117	.27					NS
Regression						.240	3/41	4.307	.00	S
Restricted Model										
Female Student	19.776	7.083	.376	2.792	.00					S
Parental Age	16.177	7.215	.302	2.242	.03					S
Regression						.239	2/42	6.605	.00	S
Full-versus-restricted Model							1/41	.053	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{234}: Industrial Technology										
Full Model										
Female Student[c]	20.931	52.071	.422	.402	.68					NS
Parental Age[d] x Female Student	6.729	9.230	.440	.729	.47					NS
Parental Age x Male Student	15.568	13.730	.990	1.134	.26					NS
Regression						.058	3/41	.841	.47	NS
Restricted Model										
Female Student	-6.596	7.455	-.133	-.885	.38					NS
Parental Age	9.480	7.595	.188	1.248	.21					NS
Regression						.051	2/42	1.139	.33	NS
Full-versus-restricted Model							1/41	.304	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{235}: Mathematics										
<u>Full Model</u>										
Female Student[c]	117.402	51.002	2.315	2.302	.02					S
Parental Age[d] x Female Student	-19.250	9.041	-1.229	-2.129	.03					S
Parental Age x Male Student	18.600	13.448	1.156	1.383	.17					NS
Regression						.136	3/41	2.152	.10	NS
<u>Restricted Model</u>										
Female Student	-.477	7.746	-.009	-.062	.95					NS
Parental Age	-7.469	7.891	-.145	-.947	.34					NS
Regression						.021	2/42	.452	.63	NS
<u>Full-versus-restricted Model</u>							1/41	5.476	< .05 but > .01	S[e]

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{236}: Music										
<u>Full Model</u>										
Female Student[c]	2.929	68.447	.045	.043	.96					NS
Parental Age[d] x Female Student	.016	12.133	.001	.001	.99					NS
Parental Age x Male Student	5.040	18.048	.246	.279	.78					NS
Regression						.040	3/41	.574	.63	NS
<u>Restricted Model</u>										
Female Student	-12.718	9.772	-.197	-1.302	.20					NS
Parental Age	1.580	9.955	.024	.159	.87					NS
Regression						.039	2/42	.854	.43	NS
<u>Full-versus-restricted Model</u>							1/41	.043	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{237}: Physical Education										
Full Model										
Female Student[c]	53.083	64.893	.839	.818	.41					NS
Parental Age[d] x Female Student	-23.147	11.503	-1.185	-2.012	.05					S
Parental Age x Male Student	-4.136	17.111	-.206	-.242	.81					NS
Regression						.101	3/41	1.536	.21	NS
Restricted Model										
Female Student	-6.124	9.354	-.097	-.655	.51					NS
Parental Age	-17.229	9.529	-.267	-1.808	.07					NS
Regression						.082	2/42	1.886	.16	NS
Full-versus-restricted Model							1/41	.864	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{238}: Science										
<u>Full Model</u>										
Female Student[c]	65.304	52.683	1.301	1.240	.22					NS
Parental Age[d] x Female Student	-8.473	9.339	-.547	-.907	.36					NS
Parental Age x Male Student	14.432	13.891	.907	1.039	.30					NS
Regression						.058	3/41	.847	.47	NS
<u>Restricted Model</u>										
Female Student	-6.031	7.686	-.120	-.785	.43					NS
Parental Age	-1.344	7.830	-.026	-.172	.86					NS
Regression						.015	2/42	.327	.72	NS
<u>Full-versus-restricted Model</u>							1/41	1.870	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{239}: Social Studies										
Full Model										
Female Student[c]	41.187	45.174	.947	.912	.36					NS
Parental Age[d] x Female Student	2.343	8.007	.174	.293	.77					NS
Parental Age x Male Student	12.424	11.911	.901	1.043	.30					NS
Regression						.079	3/41	1.168	.33	NS
Restricted Model										
Female Student	9.793	6.484	.225	1.510	.13					NS
Parental Age	5.481	6.605	.124	.830	.41					NS
Regression						.068	2/42	1.524	.22	NS
Full-versus-restricted Model							1/41	.500	> .05	NS

Table 27 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental age and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{240}: Vocational-Technical										
Full Model										
Female Student[c]	32.328	54.788	.623	.590	.55					NS
Parental Age[d] x Female Student	7.089	9.712	.443	.730	.46					NS
Parental Age x Male Student	17.512	14.446	1.065	1.212	.23					NS
Regression						.047	3/41	.668	.57	NS
Restricted Model										
Female Student	-.135	7.851	-.003	-.017	.98					NS
Parental Age	10.333	7.998	.196	1.292	.20					NS
Regression						.038	2/42	.835	.44	NS
Full-versus-restricted Model							1/41	.391	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

Table 27 (continued)

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[b]All p values were truncated, not rounded, to the hundredths place, except full-versus-restricted model p values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

[c]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

[d]Parental age was a household average. From eight possible age ranges available in the Lifelong Adaptability Survey (Parent), five averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental age may have contained the fraction *.5*.

[e]Due to the presence of 15 multiple tests in H_{G4B}'s R_{226} through R_{240}, the significant p value in R_{235} (< .05 but > .01) was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the adjusted p value in R_{235} (< .75 but > .15).

restricted model produced a nonsignificant finding, F (1, 41) = .542, $p > .05$ (Appendix 14).

R_{227}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 18.9% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student significantly predicted students' lifelong adaptability ratings of business, F (3, 41) = 3.176, $p = .03$. Accounting for 18.5% of the criterion variance, the restricted model of female student and parental age significantly predicted students' lifelong adaptability ratings of business, F (2, 42) = 4.760, p = .01. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .200, p > .05 (Appendix 14).

R_{228}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 12.2% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = 1.904, p = .14. Accounting for 8.9% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 2.054, p = .14. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.571, p > .05 (Appendix 14).

R_{229}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 2.1% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .295, p = .82. Accounting for 2.1% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .453, $p = .63$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

R_{230}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 23.3% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student significantly predicted students' lifelong adaptability ratings of English, F (3, 41) = 4.163, $p = .01$. Accounting for 19.6% of the criterion variance, the restricted model of female student and parental age significantly predicted students' lifelong adaptability ratings of English, F (2, 42) = 5.104, $p = .01$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.947, $p > .05$ (Appendix 14).

R_{231}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 14.6% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student approached significance in the prediction of students' lifelong adaptability ratings of foreign language, F (3, 41) = 2.328, $p = .08$. Accounting for 11.3% of the criterion variance, the restricted model of female student and parental age approached significance in the prediction of students' lifelong adaptability ratings of foreign language, F (2, 42)

= 2.669, $p = .08$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.571, $p > .05$ (Appendix 14).

> R_{232}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 20.9% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student significantly predicted students' lifelong adaptability ratings of health, F (3, 41) = 3.616, $p = .02$. Accounting for 19.8% of the criterion variance, the restricted model of female student and parental age significantly predicted students' lifelong adaptability ratings of health, F (2, 42) = 5.197, $p = .00$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .579, $p > .05$ (Appendix 14).

> R_{233}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 24.0% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student significantly predicted students' lifelong adaptability ratings of home economics, F (3, 41) = 4.307, $p = .00$. Accounting for 23.9% of the criterion variance, the restricted model of female student and parental age significantly predicted students' lifelong adaptability ratings of home economics, F (2, 42) = 6.605, $p = .00$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) =

.053, $p > .05$ (Appendix 14).

R_{234}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 5.8% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .841, $p = .47$. Accounting for 5.1% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = 1.139, $p =$ .33. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .304, $p > .05$ (Appendix 14).

R_{235}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of mathematics. A manual plot for General Hypothesis 4B's two-way interaction of parental age and student gender predicting mathematics lifelong adaptability ratings (R_{235}) is provided in Figure 106. The graph coordinates and their calculations are included in Appendix 15.

In R_{235}, only about 11% of the students had a parental age below 40 to 49 years, whereas about 89% of the students had a parental age equal to or above 40 to 49 years. Below a parental age of approximately 40 to 49 years, male students of younger

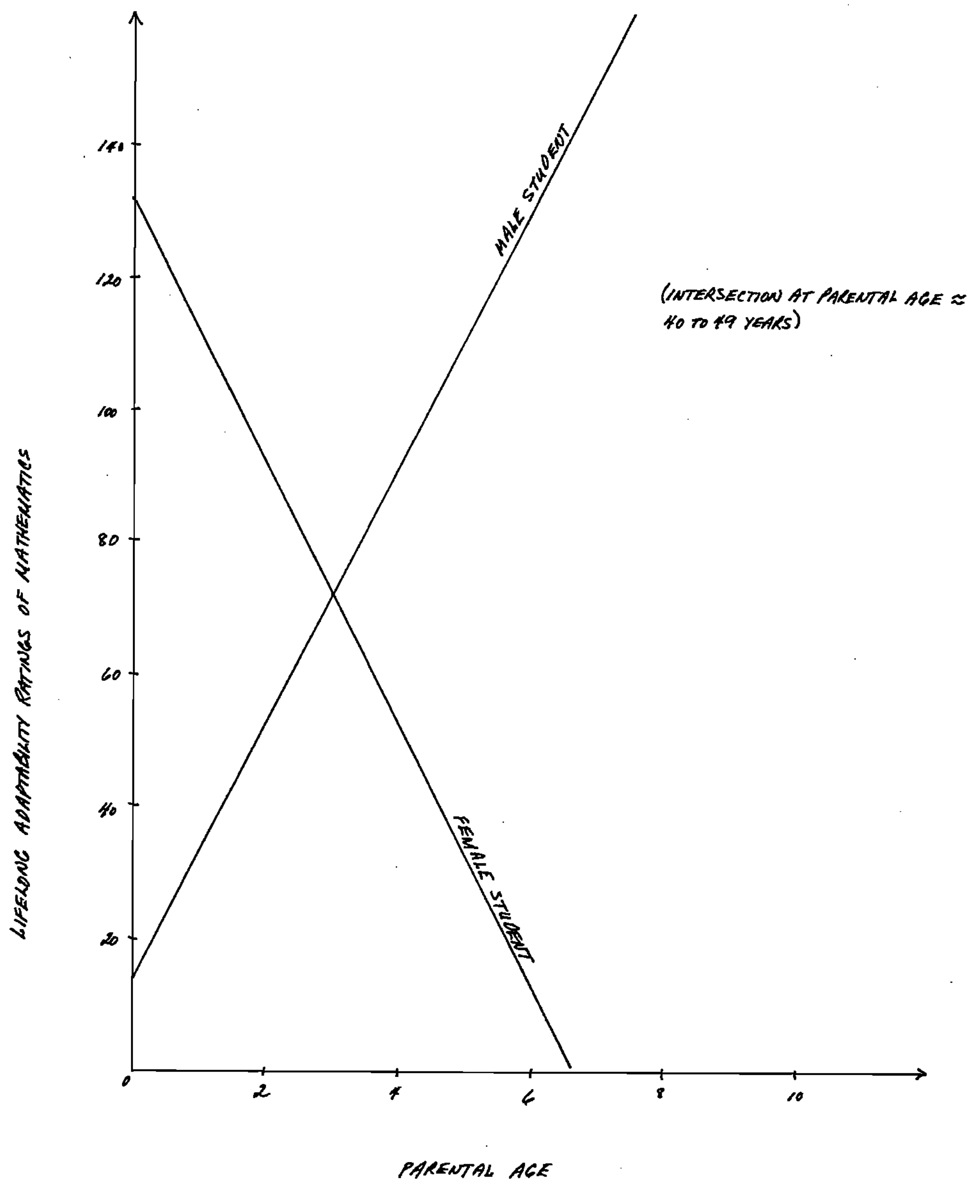

Figure 106. General Hypothesis 4B two-way interaction manual plot of parental age and student gender predicting mathematics lifelong adaptability ratings (N = 45).

parents assigned significantly lower lifelong adaptability ratings to mathematics than did female students of younger parents, but above a parental age of approximately 40 to 49 years, male students of older parents assigned significantly higher lifelong adaptability ratings to mathematics than did female students of older parents. Moreover, as parental age increased, the difference between lifelong adaptability ratings of mathematics increased such that male students of older parents assigned significantly higher lifelong adaptability ratings to mathematics than did female students of older parents.

Accounting for 13.6% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = 2.152, $p = .10$. Accounting for 2.1% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .452, $p = .63$. An F test of the full model versus the restricted model produced a significant finding, F (1, 41) = 5.476, $p <$ .05 but > .01 (Appendix 14). However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{226} through R_{240}, R_{235}'s significant p value of < .05 but > .01 was multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering R_{235}'s adjusted p value nonsignificant at < .75 but > .15.

> R_{236}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 4.0% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .574, p = .63. Accounting for 3.9% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = .854, p = .43. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .043, p > .05 (Appendix 14).

> R_{237}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 10.1% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = 1.536, p = .21. Accounting for 8.2% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = 1.886, p = .16. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .864, p > .05 (Appendix 14).

> R_{238}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 5.8% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of science, F (3, 41) =

.847, $p = .47$. Accounting for 1.5% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of science, $F(2, 42) = .327$, $p = .72$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = 1.870$, $p >$ .05 (Appendix 14).

> R_{239}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of social studies.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 7.9% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of social studies, $F(3, 41) =$ 1.168, $p = .33$. Accounting for 6.8% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of social studies, $F(2, 42) = 1.524$, $p = .22$. An F test of the full model versus the restricted model produced a nonsignificant finding, $F(1, 41) = .500$, $p > .05$ (Appendix 14).

> R_{240}: The two-way interaction of parental age and student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 4.7% of the criterion variance, the full model of female student, parental age x female student, and parental age x male student did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .668, p = .57. Accounting for 3.8% of the criterion variance, the restricted model of female student and parental age did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .835, p = .44. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .391, p > .05 (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{226}, R_{227}, R_{228}, R_{229}, R_{230}, R_{231}, R_{232}, R_{233}, R_{234}, R_{236}, R_{237}, R_{238}, R_{239}, and R_{240}): art, F (1, 41) = .542, p > .05; business, F (1, 41) = .200, p > .05; computer technology, F (1, 41) = 1.571, p > .05; driver education, F (1, 41) = .000, p > .05; English, F (1, 41) = 1.947, p > .05; foreign language, F (1, 41) = 1.571, p > .05; health, F (1, 41) = .579, p > .05; home economics, F (1, 41) = .053, p > .05; industrial technology, F (1, 41) = .304, p > .05; music, F (1, 41) = .043, p > .05; physical education, F (1, 41) = .864, p > .05; science, F (1, 41) = 1.870, p > .05; social studies, F (1, 41) = .500, p > .05; and vocational-technical, F (1, 41) = .391, p > .05.

Conversely, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{235}): mathematics, F (1, 41) = 5.476, p < .05 but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{226} through R_{240}, this one significant full and restricted regression model pair (R_{235}) was rendered nonsignificant by the

Bonferroni correction factor (Darlington, 1990).

R_{241} - R_{255}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of . . .

R_{241} . . . art.

R_{242} . . . business.

R_{243} . . . computer technology.

R_{244} . . . driver education.

R_{245} . . . English.

R_{246} . . . foreign language.

R_{247} . . . health.

R_{248} . . . home economics.

R_{249} . . . industrial technology.

R_{250} . . . mathematics.

R_{251} . . . music.

R_{252} . . . physical education.

R_{253} . . . science.

R_{254} . . . social studies.

R_{255} . . . vocational-technical.

Fifteen full and restricted regression model pairs revealed no significant findings in R_{241} through R_{255}. Furthermore, there was no attenuation of parental educational level main effects or of student gender main effects by interaction effects.

With alpha established at .05 and with an *N* of 45, R_{106} through R_{255} were conducted with a power of approximately .717 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This power was deemed acceptable for valid interpretation of General Hypothesis 4B's results. In inferential statistics for General Hypothesis 4B's R_{241} through R_{255}, for each of the 15 general school subjects, specific full and restricted regression model pairs (R_{241} - R_{255}) tested the two-way interaction of parental educational level and student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. The resulting full model, restricted model, and *F* test are presented in Table 28. The coefficient, standard error, standard coefficient, *t*, and *p* for each variable or vector are displayed. The R^2, degrees of freedom, *F*, and *p* for each full regression equation and restricted regression equation are also displayed. All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as < .01, as = .01, as < .05 but > .01, as = .05, or as > .05 without truncation or rounding.

> R_{241}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of art.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of art. Accounting for 4.4% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational

Table 28

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{241}: Art										
Full Model										
Female Student[c]	3.744	24.308	.067	.154	.87					NS
Parental Educ. Lev.[d] x Female Student	-4.296	3.456	-.337	-1.243	.22					NS
Parental Educ. Lev. x Male Student	-2.172	4.303	-.186	-.505	.61					NS
Regression						.044	3/41	.626	.60	NS
Restricted Model										
Female Student	-4.975	8.733	-.088	-.570	.57					NS
Parental Educ. Lev.	-3.463	2.667	-.202	-1.299	.20					NS
Regression						.040	2/42	.883	.42	NS
Full-versus-restricted Model							1/41	.174	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{242}: Business										
Full Model										
Female Student[c]	36.154	12.819	1.090	2.820	.00					S
Parental Educ. Lev.[d] x Female Student	-.417	1.822	-.056	-.229	.82					NS
Parental Educ. Lev. x Male Student	5.054	2.269	.736	2.227	.03					S
Regression						.234	3/41	4.174	.01	S
Restricted Model										
Female Student	13.700	4.791	.413	2.859	.00					S
Parental Educ. Lev.	1.728	1.463	.171	1.181	.24					NS
Regression						.168	2/42	4.239	.02	S
Full-versus-restricted Model							1/41	3.474	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{243}: Computer Technology										
Full Model										
Female Student[c]	5.721	16.835	.146	.340	.73					NS
Parental Educ. Lev.[d] x Female Student	.773	2.393	.087	.323	.74					NS
Parental Educ. Lev. x Male Student	-.031	2.980	-.004	-.010	.99					NS
Regression						.052	3/41	.745	.53	NS
Restricted Model										
Female Student	9.023	6.040	.231	1.494	.14					NS
Parental Educ. Lev.	.458	1.845	.038	.248	.80					NS
Regression						.051	2/42	1.120	.33	NS
Full-versus-restricted Model							1/41	.043	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{244}: Driver Education										
Full Model										
Female Student[c]	25.127	21.417	.507	1.173	.24					NS
Parental Educ. Lev.[d] x Female Student	-3.186	3.045	-.284	-1.046	.30					NS
Parental Educ. Lev. x Male Student	1.983	3.791	.193	.523	.60					NS
Regression						.041	3/41	.589	.62	NS
Restricted Model										
Female Student	3.913	7.785	.079	.503	.61					NS
Parental Educ. Lev.	-1.159	2.378	-.077	-.487	.62					NS
Regression						.015	2/42	.317	.73	NS
Full-versus-restricted Model							1/41	1.130	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{245}: English										
Full Model										
Female Student[c]	28.667	15.314	.738	1.872	.06					NS
Parental Educ. Lev.[d] x Female Student	-.915	2.177	-.104	-.420	.67					NS
Parental Educ. Lev. x Male Student	1.919	2.711	.239	.708	.48					NS
Regression						.203	3/41	3.470	.02	S
Restricted Model										
Female Student	17.036	5.536	.439	3.077	.00					S
Parental Educ. Lev.	.196	1.691	.017	.116	.90					NS
Regression						.190	2/42	4.912	.01	S
Full-versus-restricted Model							1/41	.684	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{246}: Foreign Language										
Full Model										
Female Student[c]	-1.082	23.910	-.019	-.045	.96					NS
Parental Educ. Lev.[d] x Female Student	2.775	3.399	.217	.816	.41					NS
Parental Educ. Lev. x Male Student	-1.230	4.232	-.105	-.291	.77					NS
Regression						.082	3/41	1.226	.31	NS
Restricted Model										
Female Student	15.352	8.631	.272	1.779	.08					NS
Parental Educ. Lev.	1.204	2.636	.070	.457	.65					NS
Regression						.070	2/42	1.583	.21	NS
Full-versus-restricted Model							1/41	.545	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{247}: Health										
Full Model										
Female Student[c]	35.362	18.284	.757	1.934	.06					NS
Parental Educ. Lev.[d] x Female Student	-2.433	2.599	-.230	-.936	.35					NS
Parental Educ. Lev. x Male Student	1.340	3.236	.139	.414	.68					NS
Regression						.214	3/41	3.728	.01	S
Restricted Model										
Female Student	19.874	6.622	.426	3.001	.00					S
Parental Educ. Lev.	-.954	2.022	-.067	-.472	.63					NS
Regression						.199	2/42	5.201	.00	S
Full-versus-restricted Model							1/41	.789	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{248}: Home Economics										
Full Model										
Female Student[c]	40.184	21.185	.764	1.897	.06					NS
Parental Educ. Lev.[d] x Female Student	-1.530	3.012	-.129	-.508	.61					NS
Parental Educ. Lev. x Male Student	3.264	3.750	.300	.870	.38					NS
Regression						.169	3/41	2.775	.05	S
Restricted Model										
Female Student	20.510	7.689	.390	2.668	.01					S
Parental Educ. Lev.	.350	2.348	.022	.149	.88					NS
Regression						.149	2/42	3.667	.03	S
Full-versus-restricted Model							1/41	1.000	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{249}: Industrial Technology										
Full Model										
Female Student[c]	1.152	21.494	.023	.054	.95					NS
Parental Educ. Lev.[d] x Female Student	-2.833	3.056	-.253	-.927	.35					NS
Parental Educ. Lev. x Male Student	-.656	3.805	-.064	-.172	.86					NS
Regression						.037	3/41	.527	.66	NS
Restricted Model										
Female Student	-7.784	7.726	-.157	-1.007	.31					NS
Parental Educ. Lev.	-1.979	2.360	-.131	-.839	.40					NS
Regression						.032	2/42	.704	.50	NS
Full-versus-restricted Model							1/41	.217	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{250}: Mathematics										
Full Model										
Female Student[c]	-33.484	21.656	-.660	-1.546	.12					NS
Parental Educ. Lev.[d] x Female Student	1.497	3.079	.131	.486	.62					NS
Parental Educ. Lev. x Male Student	-6.216	3.833	-.592	-1.621	.11					NS
Regression						.066	3/41	.958	.42	NS
Restricted Model										
Female Student	-1.828	7.996	-.036	-.229	.82					NS
Parental Educ. Lev.	-1.527	2.442	-.099	-.625	.53					NS
Regression						.009	2/42	.200	.81	NS
Full-versus-restricted Model							1/41	2.478	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	*t*	*p*[b]	R^2	df_n/df_d	*F*	*p*[b]	Sig.
R_{251}: Music										
Full Model										
Female Student[c]	-25.452	27.783	-.394	-.916	.36					NS
Parental Educ. Lev.[d] x Female Student	-.776	3.950	-.053	-.196	.84					NS
Parental Educ. Lev. x Male Student	-3.553	4.918	-.266	-.722	.47					NS
Regression						.051	3/41	.742	.53	NS
Restricted Model										
Female Student	-14.054	9.986	-.218	-1.407	.16					NS
Parental Educ. Lev.	-1.865	3.050	-.095	-.611	.54					NS
Regression						.047	2/42	1.035	.36	NS
Full-versus-restricted Model							1/41	.174	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{252}: Physical Education										
Full Model										
Female Student[c]	-7.625	27.722	-.121	-.275	.78					NS
Parental Educ. Lev.[d] x Female Student	-1.373	3.941	-.096	-.348	.72					NS
Parental Educ. Lev. x Male Student	-1.368	4.907	-.104	-.279	.78					NS
Regression						.016	3/41	.219	.88	NS
Restricted Model										
Female Student	-7.645	9.941	-.121	-.769	.44					NS
Parental Educ. Lev.	-1.371	3.036	-.071	-.452	.65					NS
Regression						.016	2/42	.336	.71	NS
Full-versus-restricted Model							1/41	.000	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{253}: Science										
Full Model										
Female Student[c]	-27.633	21.444	-.551	-1.289	.20					NS
Parental Educ. Lev.[d] x Female Student	4.364	3.049	.384	1.431	.15					NS
Parental Educ. Lev. x Male Student	-1.278	3.796	-.123	-.337	.73					NS
Regression						.064	3/41	.934	.43	NS
Restricted Model										
Female Student	-4.477	7.815	-.089	-.573	.56					NS
Parental Educ. Lev.	2.151	2.387	.140	.901	.37					NS
Regression						.033	2/42	.724	.49	NS
Full-versus-restricted Model							1/41	1.348	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p^b	R^2	df_n/df_d	F	p^b	Sig.
R_{254}: Social Studies										
Full Model										
Female Student[c]	10.524	17.905	.242	.588	.55					NS
Parental Educ. Lev.[d] x Female Student	4.050	2.545	.412	1.591	.11					NS
Parental Educ. Lev. x Male Student	3.497	3.169	.388	1.103	.27					NS
Regression						.132	3/41	2.074	.11	NS
Restricted Model										
Female Student	12.793	6.422	.294	1.992	.05					S
Parental Educ. Lev.	3.833	1.961	.289	1.954	.05					S
Regression						.131	2/42	3.176	.05	S
Full-versus-restricted Model							1/41	.048	> .05	NS

Table 28 (continued)

General Hypothesis 4B F tests of full-versus-restricted regression models testing interaction of parental educational level and student gender predicting students' lifelong adaptability ratings of 15 general school subjects (N = 45)

Element[a]	Coef.	Std. Error	Std. Coef.	t	p[b]	R^2	df_n/df_d	F	p[b]	Sig.
R_{255}: Vocational-Technical										
<u>Full Model</u>										
Female Student[c]	13.038	22.327	.251	.584	.56					NS
Parental Educ. Lev.[d] x Female Student	-4.610	3.174	-.393	-1.452	.15					NS
Parental Educ. Lev. x Male Student	-.904	3.952	-.084	-.229	.82					NS
Regression						.050	3/41	.721	.54	NS
<u>Restricted Model</u>										
Female Student	-2.171	8.059	-.042	-.269	.78					NS
Parental Educ. Lev.	-3.157	2.461	-.199	-1.283	.20					NS
Regression						.038	2/42	.823	.44	NS
<u>Full-versus-restricted Model</u>							1/41	.522	> .05	NS

[a]Each two-way interaction variable in H_{G4B} was derived as the multiplicative product of

Table 28 (continued)

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two of the five predictor variables (student cultural literacy, family structure, parental age, parental educational level, and student gender).

[b]All *p* values were truncated, not rounded, to the hundredths place, except full-versus-restricted model *p* values, which were reported as $< .01$, as $= .01$, as $< .05$ but $> .01$, as $= .05$, or as $> .05$ without truncation or rounding.

[c]Student gender was statistically treated as a categorical variable. In each multiple regression equation, a datum for the category representing "Female Student" was entered for student gender, except in interactions in which one interaction vector employed a datum for the category representing "Female Student" and in which another interaction vector employed a datum for the category representing "Male Student." Dummy-variable coding was employed.

[d]Parental educational level was a household average. From eight possible educational levels available in the Lifelong Adaptability Survey (Parent), eleven averages materialized from data reported by parents of students with other necessary data for this study's general hypotheses. Therefore, an interaction value involving this household average parental educational level may have contained the fraction *.5*.

level x male student did not significantly predict students' lifelong adaptability ratings of art, F (3, 41) = .626, $p = .60$. Accounting for 4.0% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of art, F (2, 42) = .883, $p = .42$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .174, $p > .05$ (Appendix 14).

> R_{242}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of business.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of business. Accounting for 23.4% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student significantly predicted students' lifelong adaptability ratings of business, F (3, 41) = 4.174, p = .01. Accounting for 16.8% of the criterion variance, the restricted model of female student and parental educational level significantly predicted students' lifelong adaptability ratings of business, F (2, 42) = 4.239, p = .02. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 3.474, p > .05 (Appendix 14).

R_{243}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of computer technology.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of computer technology. Accounting for 5.2% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of computer technology, F (3, 41) = .745, p = .53. Accounting for 5.1% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of computer technology, F (2, 42) = 1.120, p = .33. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .043, p > .05 (Appendix 14).

R_{244}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of driver education.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of driver education. Accounting for 4.1% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of driver education, F (3, 41) = .589, p = .62. Accounting for 1.5% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of driver education, F (2, 42) = .317, p = .73. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.130, $p > .05$ (Appendix 14).

> R_{245}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of English.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of English. Accounting for 20.3% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student significantly predicted students' lifelong adaptability ratings of English, F (3, 41) = 3.470, p = .02. Accounting for 19.0% of the criterion variance, the restricted model of female student and parental educational level significantly predicted students' lifelong adaptability ratings of English, F (2, 42) = 4.912, p = .01. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .684, $p > .05$ (Appendix 14).

> R_{246}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of foreign language.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of foreign language. Accounting for 8.2% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of foreign language, F (3, 41) = 1.226, $p = .31$. Accounting for 7.0% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of foreign language, F (2, 42) = 1.583, $p = .21$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .545, $p > .05$ (Appendix 14).

> R_{247}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of health.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of health. Accounting for 21.4% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student significantly predicted students' lifelong adaptability ratings of health, F (3, 41) = 3.728, $p = .01$. Accounting for 19.9% of the criterion variance, the restricted model of female student and parental educational level significantly predicted students' lifelong adaptability ratings of health, F (2, 42) = 5.201, $p = .00$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .789, $p > .05$ (Appendix 14).

> R_{248}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of home economics.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of home economics. Accounting for 16.9% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student significantly predicted students' lifelong adaptability ratings of home economics, F (3, 41) = 2.775, p = .05. Accounting for 14.9% of the criterion variance, the restricted model of female student and parental educational level significantly predicted students' lifelong adaptability ratings of home economics, F (2, 42) = 3.667, p = .03. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.000, p > .05 (Appendix 14).

R_{249}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of industrial technology.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of industrial technology. Accounting for 3.7% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of industrial technology, F (3, 41) = .527, p = .66. Accounting for 3.2% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of industrial technology, F (2, 42) = .704, p = .50. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .217, p > .05 (Appendix 14).

R_{250}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of mathematics.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of mathematics. Accounting for 6.6% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of mathematics, F (3, 41) = .958, p = .42. Accounting for 0.9% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of mathematics, F (2, 42) = .200, p = .81. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 2.478, $p > .05$ (Appendix 14).

R_{251}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of music.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of music. Accounting for 5.1% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of music, F (3, 41) = .742, p = .53. Accounting for 4.7% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of music, F (2, 42) = 1.035, p = .36. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .174, $p > .05$ (Appendix 14).

R_{252}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of physical education.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of physical education. Accounting for 1.6% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of physical education, F (3, 41) = .219, p = .88. Accounting for 1.6% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of physical education, F (2, 42) = .336, p = .71. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .000, $p > .05$ (Appendix 14).

> R_{253}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of science.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of science. Accounting for 6.4% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of science, F (3, 41) = .934, p = .43. Accounting for 3.3% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of science, F (2, 42) = .724, p = .49. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = 1.348, $p > .05$ (Appendix 14).

> R_{254}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability

ratings of social studies.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of social studies. Accounting for 13.2% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of social studies, F (3, 41) = 2.074, $p = .11$. Accounting for 13.1% of the criterion variance, the restricted model of female student and parental educational level significantly predicted students' lifelong adaptability ratings of social studies, F (2, 42) = 3.176, $p = .05$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .048, $p > .05$ (Appendix 14).

R_{255}: The two-way interaction of parental educational level and student gender significantly enhances prediction of students' lifelong adaptability ratings of vocational-technical.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of vocational-technical. Accounting for 5.0% of the criterion variance, the full model of female student, parental educational level x female student, and parental educational level x male student did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (3, 41) = .721, $p = .54$. Accounting for 3.8% of the criterion variance, the restricted model of female student and parental educational level did not significantly predict students' lifelong adaptability ratings of vocational-technical, F (2, 42) = .823, $p = .44$. An F test of the full model versus the restricted model produced a nonsignificant finding, F (1, 41) = .522, $p > .05$ (Appendix 14).

In summation, with alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{241}, R_{242}, R_{243}, R_{244}, R_{245}, R_{246}, R_{247}, R_{248}, R_{249}, R_{250}, R_{251}, R_{252}, R_{253}, R_{254}, and R_{255}): art, F (1, 41) = .174, $p > .05$; business, F (1, 41) = 3.474, $p > .05$; computer technology, F (1, 41) = .043, $p > .05$; driver education, F (1, 41) = 1.130, $p > .05$; English, F (1, 41) = .684, $p > .05$; foreign language, F (1, 41) = .545, $p > .05$; health, F (1, 41) = .789, $p > .05$; home economics, F (1, 41) = 1.000, $p > .05$; industrial technology, F (1, 41) = .217, $p > .05$; mathematics, F (1, 41) = 2.478, $p > .05$; music, F (1, 41) = .174, $p > .05$; physical education, F (1, 41) = .000, $p > .05$; science, F (1, 41) = 1.348, $p > .05$; social studies, F (1, 41) = .048, $p > .05$; and vocational-technical, F (1, 41) = .522, $p > .05$.

Overall, General Hypothesis 4 tested for significant main effects of and for significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of 15 general school subjects. After application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of three of the 15 general school subjects in simple regression equations (R_{95}, R_{97}, and R_{98}): English, F (1, 43) = 10.042, $p = .00$; health, F (1, 43) = 10.367, $p = .00$; and home economics, F (1, 43) = 7.482, $p = .00$. In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

General Hypothesis 5 (H_{G5})

For inclusion in General Hypothesis 5, parents, teachers, administrators, all students, and culturally literate students must have provided lifelong adaptability ratings for all 15 general school subjects in the Lifelong Adaptability Survey. Moreover, to be deemed culturally literate, a student must have achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B.

General Hypothesis 5 descriptive statistics for parents' lifelong adaptability ratings of 15 general school subjects are displayed in Table 29. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Parent) were permitted a possible range of 0 through 100 on a respondent analogue scale.

After listwise deletion of respondents who had not rated all 15 general school subjects, Lifelong Adaptability Survey (Parent) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations: art (N = 215, range = 0-100, M = 54.85, SD = 24.94); business (N = 215, range = 7-100, M = 75.56, SD = 19.67); computer technology (N = 215, range = 8-100, M = 87.31, SD = 13.80); driver education (N = 215, range = 0-100, M = 60.21, SD = 27.67); English (N = 215, range = 4-100, M = 84.02, SD = 17.18); foreign language (N = 215, range = 0-100, M = 55.51, SD = 26.88); health (N = 215, range = 3-100, M = 74.90, SD = 20.74); home economics (N = 215, range = 0-100, M = 63.88, SD = 23.91);

Table 29

General Hypothesis 5 parents' lifelong adaptability ratings descriptive statistics

General School Subject[a]	*N*	Range	*M*	*SD*
Art	215	0-100	54.85	24.94
Business	215	7-100	75.56	19.67
Computer Technology	215	8-100	87.31	13.80
Driver Education	215	0-100	60.21	27.67
English	215	4-100	84.02	17.18
Foreign Language	215	0-100	55.51	26.88
Health	215	3-100	74.90	20.74
Home Economics	215	0-100	63.88	23.91
Industrial Technology	215	5-100	64.03	24.08
Mathematics	215	5-100	79.12	18.41
Music	215	0-100	50.00	25.74
Physical Education	215	0-100	57.22	25.69
Science	215	5-100	74.14	20.57
Social Studies	215	6-100	73.28	20.69
Vocational-Technical	215	6-100	70.27	23.40

[a]Due to listwise deletion of 11 respondents who had not rated all 15 general school subjects, *N* was reduced from 226 to 215.

industrial technology (*N* = 215, range = 5-100, *M* = 64.03, *SD* = 24.08); mathematics (*N* = 215, range = 5-100, *M* = 79.12, *SD* = 18.41); music (*N* = 215, range = 0-100, *M* = 50.00, *SD* = 25.74); physical education (*N* = 215, range = 0-

100, *M* = 57.22, *SD* = 25.69); science (*N* = 215, range = 5-100, *M* = 74.14, *SD* = 20.57); social studies (*N* = 215, range = 6-100, *M* = 73.28, *SD* = 20.69); and vocational-technical (*N* = 215, range = 6-100, *M* = 70.27, *SD* = 23.40).

General Hypothesis 5 descriptive statistics for teachers' lifelong adaptability ratings of 15 general school subjects are displayed in Table 30. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Teacher) were permitted a possible range of 0 through 100 on a respondent analogue scale.

After listwise deletion of respondents who had not rated all 15 general school subjects, Lifelong Adaptability Survey (Teacher) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations: art (*N* = 80, range = 14-100, *M* = 68.03, *SD* = 21.07); business (*N* = 80, range = 49-100, *M* = 81.94, *SD* = 14.20); computer technology (*N* = 80, range = 46-100, *M* = 86.64, *SD* = 12.44); driver education (*N* = 80, range = 1-100, *M* = 65.21, *SD* = 26.68); English (*N* = 80, range = 45-100, *M* = 87.45, *SD* = 13.47); foreign language (*N* = 80, range = 0-100, *M* = 66.81, *SD* = 22.50); health (*N* = 80, range = 28-100, *M* = 84.31, *SD* = 14.94); home economics (*N* = 80, range = 7-100, *M* = 74.25, *SD* = 22.60); industrial technology (*N* = 80, range = 14-100, *M* = 72.85, *SD* = 20.81); mathematics (*N* = 80, range = 42-100, *M* = 83.23, *SD* = 14.66); music (*N* = 80, range = 7-100, *M* = 61.79, *SD* = 23.66); physical education (*N* = 80, range = 2-100, *M* = 72.75, *SD* = 21.60); science (*N* = 80, range = 26-100, *M* = 80.26, *SD* = 16.34); social studies (*N* = 80, range = 43-100, *M* = 78.56, *SD* = 15.85); and vocational-technical (*N* = 80, range = 31-100, *M* = 78.21, *SD* = 17.68).

General Hypothesis 5 descriptive statistics for administrators' lifelong adaptability ratings of 15 general school subjects are displayed in Table 31. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey

Table 30

General Hypothesis 5 teachers' lifelong adaptability ratings descriptive statistics

General School Subject[a]	*N*	Range	*M*	*SD*
Art	80	14-100	68.03	21.07
Business	80	49-100	81.94	14.20
Computer Technology	80	46-100	86.64	12.44
Driver Education	80	1-100	65.21	26.68
English	80	45-100	87.45	13.47
Foreign Language	80	0-100	66.81	22.50
Health	80	28-100	84.31	14.94
Home Economics	80	7-100	74.25	22.60
Industrial Technology	80	14-100	72.85	20.81
Mathematics	80	42-100	83.23	14.66
Music	80	7-100	61.79	23.66
Physical Education	80	2-100	72.75	21.60
Science	80	26-100	80.26	16.34
Social Studies	80	43-100	78.56	15.85
Vocational-Technical	80	31-100	78.21	17.68

[a]Due to listwise deletion of 5 respondents who had not rated all 15 general school subjects, *N* was reduced from 85 to 80.

(Administrator) were permitted a possible range of 0 through 100 on a respondent analogue scale.

Lifelong Adaptability Survey (Administrator) data yielded the following

Table 31

General Hypothesis 5 administrators' lifelong adaptability ratings descriptive statistics

General School Subject[a]	*N*	Range	*M*	*SD*
Art	6	56-96	73.83	13.06
Business	6	47-91	69.33	15.76
Computer Technology	6	68-92	81.50	9.18
Driver Education	6	6-85	56.50	27.55
English	6	73-93	84.50	8.53
Foreign Language	6	41-92	71.67	19.62
Health	6	52-94	77.67	14.04
Home Economics	6	11-92	64.33	29.69
Industrial Technology	6	38-95	71.50	24.49
Mathematics	6	34-89	69.00	20.54
Music	6	19-92	70.83	29.98
Physical Education	6	52-91	75.83	16.46
Science	6	55-93	77.00	15.43
Social Studies	6	69-94	83.50	9.94
Vocational-Technical	6	51-93	75.00	19.24

[a]Due to all 6 respondents' having rated all 15 general school subjects, listwise deletion proved unnecessary and *N* remained at 6.

lifelong adaptability ratings ranges, means, and standard deviations for 15 general school subjects: art (*N* = 6, range = 56-96, *M* = 73.83, *SD* = 13.06); business (*N* = 6, range = 47-91, *M* = 69.33, *SD* = 15.76); computer technology (*N* = 6, range = 68-

92, *M* = 81.50, *SD* = 9.18); driver education (*N* = 6, range = 6-85, *M* = 56.50, *SD* = 27.55); English (*N* = 6, range = 73-93, *M* = 84.50, *SD* = 8.53); foreign language (*N* = 6, range = 41-92, *M* = 71.67, *SD* = 19.62); health (*N* = 6, range = 52-94, *M* = 77.67, *SD* = 14.04); home economics (*N* = 6, range = 11-92, *M* = 64.33, *SD* = 29.69); industrial technology (*N* = 6, range = 38-95, *M* = 71.50, *SD* = 24.49); mathematics (*N* = 6, range = 34-89, *M* = 69.00, *SD* = 20.54); music (*N* = 6, range = 19-92, *M* = 70.83, *SD* = 29.98); physical education (*N* = 6, range = 52-91, *M* = 75.83, *SD* = 16.46); science (*N* = 6, range = 55-93, *M* = 77.00, *SD* = 15.43); social studies (*N* = 6, range = 69-94, *M* = 83.50, *SD* = 9.94); and vocational-technical (*N* = 6, range = 51-93, *M* = 75.00, *SD* = 19.24).

General Hypothesis 5 descriptive statistics for all students' lifelong adaptability ratings of 15 general school subjects are displayed in Table 32. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Student) were permitted a possible range of 0 through 100 on a respondent analogue scale.

After listwise deletion of respondents who had not rated all 15 general school subjects, Lifelong Adaptability Survey (Student) data yielded the following lifelong adaptability ratings ranges, means, and standard deviations: art (*N* = 78, range = 0-100, *M* = 55.94, *SD* = 28.41); business (*N* = 78, range = 12-100, *M* = 71.40, *SD* = 21.45); computer technology (*N* = 78, range = 1-100, *M* = 81.60, *SD* = 19.30); driver education (*N* = 78, range = 0-100, *M* = 53.92, *SD* = 28.08); English (*N* = 78, range = 8-100, *M* = 77.82, *SD* = 21.21); foreign language (*N* = 78, range = 0-100, *M* = 54.80, *SD* = 29.61); health (*N* = 78, range = 0-100, *M* = 72.00, *SD* = 23.94); home economics (*N* = 78, range = 1-100, *M* = 60.10, *SD* = 26.90); industrial technology (*N* = 78, range = 5-100, *M* = 51.12, *SD* = 26.74); mathematics (*N* = 78,

Table 32

General Hypothesis 5 all students' lifelong adaptability ratings descriptive statistics

General School Subject[a]	*N*[b]	Range	*M*	*SD*
Art	78	0-100	55.94	28.41
Business	78	12-100	71.40	21.45
Computer Technology	78	1-100	81.60	19.30
Driver Education	78	0-100	53.92	28.08
English	78	8-100	77.82	21.21
Foreign Language	78	0-100	54.80	29.61
Health	78	0-100	72.00	23.94
Home Economics	78	1-100	60.10	26.90
Industrial Technology	78	5-100	51.12	26.74
Mathematics	78	3-100	68.78	28.11
Music	78	0-100	43.59	30.63
Physical Education	78	0-100	44.82	31.75
Science	78	6-100	63.15	25.90
Social Studies	78	0-100	66.15	24.11
Vocational-Technical	78	0-100	60.76	27.96

[a]Due to listwise deletion of 1 respondent who had not rated all 15 general school subjects, *N* was reduced from 79 to 78.

[b]Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in H_{G5B} may be thereby unduly influencing all students' results in H_{G5A}.

range = 3-100, *M* = 68.78, *SD* = 28.11); music (*N* = 78, range = 0-100, *M* = 43.59,

SD = 30.63); physical education (*N* = 78, range = 0-100, *M* = 44.82, *SD* = 31.75); science (*N* = 78, range = 6-100, *M* = 63.15, *SD* = 25.90); social studies (*N* = 78, range = 0-100, *M* = 66.15, *SD* = 24.11); and vocational-technical (*N* = 78, range = 0-100, *M* = 60.76, *SD* = 27.96).

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

General Hypothesis 5 descriptive statistics for culturally literate students' lifelong adaptability ratings of 15 general school subjects are displayed in Table 33. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey (Student) were permitted a possible range of 0 through 100 on a respondent analogue scale.

After listwise deletion of respondents who had not rated all 15 general school subjects, Lifelong Adaptability Survey (Student) data yielded the following culturally literate students' lifelong adaptability ratings ranges, means, and standard deviations: art (*N* = 51, range = 3-100, *M* = 58.71, *SD* = 27.49); business (*N* = 51, range = 12-99, *M* = 68.53, *SD* = 20.89); computer technology (*N* = 51, range = 33-100, *M* = 83.00, *SD* = 16.53); driver education (*N* = 51, range = 0-100, *M* = 54.10, *SD* = 28.17); English (*N* = 51, range = 8-100, *M* = 74.00, *SD* = 22.55); foreign language (*N* = 51, range = 8-100, *M* = 59.41, *SD* = 29.03); health (*N* = 51, range = 0-100, *M* = 68.77, *SD* = 23.96); home economics (*N* = 51, range = 1-100, *M* = 60.51, *SD* = 27.74); industrial technology (*N* = 51, range = 5-100, *M* = 52.82, *SD* = 26.36); mathematics (*N* = 51, range = 3-100, *M* = 66.20, *SD* = 29.62); music (*N* = 51, range = 0-100, *M* = 50.63, *SD* = 31.16); physical education (*N* = 51, range = 0-100, *M* = 42.39, *SD* = 32.46); science (*N* = 51, range = 6-100, *M* = 63.94, *SD* = 26.05);

Table 33

General Hypothesis 5 culturally literate students' lifelong adaptability ratings descriptive statistics

General School Subject[a]	*N*	Range	*M*	*SD*
Art	51	3-100	58.71	27.49
Business	51	12-99	68.53	20.89
Computer Technology	51	33-100	83.00	16.53
Driver Education	51	0-100	54.10	28.17
English	51	8-100	74.00	22.55
Foreign Language	51	8-100	59.41	29.03
Health	51	0-100	68.77	23.96
Home Economics	51	1-100	60.51	27.74
Industrial Technology	51	5-100	52.82	26.36
Mathematics	51	3-100	66.20	29.62
Music	51	0-100	50.63	31.16
Physical Education	51	0-100	42.39	32.46
Science	51	6-100	63.94	26.05
Social Studies	51	6-100	67.02	24.20
Vocational-Technical	51	0-100	59.82	26.45

[a]Due to listwise deletion of 1 respondent who had not rated all 15 general school subjects, *N* was reduced from 52 to 51.

social studies (N = 51, range = 6-100, M = 67.02, SD = 24.20); and vocational-technical (N = 51, range = 0-100, M = 59.82, SD = 26.45).

Because parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of 15 general school subjects were included in exploratory factor analyses in General Hypothesis 5, these groups' correlation coefficients of the 15 general school subjects are respectively presented in Tables 34, 35, 36, and 37 below.

A correlation matrix of the variables in parents' lifelong adaptability ratings of 15 general school subjects (Table 29) produced the correlation coefficients in Table 34. The strongest (i.e., with an absolute value > .400) correlation coefficients occurred between home economics and health (.627), vocational-technical and industrial technology (.582), computer technology and business (.556), physical education and health (.542), music and art (.537), home economics and driver education (.502), science and mathematics (.477), social studies and English (.474), social studies and science (.471), science and foreign language (.469), health and driver education (.463), and social studies and foreign language (.432). All of these correlations were positive.

A correlation matrix of the variables in teachers' lifelong adaptability ratings of 15 general school subjects (Table 30) produced the correlation coefficients in Table 35. The strongest (i.e., with an absolute value > .400) correlation coefficients occurred between computer technology and business (.759), science and mathematics (.680), vocational-technical and industrial technology (.680), physical education and music (.667), physical education and health (.605), music and art (.597), health and English (.596), home economics and business (.583), music and home economics (.572), music and health (.562), home economics and health (.561), industrial technology and business (.549), social studies and English (.541), physical education and home economics (.530), music and driver education (.528), English and business (.527), home economics and driver education (.527), social studies and health (.523), social

Table 34

General Hypothesis 5 correlation coefficients of variables in parents' lifelong adaptability ratings of 15 general school subjects (N = 215)

Variables	Art	Business	Comp. Tech.	Driver Ed.	English	For. Lang.	Health	Home Econ.	Indus. Tech.
Art	1.000								
Business	.281	1.000							
Comp. Tech.	.124	.556	1.000						
Driver Ed.	.146	.260	.103	1.000					
English	.203	.203	.117	.187	1.000				
For. Lang.	.179	.174	.140	.056	.399	1.000			
Health	.257	.333	.208	.463	.193	.144	1.000		
Home Econ.	.305	.349	.197	.502	.072	.031	.627	1.000	
Indus. Tech.	.260	.395	.304	.284	.091	.156	.284	.396	1.000
Math.	.013	.242	.120	-.046	.168	.280	.060	.064	.232
Music	.537	.209	.158	.074	.281	.400	.211	.226	.244
Phys. Ed.	.240	.312	.164	.248	.148	.195	.542	.382	.249
Science	.128	.126	.249	-.027	.280	.469	.027	-.071	.202
Soc. Stud.	.193	.294	.259	.092	.474	.432	.318	.151	.302
Vo.-Tech.	.173	.349	.322	.235	.119	-.035	.288	.352	.582

studies and science (.520), foreign language and art (.500), driver education and business (.499), physical education and English (.496), vocational-technical and home economics (.481), science and foreign language (.479), social studies and home

Table 34 (continued)

General Hypothesis 5 correlation coefficients of variables in parents' lifelong adaptability ratings of 15 general school subjects (N = 215)

Variables	Math.	Music	Phys. Ed.	Science	Soc. Stud.	Vo.-Tech.
Art						
Business						
Comp. Tech.						
Driver Ed.						
English						
For. Lang.						
Health						
Home Econ.						
Indus. Tech.						
Math.	1.000					
Music	.155	1.000				
Phys. Ed.	.208	.308	1.000			
Science	.477	.288	.141	1.000		
Soc. Stud.	.330	.309	.261	.471	1.000	
Vo.-Tech.	.093	.216	.277	.111	.252	1.000

economics (.479), social studies and mathematics (.479), social studies and physical education (.471), home economics and art (.470), health and art (.468), home economics and English (.465), music and industrial technology (.461), industrial

Table 35

General Hypothesis 5 correlation coefficients of variables in teachers' lifelong adaptability ratings of 15 general school subjects (N = 80)

Variables	Art	Business	Comp. Tech.	Driver Ed.	English	For. Lang.	Health	Home Econ.	Indus. Tech.
Art	1.000								
Business	.397	1.000							
Comp. Tech.	.083	.759	1.000						
Driver Ed.	.378	.499	.378	1.000					
English	.328	.527	.450	.328	1.000				
For. Lang.	.500	.437	.287	.314	.455	1.000			
Health	.468	.412	.347	.300	.596	.383	1.000		
Home Econ.	.470	.583	.361	.527	.465	.456	.561	1.000	
Indus. Tech.	.308	.549	.437	.335	.204	.290	.314	.459	1.000
Math.	.116	.214	.265	.041	.377	.413	.294	.092	.336
Music	.597	.318	.125	.528	.356	.451	.562	.572	.461
Phys. Ed.	.315	.318	.236	.427	.496	.368	.605	.530	.307
Science	.270	.368	.295	.038	.426	.479	.326	.302	.440
Soc. Stud.	.287	.449	.365	.307	.541	.392	.523	.479	.388
Vo.-Tech.	.236	.426	.352	.339	.293	.149	.407	.481	.680

technology and home economics (.459), home economics and foreign language (.456), foreign language and English (.455), music and foreign language (.451), English and computer technology (.450), social studies and business (.449), social studies and

Table 35 (continued)

General Hypothesis 5 correlation coefficients of variables in teachers' lifelong adaptability ratings of 15 general school subjects (N = 80)

Variables	Math.	Music	Phys. Ed.	Science	Soc. Stud.	Vo.-Tech.
Art						
Business						
Comp. Tech.						
Driver Ed.						
English						
For. Lang.						
Health						
Home Econ.						
Indus. Tech.						
Math.	1.000					
Music	.304	1.000				
Phys. Ed.	.331	.667	1.000			
Science	.680	.291	.389	1.000		
Soc. Stud.	.479	.446	.471	.520	1.000	
Vo.-Tech.	.300	.433	.398	.380	.394	1.000

music (.446), science and industrial technology (.440), foreign language and business (.437), industrial technology and computer technology (.437), vocational-technical and music (.433), physical education and driver education (.427), science and English

(.426), vocational-technical and business (.426), mathematics and foreign language (.413), health and business (.412), and vocational-technical and health (.407). All of these correlations were positive.

A correlation matrix of the variables in all students' lifelong adaptability ratings of 15 general school subjects (Table 32) produced the correlation coefficients in Table 36. The strongest (i.e., with an absolute value > .400) correlation coefficients occurred between science and mathematics (.566), vocational-technical and industrial technology (.545), mathematics and English (.531), social studies and science (.521), music and art (.519), mathematics and industrial technology (.512), home economics and driver education (.495), social studies and foreign language (.479), computer technology and business (.443), mathematics and business (.442), physical education and mathematics (.430), social studies and health (.430), home economics and health (.413), health and business (.409), and social studies and business (.404). All of these correlations were positive.

A correlation matrix of the variables in culturally literate students' lifelong adaptability ratings of 15 general school subjects (Table 33) produced the correlation coefficients in Table 37. The strongest (i.e., with an absolute value > .400) correlation coefficients occurred between science and mathematics (.663), social studies and health (.650), mathematics and industrial technology (.639), music and art (.608), vocational-technical and industrial technology (.606), science and business (.559), mathematics and English (.549), social studies and English (.535), physical education and mathematics (.500), social studies and science (.493), mathematics and foreign language (.492), mathematics and business (.488), health and business (.484), social studies and foreign language (.475), computer technology and business (.464), science and industrial technology (.462), social studies and mathematics (.460), physical

Table 36

General Hypothesis 5C correlation coefficients of variables in all students' lifelong adaptability ratings of 15 general school subjects (N = 78)[a]

Variables	Art	Business	Comp. Tech.	Driver Ed.	English	For. Lang.	Health	Home Econ.	Indus. Tech.
Art	1.000								
Business	-.038	1.000							
Comp. Tech.	.018	.443	1.000						
Driver Ed.	-.099	.234	-.053	1.000					
English	-.011	.262	.085	.265	1.000				
For. Lang.	.072	.223	.393	-.047	.241	1.000			
Health	-.105	.409	-.063	.341	.318	.139	1.000		
Home Econ.	-.079	.151	-.233	.495	.321	-.014	.413	1.000	
Indus. Tech.	.205	.128	-.033	.194	.316	.158	.179	.279	1.000
Math.	.000	.442	.253	.218	.531	.361	.291	.122	.512
Music	.519	-.068	.130	-.078	-.048	.101	-.092	-.034	.272
Phys. Ed.	.027	.177	-.007	.297	.289	.170	.382	.292	.396
Science	.159	.341	.155	-.049	.179	.358	.140	.043	.365
Soc. Stud.	.192	.404	.104	.103	.318	.479	.430	.127	.063
Vo.-Tech.	.102	.148	-.084	.054	.148	.102	.340	.259	.545

education and health (.459), home economics and driver education (.453), physical education and industrial technology (.448), home economics and health (.440), industrial technology and English (.426), social studies and business (.423), and

Table 36 (continued)

General Hypothesis 5C correlation coefficients of variables in all students' lifelong adaptability ratings of 15 general school subjects (N = 78)[a]

Variables	Math.	Music	Phys. Ed.	Science	Soc. Stud.	Vo.-Tech.
Art						
Business						
Comp. Tech.						
Driver Ed.						
English						
For. Lang.						
Health						
Home Econ.						
Indus. Tech.						
Math.	1.000					
Music	.015	1.000				
Phys. Ed.	.430	.204	1.000			
Science	.566	.087	.258	1.000		
Soc. Stud.	.316	.031	.139	.521	1.000	
Vo.-Tech.	.363	.036	.217	.190	.070	1.000

[a]Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in H_{G5D} may be thereby unduly influencing all students' results in H_{G5C}.

science and foreign language (.413). All of these correlations were positive.

Table 37

General Hypothesis 5D correlation coefficients of variables in culturally literate students' lifelong adaptability ratings of 15 general school subjects (N = 51)[a]

Variables	Art	Business	Comp. Tech.	Driver Ed.	English	For. Lang.	Health	Home Econ.	Indus. Tech.
Art	1.000								
Business	-.224	1.000							
Comp. Tech.	.018	.464	1.000						
Driver Ed.	-.093	.206	.000	1.000					
English	.117	.280	-.001	.330	1.000				
For. Lang.	-.066	.221	.268	-.016	.380	1.000			
Health	-.199	.484	.007	.358	.358	.284	1.000		
Home Econ.	-.147	.183	-.218	.453	.391	.126	.440	1.000	
Indus. Tech.	.216	.324	.218	.169	.426	.311	.219	.263	1.000
Math.	-.007	.488	.366	.209	.549	.492	.319	.188	.639
Music	.608	.005	.125	.013	.152	.005	-.018	.057	.281
Phys. Ed.	.108	.335	.062	.280	.326	.329	.459	.366	.448
Science	-.029	.559	.311	.087	.301	.413	.264	.160	.462
Soc. Stud.	-.114	.423	.013	.283	.535	.475	.650	.265	.181
Vo.-Tech.	.115	.173	-.004	-.093	.181	.288	.191	.198	.606

Table 37 (continued)

General Hypothesis 5D correlation coefficients of variables in culturally literate students' lifelong adaptability ratings of 15 general school subjects (N = 51)[a]

Variables	Math.	Music	Phys. Ed.	Science	Soc. Stud.	Vo.-Tech.
Art						
Business						
Comp. Tech.						
Driver Ed.						
English						
For. Lang.						
Health						
Home Econ.						
Indus. Tech.						
Math.	1.000					
Music	.175	1.000				
Phys. Ed.	.500	.395	1.000			
Science	.663	.117	.305	1.000		
Soc. Stud.	.460	-.044	.357	.493	1.000	
Vo.-Tech.	.323	.130	.156	.198	.109	1.000

[a]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

General Hypothesis 5A (H_{G5A}).

H_{G5A}: There is consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects.

Although administrators' *N* of 6 was noticeably smaller than those of the other respondent groups in General Hypothesis 5A, administrators' lifelong adaptability ratings were nonetheless included because this *N* reflected 100 percent of the respondent population and because only the means of their lifelong adaptability ratings were of interest in making comparisons across parents', teachers', administrators', and all students' lifelong adaptability ratings of 15 general school subjects.

Possible consensus was investigated by ranking parents', teachers', administrators', and all students' lifelong adaptability ratings of 15 general school subjects in descending order by their means. The resulting lifelong adaptability rankings are shown in Table 38. Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

A visual inspection across all four respondent groups, revealed that English was consistently ranked 1st or 2nd with computer technology consistently ranked 1st, 2nd, or 3rd. Health was consistently ranked 3rd, 4th, or 5th. Science was consistently ranked 5th, 6th, or 7th. Vocational-technical was consistently ranked 7th or 8th. Three of the four groups (parents, teachers, and all students) ranked music 15th. Administrators' ($N = 6$) lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of general school subjects.

In summation, there was partial consensus across parents', teachers',

Table 38

General Hypothesis 5A parents', teachers', administrators', and all students' lifelong adaptability ratings of 15 general school subjects ranked in descending order by their means

	Group			
Rank	Parents	Teachers	Administrators	All Students[a]
1	computer tech.	English	English	computer tech.
2	English	computer tech.	social studies	English
3	mathematics	health	computer tech.	health
4	business	mathematics	health	business
5	health	business	science	mathematics
6	science	science	phys. ed.	social studies
7	social studies	social studies	vo.-tech.	science
8	vo.-tech.	vo.-tech.	art	vo.-tech.
9	industrial tech.	home economics	foreign language	home economics
10	home economics	industrial tech.	industrial tech.	art
11	driver education	phys. ed.	music	foreign language
12	phys. ed.	art	business	driver education
13	foreign language	foreign language	mathematics	industrial tech.
14	art	driver education	home economics	phys. ed.
15	music	music	driver education	music
	N = 215	*N* = 80	*N* = 6	*N* = 78

[a]Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N*

Table 38 (continued)

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of 78. Culturally literate students' results in H_{G5B} may be thereby unduly influencing all students' results in H_{G5A}.

administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability.

General Hypothesis 5B (H_{G5B}).

H_{G5B}: There is consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects.

Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Although administrators' *N* of 6 was noticeably smaller than those of the other respondent groups in General Hypothesis 5B, administrators' lifelong adaptability ratings were nonetheless included because this *N* reflected 100 percent of the respondent population and because only the means of their lifelong adaptability ratings were of interest in making comparisons across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of 15 general school subjects.

Possible consensus was investigated by ranking parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of 15 general school subjects in descending order by their means. The resulting lifelong adaptability rankings are shown in Table 39.

A visual inspection across all four respondent groups, revealed that English was consistently ranked 1st or 2nd with computer technology consistently ranked 1st, 2nd, or 3rd. Health was consistently ranked 3rd, 4th, or 5th. Science was consistently ranked 5th, 6th, or 7th. Vocational-technical was consistently ranked 7th, 8th, or 9th. Three of the four groups (parents, teachers, and culturally literate students) ranked music 14th or 15th. Administrators' ($N = 6$) lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of general school subjects.

In summation, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability.

Table 39

General Hypothesis 5B parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of 15 general school subjects ranked in descending order by their means

	Group			
Rank	Parents	Teachers	Administrators	Cult. Lit. Students
1	computer tech.	English	English	computer tech.
2	English	computer tech.	social studies	English
3	mathematics	health	computer tech.	health
4	business	mathematics	health	business
5	health	business	science	social studies
6	science	science	phys. ed.	mathematics
7	social studies	social studies	vo.-tech.	science
8	vo.-tech.	vo.-tech.	art	home economics
9	industrial tech.	home economics	foreign language	vo.-tech.
10	home economics	industrial tech.	industrial tech.	foreign language
11	driver education	phys. ed.	music	art
12	phys. ed.	art	business	driver education
13	foreign language	foreign language	mathematics	industrial tech.
14	art	driver education	home economics	music
15	music	music	driver education	phys. ed.
	$N = 215$	$N = 80$	$N = 6$	$N = 51$

General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B.

General Hypothesis 5C (H_{G5C}).

H_{G5C}: There are common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects.

Parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

In other words, a separate exploratory factor analysis of parents' (Appendix

16), a separate exploratory factor analysis of teachers' (Appendix 17), and a separate exploratory factor analysis of all students' (Appendix 18) lifelong adaptability ratings were performed. Then means and standard deviations of administrators' lifelong adaptability ratings of 15 general school subjects (see Table 31) were speculatively compared with means and standard deviations of the other three respondent groups' lifelong adaptability ratings (see Tables 29, 30, and 32).

An exploratory factor analysis including a scree plot (Appendix 16) of parents' lifelong adaptability ratings of 15 general school subjects produced the factor solutions in Table 40. Parents' data yielded two viable factors with the following eigenvalues, proportions of variance, variables, and loadings: Practical Factor (eigenvalue = 4.430, prop. of var. = 29.5%, variables = driver education [.750], health [.830], home economics [.752], and physical education [.579]); and Academic Factor (eigenvalue = 2.167, prop. of var. = 14.4%, variables = English [.601], foreign language [.729], mathematics [.630], science [.761], and social studies [.707]). No dirty variables (i.e., variables loading with strength on more than one factor) appeared in either factor. Together these two factors (Practical and Academic) accounted for 43.9% of the orthogonal variance in parents' lifelong adaptability ratings of 15 general school subjects.

An exploratory factor analysis including a scree plot (Appendix 17) of teachers' lifelong adaptability ratings of 15 general school subjects produced the factor solution in Table 41. Teachers' data yielded one viable factor with the following eigenvalue, proportion of variance, variables, and loadings: Peripheral Factor (eigenvalue = 6.560, prop. of var. = 43.7%, variables = art [.747], driver education [.580], foreign language [.529], health [.664], home economics [.673], music [.829], and physical education [.684]). Driver education and foreign language, two dirty

Table 40

General Hypothesis 5 exploratory factor solutions for parents' lifelong adaptability ratings (N = 215)

Factor[a]	Eigenvalue	Proportion of Variance	Variables	Loadings
Practical	4.430	29.5%	driver education	.750
			health	.830
			home economics	.752
			physical education	.579
Academic	2.167	14.4%	English	.601
			foreign language	.729
			mathematics	.630
			science	.761
			social studies	.707

[a]Each factor was derived by principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and orthogonal solution as the definition of factor loadings method.

variables (i.e., variables loading with strength on more than one factor), appeared in this factor. This one factor (Peripheral) accounted for 43.7% of the orthogonal variance in teachers' lifelong adaptability ratings of 15 general school subjects.

An exploratory factor analysis including a scree plot (Appendix 18) of all students' lifelong adaptability ratings of 15 general school subjects produced the factor solutions in Table 42. Again, these results ought to be interpreted with caution due to

Table 41

General Hypothesis 5 exploratory factor solution for teachers' lifelong adaptability ratings (N = 80)

Factor[a]	Eigenvalue	Proportion of Variance	Variables	Loadings
Peripheral	6.560	43.7%	art	.747
			driver education[b]	.580
			foreign language[b]	.529
			health	.664
			home economics	.673
			music	.829
			physical education	.684

[a]Each factor was derived by principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and orthogonal solution as the definition of factor loadings method.

[b]dirty variable

culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. All students' data yielded three viable factors with the following eigenvalues, proportions of variance, variables, and loadings: Practical Factor (eigenvalue = 4.045, prop. of var. = 27.0%, variables = driver education [.819], English [.457], health [.628], home economics [.752], and physical education [.497]); Social Studies Factor (eigenvalue = 2.104,

Table 42

General Hypothesis 5C exploratory factor solutions for all students' lifelong adaptability ratings (N = 78)

Factor[ab]	Eigenvalue	Proportion of Variance	Variables	Loadings
Practical	4.045	27.0%	driver education	.819
			English[c]	.457
			health[c]	.628
			home economics	.752
			physical education[c]	.497
Social Studies	2.104	14.0%	foreign language[c]	.563
			science[c]	.640
			social studies	.914
Artistic	1.774	11.8%	art	.817
			music	.881

[a]Each factor was derived by principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and orthogonal solution as the definition of factor loadings method.

[b]These results ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in H_{G5D} may be thereby unduly influencing all students' results in H_{G5C}.

[c]dirty variable

prop. of var. = 14.0%, variables = foreign language [.563], science [.640], and social studies [.914]); and Artistic Factor (eigenvalue = 1.774, prop. of var. = 11.8%, variables = art [.817] and music [.881]). English, health, and physical education, three dirty variables (i.e., variables loading with strength on more than one factor), appeared in the Practical Factor. Foreign language and science, two dirty variables (i.e., variables loading with strength on more than one factor), appeared in the Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Together these three factors (Practical, Social Studies, and Artistic) accounted for 52.8% of the orthogonal variance in all students' lifelong adaptability ratings of 15 general school subjects.

A comparison of exploratory factor solutions for parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects is displayed in Table 43. A Practical Factor (driver education, health, home economics, and physical education) surfaced for parents (29.5% of variance). A similar but not identical Practical Factor (driver education, English, health, home economics, and physical education) surfaced for all students (27.0% of variance) with the one distinction between the two respondent groups being that English was excluded from parents' Practical Factor. A Peripheral Factor (art, driver education, foreign language, health, home economics, music, and physical education) surfaced for teachers only (43.7% of variance). An Academic Factor (English, foreign language, mathematics, science, and social studies) surfaced for parents only (14.4% of variance). A Social Studies Factor (foreign language, science, and social studies) surfaced for all students only (14.0% of variance). Finally, an Artistic Factor (art and music) surfaced for all students only (11.8% of variance).

Parents' two factors (Practical and Academic) accounted for 43.9% of the

Table 43

General Hypothesis 5C comparison of exploratory factor solutions for parents', teachers', and all students' lifelong adaptability ratings

	Group, Variance, and Variables		
Factor	Parents	Teachers	All Students[a]
Practical	29.5%		27.0%
	driver education		driver education
			English[b]
	health		health[b]
	home economics		home economics
	physical education		physical education[b]
Academic	14.4%		
	English		
	foreign language		
	mathematics		
	science		
	social studies		
Peripheral		43.7%	
		art	
		driver education[b]	
		foreign language[b]	

Table 43 (continued)

General Hypothesis 5C comparison of exploratory factor solutions for parents', teachers', and all students' lifelong adaptability ratings

	Group, Variance, and Variables		
Factor	Parents	Teachers	All Students[a]
		health	
		home economics	
		music	
		physical education	
Social Studies			14.0%
			foreign language[b]
			science[b]
			social studies
Artistic			11.8%
			art
			music
Total Orthogonal Variance	43.9%	43.7%	52.8%

[a]These results ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate

Table 43 (continued)

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students' results in H_{G5D} may be thereby unduly influencing all students' results in H_{G5C}.

[b]dirty variable

orthogonal variance in parents' lifelong adaptability ratings of 15 general school subjects. Teachers' one factor (Peripheral) accounted for 43.7% of the variance in teachers' lifelong adaptability ratings of 15 general school subjects. All students' three factors (Practical, Social Studies, and Artistic) accounted for 52.8% of the variance in all students' lifelong adaptability ratings of 15 general school subjects.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors.

As previously mentioned, a factor analysis of administrators' lifelong adaptability ratings was not performed due to a small sample size (N = 6), which nonetheless reflected 100 percent of the respondent population. Instead, this remaining respondent group (administrators) was speculatively compared with the other three respondent groups (parents, teachers, and all students) having larger N's. This comparison was accomplished by inspecting means and standard deviations. Therefore, means and standard deviations of administrators' lifelong adaptability ratings of 15 general school subjects (see Table 31) were speculatively compared with means and standard deviations of parents' lifelong adaptability ratings (see Table 29), with means and standard deviations of teachers' lifelong adaptability ratings (see Table 30), and with means and standard deviations of all students' lifelong adaptability ratings (see Table 32). For comparison purposes, Table 44 presents these respondent groups' means and standard deviations.

For comparisons of means involving administrators' lifelong adaptability ratings and lifelong adaptability ratings of the other three respondent groups, a difference of 20 points was established arbitrarily as "remarkably" different for the Lifelong Adaptability Survey's analogue scale quantified by the 100-increment Lifelong Adaptability Survey Rating Template (Appendix 12). For comparisons of standard deviations involving administrators' lifelong adaptability ratings and lifelong adaptability ratings of the other three respondent groups, a difference of 15 points was established arbitrarily as "notably" different for the Lifelong Adaptability Survey's analogue scale quantified by the 100-increment Lifelong Adaptability Survey Rating Template (Appendix 12).

Regarding administrators versus the other three respondent groups collectively, administrators' lifelong adaptability ratings of all 15 general school subjects were not remarkably different (i.e., did not exhibit a mean difference of at least 20 points) from parents', teachers', and all students' lifelong adaptability ratings of the same 15 general school subjects (art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical). In other

Table 44

General Hypothesis 5C administrators', parents', teachers', and all students' lifelong adaptability ratings means and standard deviations

	Mean/Standard Deviation			
Gen. School Sub.	Admin.	Parents	Teachers	All Students[a]
Art	73.83/13.06	54.85/24.94	68.03/21.07	55.94/28.41
Business	69.33/15.76	75.56/19.67	81.94/14.20	71.40/21.45
Computer Technology	81.50/9.18	87.31/13.80	86.64/12.44	81.60/19.30
Driver Education	56.50/27.55	60.21/27.67	65.21/26.68	53.92/28.08
English	84.50/8.53	84.02/17.18	87.45/13.47	77.82/21.21
Foreign Language	71.67/19.62	55.51/26.88	66.81/22.50	54.80/29.61
Health	77.67/14.04	74.90/20.74	84.31/14.94	72.00/23.94
Home Economics	64.33/29.69	63.88/23.91	74.25/22.60	60.10/26.90
Industrial Technology	71.50/24.49	64.03/24.08	72.85/20.81	51.12/26.74
Mathematics	69.00/20.54	79.12/18.41	83.23/14.66	68.78/28.11
Music	70.83/29.98	50.00/25.74	61.79/23.66	43.59/30.63
Physical Education	75.83/16.46	57.22/25.69	72.75/21.60	44.82/31.75
Science	77.00/15.43	74.14/20.57	80.26/16.34	63.15/25.90
Social Studies	83.50/9.94	73.28/20.69	78.56/15.85	66.15/24.11
Vocational-Technical	75.00/19.24	70.27/23.40	78.21/17.68	60.76/27.96
	N = 6	*N* = 215	*N* = 80	*N* = 78

[a]Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' means and standard deviations may be thereby

Table 44 (continued)

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unduly influencing all students' means and standard deviations.

words, for all 15 general school subjects, the mean of administrators' lifelong adaptability ratings of any given general school subject did not consistently exhibit a difference of at least 20 points lower than all of the other three respondent groups' means of that same general school subject or higher than all of the other three respondent groups' means of that same general school subject. Nonetheless, subtle differences were noted between administrators' lifelong adaptability ratings of some of the 15 general school subjects and parents', teachers', and all students' lifelong adaptability ratings of those same general school subjects.

The means of administrators' lifelong adaptability ratings of art, foreign language, physical education, and social studies were higher than those of all of the other three respondent groups, but the standard deviations of administrators' lifelong adaptability ratings of art, foreign language, physical education, and social studies were lower than those of all of the other three respondent groups, thereby indicating administrators' greater within-group agreement on higher lifelong adaptability ratings of art, foreign language, physical education, and social studies.

In contrast, the mean of administrators' lifelong adaptability ratings of music was higher than those of all of the other three respondent groups, but the standard deviation of administrators' lifelong adaptability ratings of music was not higher than those of all or lower than those of all of the other three respondent groups, thereby indicating administrators' higher mean lifelong adaptability rating of music without consistently greater or lesser within-group agreement than that of all of the other three respondent groups.

Conversely, the mean of administrators' lifelong adaptability ratings of business was lower than those of all of the other three respondent groups, but the standard deviation of administrators' lifelong adaptability ratings of business was not higher than those of all or lower than those of all of the other three respondent groups, thereby indicating administrators' lower lifelong adaptability rating of business without consistently greater or lesser within-group agreement than that of all of the other three respondent groups.

Dissimilarly, the mean of administrators' lifelong adaptability ratings of computer technology was lower than those of all of the other three respondent groups, and the standard deviation of administrators' lifelong adaptability ratings of computer technology was also lower than those of all of the other three respondent groups, thereby indicating administrators' greater within-group agreement on a lower mean lifelong adaptability rating of computer technology.

Regarding administrators versus the other three respondent groups individually, the mean of administrators' lifelong adaptability ratings of industrial technology was remarkably higher (i.e., exhibited a difference of at least 20 points) than that of all students, but the standard deviation of administrators' lifelong adaptability ratings of industrial technology was not notably different (i.e., did not exhibit a difference of at least 15 points) from that of all students, thereby indicating similar within-group agreement regarding lifelong adaptability ratings of industrial technology. In other words, the mean of administrators' lifelong adaptability ratings of industrial technology and the mean of all students' lifelong adaptability ratings of industrial technology were not only remarkably different means (i.e., exhibited a difference of at least 20 points) but were also the means of ratings comparably polarized in that difference (i.e., did not exhibit a difference of at least 15 points in their standard deviations).

Likewise, the mean of administrators' lifelong adaptability ratings of music was remarkably higher (i.e., exhibited a difference of at least 20 points) than those of parents and all students, but the standard deviation of administrators' lifelong adaptability ratings of music was not notably different (i.e., did not exhibit a difference of at least 15 points) from those of parents and all students, thereby indicating similar within-group agreement regarding lifelong adaptability ratings of music. In other words, the mean of administrators' lifelong adaptability ratings of music was not only a remarkably higher mean (i.e., exhibited a difference of at least 20 points) than those of parents and all students but was also the mean of ratings comparably polarized in that difference (i.e., did not exhibit a difference of at least 15 points in standard deviation).

Finally, the mean of administrators' lifelong adaptability ratings of physical education was remarkably higher (i.e., exhibited a difference of at least 20 points) than that of all students, but the standard deviation of administrators' lifelong adaptability ratings of physical education was notably lower (i.e., exhibited a difference of at least 15 points) than that of all students, thereby indicating administrators' greater within-group agreement concerning lifelong adaptability ratings of physical education. In other words, the mean of administrators' lifelong adaptability ratings of physical education was not only a remarkably higher mean (i.e., exhibited a difference of at least 20 points) but was also a mean of ratings more polarized (i.e., exhibited a difference of at least 15 points in standard deviation) than were all students' lifelong adaptability ratings of physical education.

In summation, generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors. Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, Table 38 indicates that administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

General Hypothesis 5D (H_{G5D}).

H_{G5D}: There are common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects.

Of specific interest was whether common underlying factors exist among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5D, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Common underlying factors among respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

In other words, a separate exploratory factor analysis of parents' (Appendix 16), a separate exploratory factor analysis of teachers' (Appendix 17), and a separate exploratory factor analysis of culturally literate students' (Appendix 19) lifelong adaptability ratings were performed. Then means and standard deviations of administrators' lifelong adaptability ratings of 15 general school subjects (see Table 31) were speculatively compared with means and standard deviations of the other three respondent groups' lifelong adaptability ratings (see Tables 29, 30, and 33).

An exploratory factor analysis including a scree plot (Appendix 16) of parents' lifelong adaptability ratings of 15 general school subjects produced the factor solutions in Table 40. Parents' data yielded two viable factors with the following eigenvalues, proportions of variance, variables, and loadings: Practical Factor (eigenvalue = 4.430, prop. of var. = 29.5%, variables = driver education [.750], health [.830], home economics [.752], and physical education [.579]); and Academic Factor (eigenvalue = 2.167, prop. of var. = 14.4%, variables = English [.601], foreign language [.729], mathematics [.630], science [.761], and social studies [.707]). No dirty variables (i.e., variables loading with strength on more than one factor) appeared in either factor. Together these two factors (Practical and Academic) accounted for 43.9% of the orthogonal variance in parents' lifelong adaptability ratings of 15 general school subjects.

An exploratory factor analysis including a scree plot (Appendix 17) of teachers' lifelong adaptability ratings of 15 general school subjects produced the factor solution in Table 41. Teachers' data yielded one viable factor with the following eigenvalue, proportion of variance, variables, and loadings: Peripheral Factor (eigenvalue = 6.560, prop. of var. = 43.7%, variables = art [.747], driver education [.580], foreign language [.529], health [.664], home economics [.673], music [.829], and physical education [.684]). Driver education and foreign language, two dirty variables (i.e., variables loading with strength on more than one factor), appeared in this factor. This one factor (Peripheral) accounted for 43.7% of the orthogonal variance in teachers' lifelong adaptability ratings of 15 general school subjects.

An exploratory factor analysis including a scree plot (Appendix 19) of culturally literate students' lifelong adaptability ratings of 15 general school subjects produced the factor solutions in Table 45. These results ought to be interpreted with caution due to culturally literate students' *N* of only 51. Culturally literate students' data yielded three viable factors with the following eigenvalues, proportions of variance, variables, and loadings: Occupational Factor (eigenvalue = 4.871, prop. of var. = 32.5%, variables = business [.740], computer technology [.857], mathematics [.538], and science [.584]); Artistic Factor (eigenvalue = 2.066, prop. of var. = 13.8%, variables = art [.862] and music [.874]); and Practical Factor (eigenvalue = 1.734, prop. of var. = 11.6%, variables = driver education [.802], health [.595], home economics [.762], and physical education [.498]). Mathematics and science, two dirty variables (i.e., variables loading with strength on more than one factor), appeared in the Occupational Factor. Health and physical education, two dirty variables (i.e., variables loading with strength on more than one factor), appeared in the Practical Factor. Together these three factors (Occupational, Artistic, and Practical) accounted for 57.9% of the orthogonal variance in culturally literate students' lifelong adaptability ratings of 15 general school subjects.

A comparison of exploratory factor solutions for parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects

Table 45

General Hypothesis 5D exploratory factor solutions for culturally literate students' lifelong adaptability ratings (N = 51)

Factor[ab]	Eigenvalue	Proportion of Variance	Variables	Loadings
Occupational	4.871	32.5%	business	.740
			computer technology	.857
			mathematics[c]	.538
			science[c]	.584
Artistic	2.066	13.8%	art	.862
			music	.874
Practical	1.734	11.6%	driver education	.802
			health[c]	.595
			home economics	.762
			physical education[c]	.498

[a]Each factor was derived by principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and orthogonal solution as the definition of factor loadings method.

[b]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

[c]dirty variable

is displayed in Table 46. A Practical Factor (driver education, health, home economics,

Table 46

General Hypothesis 5D comparison of exploratory factor solutions for parents', teachers', and culturally literate students' lifelong adaptability ratings

Factor	Group, Variance, and Variables		
	Parents	Teachers	Culturally Literate Students[a]
Practical	29.5%		11.6%
	driver education		driver education
	health		health[b]
	home economics		home economics
	physical education		physical education[b]
Academic	14.4%		
	English		
	foreign language		
	mathematics		
	science		
	social studies		
Peripheral		43.7%	
		art	
		driver education[b]	
		foreign language[b]	

Table 46 (continued)

General Hypothesis 5D comparison of exploratory factor solutions for parents', teachers', and culturally literate students' lifelong adaptability ratings

	Group, Variance, and Variables		
Factor	Parents	Teachers	Culturally Literate Students[a]
		health	
		home economics	
		music	
		physical education	
Occupational			32.5%
			business
			computer technology
			mathematics[b]
			science[b]
Artistic			13.8%
			art
			music
Total Orthogonal Variance	43.9%	43.7%	57.9%

Table 46 (continued)

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[a]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

[b]dirty variable

and physical education) surfaced for parents (29.5% of variance) and for culturally literate students (11.6% of variance) with a distinction between the two respondent groups being that health and physical education appeared in culturally literate students' Practical Factor as dirty variables (i.e., variables loading with strength on more than one factor). A Peripheral Factor (art, driver education, foreign language, health, home economics, music, and physical education) surfaced for teachers only (43.7% of variance). An Occupational Factor (business, computer technology, mathematics, and science) surfaced for culturally literate students only (32.5% of variance). An Academic Factor (English, foreign language, mathematics, science, and social studies) surfaced for parents only (14.4% of variance). Finally, an Artistic Factor (art and music) surfaced for culturally literate students only (13.8% of variance).

Parents' two factors (Practical and Academic) accounted for 43.9% of the orthogonal variance in parents' lifelong adaptability ratings of 15 general school subjects. Teachers' one factor (Peripheral) accounted for 43.7% of the variance in teachers' lifelong adaptability ratings of 15 general school subjects. Culturally literate students' three factors (Occupational, Artistic, and Practical) accounted for 57.9% of the variance in culturally literate students' lifelong adaptability ratings of 15 general school subjects.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

As previously mentioned, a factor analysis of administrators' lifelong adaptability ratings was not performed due to a small sample size (N = 6), which nonetheless reflected 100 percent of the respondent population. Instead, this remaining respondent group (administrators) was speculatively compared with the other three respondent groups (parents, teachers, and culturally literate students) having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations. Therefore, means and standard deviations of administrators' lifelong adaptability ratings of 15 general school subjects (see Table 31) were speculatively compared with means and standard deviations of parents' lifelong adaptability ratings (see Table 29), with means and standard deviations of teachers' lifelong adaptability ratings (see Table 30), and with means and standard deviations of culturally literate students' lifelong adaptability ratings (see Table 33). For comparison purposes, Table 47 presents these respondent groups' means and standard deviations.

For comparisons of means involving administrators' lifelong adaptability ratings and lifelong adaptability ratings of the other three respondent groups, a difference of 20 points was established arbitrarily as "remarkably" different for the Lifelong Adaptability Survey's analogue scale quantified by the 100-increment Lifelong Adaptability Survey Rating Template (Appendix 12). For comparisons of standard

Table 47

General Hypothesis 5D administrators', parents', teachers', and culturally literate students' lifelong adaptability ratings means and standard deviations

	Mean/Standard Deviation			
Gen. School Sub.	Admin.	Parents	Teachers	Cult. Lit. St.
Art	73.83/13.06	54.85/24.94	68.03/21.07	58.71/27.49
Business	69.33/15.76	75.56/19.67	81.94/14.20	68.53/20.89
Computer Technology	81.50/9.18	87.31/13.80	86.64/12.44	83.00/16.53
Driver Education	56.50/27.55	60.21/27.67	65.21/26.68	54.10/28.17
English	84.50/8.53	84.02/17.18	87.45/13.47	74.00/22.55
Foreign Language	71.67/19.62	55.51/26.88	66.81/22.50	59.41/29.03
Health	77.67/14.04	74.90/20.74	84.31/14.94	68.77/23.96
Home Economics	64.33/29.69	63.88/23.91	74.25/22.60	60.51/27.74
Industrial Technology	71.50/24.49	64.03/24.08	72.85/20.81	52.82/26.36
Mathematics	69.00/20.54	79.12/18.41	83.23/14.66	66.20/29.62
Music	70.83/29.98	50.00/25.74	61.79/23.66	50.63/31.16
Physical Education	75.83/16.46	57.22/25.69	72.75/21.60	42.39/32.46
Science	77.00/15.43	74.14/20.57	80.26/16.34	63.94/26.05
Social Studies	83.50/9.94	73.28/20.69	78.56/15.85	67.02/24.20
Vocational-Technical	75.00/19.24	70.27/23.40	78.21/17.68	59.82/26.45
	N = 6	*N* = 215	*N* = 80	*N* = 51

deviations involving administrators' lifelong adaptability ratings and lifelong adaptability ratings of the other three respondent groups, a difference of 15 points was established arbitrarily as "notably" different for the Lifelong Adaptability Survey's analogue scale quantified by the 100-increment Lifelong Adaptability Survey Rating Template (Appendix 12).

Regarding administrators versus the other three respondent groups collectively, administrators' lifelong adaptability ratings of all 15 general school subjects were not remarkably different (i.e., did not exhibit a mean difference of at least 20 points) from parents', teachers', and culturally literate students' lifelong adaptability ratings of the same 15 general school subjects (art, business, computer technology, driver education, English, foreign language, health, home economics, industrial technology, mathematics, music, physical education, science, social studies, and vocational-technical). In other words, for all 15 general school subjects, the mean of administrators' lifelong adaptability ratings of any given general school subject did not consistently exhibit a difference of at least 20 points lower than all of the other three respondent groups' means of that same general school subject or higher than all of the other three respondent groups' means of that same general school subject. Nonetheless, subtle differences were noted between administrators' lifelong adaptability ratings of some of the 15 general school subjects and parents', teachers', and culturally literate students' lifelong adaptability ratings of those same general school subjects.

The means of administrators' lifelong adaptability ratings of art, foreign language, physical education, and social studies were higher than those of all of the other three respondent groups, but the standard deviations of administrators' lifelong adaptability ratings of art, foreign language, physical education, and social studies were lower than those of all of the other three respondent groups, thereby indicating administrators' greater within-group agreement on higher lifelong adaptability ratings of art, foreign language, physical education, and social studies.

In contrast, the mean of administrators' lifelong adaptability ratings of music was higher than those of all of the other three respondent groups, but the standard deviation of administrators' lifelong adaptability ratings of music was not higher than those of all or lower than those of all of the other three respondent groups, thereby indicating administrators' higher mean lifelong adaptability rating of music without consistently greater or lesser within-group agreement than that of all of the other three respondent groups.

Dissimilarly, the mean of administrators' lifelong adaptability ratings of computer technology was lower than those of all of the other three respondent groups, and the standard deviation of administrators' lifelong adaptability ratings of computer technology was also lower than those of all of the other three respondent groups, thereby indicating administrators' greater within-group agreement on a lower mean lifelong adaptability rating of computer technology.

Regarding administrators versus the other three respondent groups individually, the mean of administrators' lifelong adaptability ratings of music was remarkably higher (i.e., exhibited a difference of at least 20 points) than those of parents and culturally literate students, but the standard deviation of administrators' lifelong adaptability ratings of music was not notably different (i.e., did not exhibit a difference of at least 15 points) from those of parents and culturally literate students, thereby indicating similar within-group agreement regarding lifelong adaptability ratings of music. In other words, the mean of administrators' lifelong adaptability ratings of music was not only a remarkably higher mean (i.e., exhibited a difference of at least 20 points) than those of parents and culturally literate students but was also the mean of ratings comparably polarized in that difference (i.e., did not exhibit a difference of at least 15 points in standard deviation).

Finally, the mean of administrators' lifelong adaptability ratings of physical education was remarkably higher (i.e., exhibited a difference of at least 20 points) than that of culturally literate students, but the standard deviation of administrators' lifelong adaptability ratings of physical education was notably lower (i.e., exhibited a difference of at least 15 points) than that of culturally literate students, thereby indicating administrators' greater within-group agreement concerning lifelong adaptability ratings of physical education. In other words, the mean of administrators' lifelong adaptability ratings of physical education was not only a remarkably higher mean (i.e., exhibited a difference of at least 20 points) but was also a mean of ratings more polarized (i.e., exhibited a difference of at least 15 points in standard deviation) than were culturally literate students' lifelong adaptability ratings of physical education.

In summation, generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors. Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, Table 39 indicates that administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

General Hypothesis 5E (H_{G5E}).

> H_{G5E}: Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects share a common factor model.

Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for a common factor model. The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy*

Test, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

Initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model.

Descriptive statistics for parents' (N = 215) lifelong adaptability ratings of 15 general school subjects are displayed in Table 29. Descriptive statistics for teachers' (*N* = 80) lifelong adaptability ratings of 15 general school subjects are displayed in Table 30. Descriptive statistics for all students' (*N* = 78) lifelong adaptability ratings of 15 general school subjects are displayed in Table 32. Descriptive statistics for culturally literate students' (*N* = 51) lifelong adaptability ratings of 15 general school subjects are displayed in Table 33. Descriptive statistics for a single group (*N* = 373) consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects are displayed in Table 48. All lifelong adaptability ratings of general school subjects in the Lifelong Adaptability Survey were permitted a possible range of 0 through 100 on a respondent analogue scale.

After listwise deletion of respondents who had not rated all 15 general school subjects, Lifelong Adaptability Survey data for a single group (*N* = 373) consisting of parents, teachers, and all students yielded the following lifelong adaptability ratings ranges, means, and standard deviations: art (*N* = 373, range = 0-100, *M* = 57.90, *SD* = 25.45); business (*N* = 373, range = 7-100, *M* = 76.06, *SD* = 19.31); computer technology (*N* = 373, range = 1-100, *M* = 85.97, *SD* = 14.99); driver education (*N* = 373, range = 0-100, *M* = 59.97, *SD* = 27.72); English (*N* = 373, range = 4-100, *M* = 83.46, *SD* = 17.65); foreign language (*N* = 373, range = 0-100, *M* = 57.78, *SD* = 26.97); health (*N* = 373, range = 0-100, *M* = 76.31, *SD* = 20.79); home economics (*N* = 373, range = 0-100, *M* = 65.31, *SD* = 24.72); industrial technology (*N* = 373, range = 5-100, *M* = 63.22, *SD* = 24.99); mathematics (*N* = 373, range = 3-100, *M* = 77.84, *SD* = 20.70); music (*N* = 373, range = 0-100, *M* = 51.19, *SD* = 27.04); physical education (*N* = 373, range = 0-100, *M* = 57.96, *SD* = 27.77); science (*N* = 373, range = 5-100, *M* = 73.15, *SD* = 21.71); social studies (*N* = 373, range = 0-100, *M* = 72.93, *SD* = 20.89); and vocational-technical (*N* = 373, range = 0-100, *M* = 69.98, *SD* = 23.99).

Table 48

General Hypothesis 5E descriptive statistics for a single group consisting of parents', teachers', and all students' lifelong adaptability ratings

General School Subject[a]	*N*[b]	Range	*M*	*SD*
Art	373	0-100	57.90	25.45
Business	373	7-100	76.06	19.31
Computer Technology	373	1-100	85.97	14.99
Driver Education	373	0-100	59.97	27.72
English	373	4-100	83.46	17.65
Foreign Language	373	0-100	57.78	26.97
Health	373	0-100	76.31	20.79
Home Economics	373	0-100	65.31	24.72
Industrial Technology	373	5-100	63.22	24.99
Mathematics	373	3-100	77.84	20.70
Music	373	0-100	51.19	27.04
Physical Education	373	0-100	57.96	27.77
Science	373	5-100	73.15	21.71
Social Studies	373	0-100	72.93	20.89
Vocational-Technical	373	0-100	69.98	23.99

[a]Due to listwise deletion of 17 respondents who had not rated all 15 general school subjects, *N* was reduced from 390 to 373.

[b]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E}. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly

Table 48 (continued)

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influencing all students' lifelong adaptability ratings in H_{G5E}.

Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Moreover, the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

Correlation matrices of the variables in parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of 15 general school subjects respectively produced the correlation coefficients in Tables 34, 35, 36, and 37.

Exploratory factor analysis on a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects in order to create a confirmatory factor model and confirmatory factor analysis in order to test the attempt to impose that confirmatory factor model on this single group from which the confirmatory factor model had been derived.

A single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects (Table 48) was included in an exploratory factor analysis in General Hypotheses 5E in order to create a confirmatory factor model (i.e., a measurement model) for subsequent confirmatory factor analyses. A correlation matrix of the variables in that single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the correlation coefficients in Table 49. The strongest (i.e., with an absolute value > .400) correlation coefficients occurred between vocational-technical and industrial technology (.611), home economics and health (.575), science and math (.560), music and art (.557), computer technology and business (.546), physical education and health (.529), social studies and science (.516), home economics and driver education (.514), social studies and English (.456), social studies and foreign language (.450), science and foreign language (.448), health and driver education (.417), physical education and home economics (.415), and industrial technology and home economics (.404). All of these correlations were positive.

An exploratory factor analysis including a scree plot (Appendix 20) of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the factor solutions in Table 50. This single group's data yielded two viable factors with the following eigenvalues, proportions of variance, variables, and loadings: Practical Factor (eigenvalue = 4.929, prop. of var. = 32.9%, variables = driver education [.752], health [.775], home economics [.775], and physical education [.527]); and Academic Factor (eigenvalue = 1.803, prop. of var. = 12.0%, variables = English [.625], foreign language [.690], mathematics [.681], science [.748], and social studies [.703]). Physical education, a dirty variable (i.e., a variable loading with strength on more than one factor), appeared in the Practical Factor. Mathematics, a dirty variable (i.e., a variable loading with strength on more than one factor), appeared in the Academic Factor. Together these two factors (Practical and Academic) accounted for 44.9% of the orthogonal variance in the single group's lifelong adaptability ratings of 15 general school subjects.

A correlation matrix of the variables in the Practical-Academic Factor Model

Table 49

General Hypothesis 5E correlation coefficients of variables in a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects (N = 373)[a]

Variables	Art	Business	Comp. Tech.	Driver Ed.	English	For. Lang.	Health	Home Econ.	Indus. Tech.
Art	1.000								
Business	.235	1.000							
Comp. Tech.	.085	.546	1.000						
Driver Ed.	.142	.305	.120	1.000					
English	.174	.281	.171	.246	1.000				
For. Lang.	.228	.244	.237	.093	.372	1.000			
Health	.217	.386	.148	.417	.299	.203	1.000		
Home Econ.	.261	.354	.105	.514	.225	.121	.575	1.000	
Indus. Tech.	.276	.375	.245	.296	.212	.205	.294	.404	1.000
Math.	.046	.326	.214	.076	.349	.332	.195	.119	.378
Music	.557	.183	.157	.145	.224	.351	.212	.252	.328
Phys. Ed.	.230	.313	.143	.314	.279	.249	.529	.415	.362
Science	.180	.251	.247	.013	.301	.448	.138	.063	.336
Soc. Stud.	.225	.365	.240	.151	.456	.450	.395	.221	.290
Vo.-Tech.	.188	.330	.214	.227	.186	.060	.346	.371	.611

(Table 50) for a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the correlation coefficients in Table 51. The strongest (i.e., with an absolute value > .400) correlation coefficients

Table 49 (continued)

General Hypothesis 5E correlation coefficients of variables in single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects (N = 373)[a]

Variables	Math.	Music	Phys. Ed.	Science	Soc. Stud.	Vo.-Tech.
Art						
Business						
Comp. Tech.						
Driver Ed.						
English						
For. Lang.						
Health						
Home Econ.						
Indus. Tech.						
Math.	1.000					
Music	.166	1.000				
Phys. Ed.	.348	.381	1.000			
Science	.560	.268	.275	1.000		
Soc. Stud.	.370	.280	.297	.516	1.000	
Vo.-Tech.	.253	.236	.329	.220	.252	1.000

[a]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E}. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly

Table 49 (continued)

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influencing all students' lifelong adaptability ratings in H_{G5E}.

occurred between home economics and health (.575), science and mathematics (.560), physical education and health (.529), social studies and science (.516), home economics and driver education (.514), social studies and English (.456), social studies and foreign language (.450), science and foreign language (.448), health and driver education (.417), and physical education and home economics (.415). All of these correlations were positive.

Then a confirmatory factor analysis (Appendix 21) tested the attempt to impose the Practical-Academic Factor Model on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. With alpha established at .05 and with an *N* of 373, the confirmatory factor analysis was conducted with maximum likelihood as the estimation method. The resulting path diagram is provided in Figure 107. The resulting chi-square, degrees of freedom, *p*, normed chi-square (i.e., chi-square/degrees of freedom ratio), comparative fit index, root mean square error of approximation, root mean square error of approximation lower bound of 90 percent confidence interval, root mean square error of approximation upper bound of 90 percent confidence interval, and standardized root mean square residual are displayed in Table 52. All values were entered, rounded, or extended to the hundredths place.

A lower normed chi-square indicates a better fitting measurement model, but there exists no consensus regarding cutoff points of 2.00, 3.00, or 5.00 (Bollen, 1989). A comparative fit index greater than .95 indicates a good fitting measurement

Table 50

General Hypothesis 5E exploratory factor solutions for a single group consisting of parents', teachers', and all students' lifelong adaptability ratings (N = 373)

Factor[ab]	Eigenvalue	Proportion of Variance	Variables	Loadings
Practical	4.929	32.9%	driver education	.752
			health	.775
			home economics	.775
			physical education[c]	.527
Academic	1.803	12.0%	English	.625
			foreign language	.690
			mathematics[c]	.681
			science	.748
			social studies	.703

[a]Each factor was derived by principal components analysis as the factor extraction method, roots greater than one as the extraction rule, orthotran/varimax as the transformation method, and orthogonal solution as the definition of factor loadings method.

[b]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E}. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing all students' lifelong adaptability ratings in H_{G5E}.

[c]dirty variable

model (Hu & Bentler, 1999), whereas a comparative fit index greater than .90

Table 51

General Hypothesis 5E correlation coefficients of variables in the Practical-Academic Factor Model derived from a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects (N = 373)

Variables[ab]	Driver Ed.	Health	Home Econ.	Phys. Ed.[c]	English	For. Lang.	Math.[c]	Science	Soc. Stud.
Driver Ed.	1.000								
Health	.417	1.000							
Home Econ.	.514	.575	1.000						
Phys. Ed.[c]	.314	.529	.415	1.000					
English	.246	.299	.225	.279	1.000				
For. Lang.	.093	.203	.121	.249	.372	1.000			
Math.[c]	.076	.195	.119	.348	.349	.332	1.000		
Science	.013	.138	.063	.275	.301	.448	.560	1.000	
Soc. Stud.	.151	.395	.221	.297	.456	.450	.370	.516	1.000

[a]The Practical Factor consisted of driver education, health, home economics, and physical education. The Academic Factor consisted of English, foreign language, mathematics, science, and social studies.

[b]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E}. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing all students' lifelong adaptability ratings in H_{G5E}.

[c]dirty variable

indicates a reasonable fitting measurement model (Hu & Bentler, 1998). A root mean

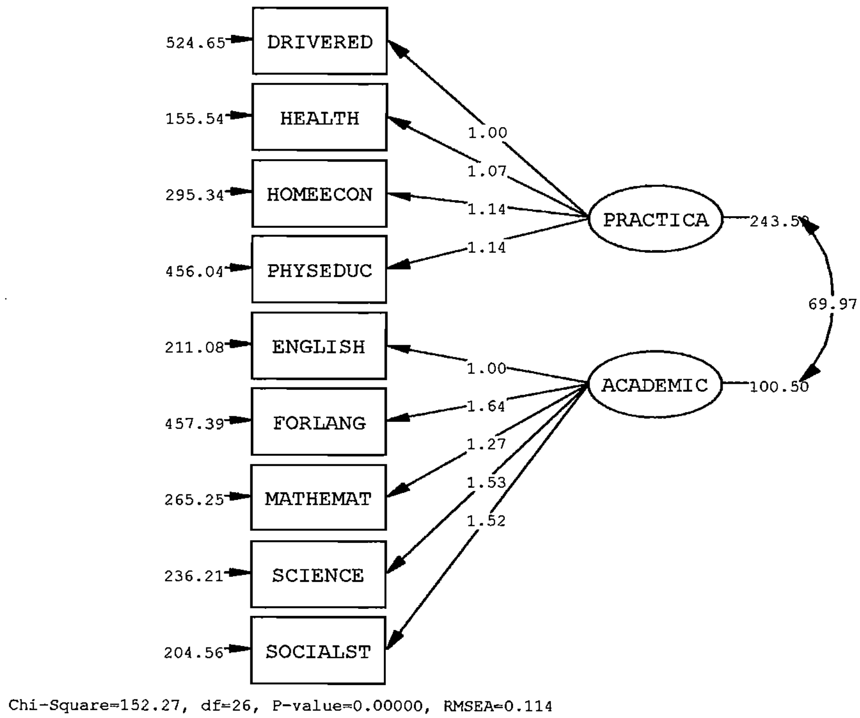

Figure 107. General Hypothesis 5E path diagram of confirmatory factor analysis testing the attempt to impose the Practical-Academic Factor Model on a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects (N = 373).

square error of approximation index less than .06 indicates a good fitting measurement model, less than .08 indicates a reasonable fitting measurement model, and less than .10 indicates a mediocre fitting measurement model (Browne & Cudeck, 1993). A standardized root mean square residual index less than .08 indicates a good fitting measurement model (Hu et al., 1998).

With alpha established at .05, the confirmatory factor analysis produced the following: χ^2 (26, N = 373) = 152.27, p = .00, normed chi-square = 5.86, comparative fit index = .92, root mean square error of approximation = .11, root mean square error of approximation lower bound of 90 percent confidence interval = .10,

Table 52

General Hypothesis 5E chi-square results and fit indices for the measurement model involving a single group's, parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of 15 general school subjects

Element[a]	Group				
	Single Group[b]	Parents	Teachers	All Students[c]	Cult. Lit. Students[d]
χ^2	152.27	86.99	67.74	67.38	45.75
df	26.00	26.00	26.00	26.00	26.00
p	.00	.00	.00	.00	.01
Normed Chi-square	5.86	3.35	2.61	2.59	1.76
Comparative Fit Index	.92	.92	.92	.79	.90
Root Mean Square Error of Approximation	.11	.10	.14	.14	.12
Lower Bound of 90% Confidence Interval	.10	.08	.10	.10	.06
Upper Bound of 90% Confidence Interval	.13	.13	.18	.19	.18
Standardized Root Mean Square Residual	.07	.08	.09	.11	.09
	N = 373	*N* = 215	*N* = 80	*N* = 78	*N* = 51

[a]All values were entered, rounded, or extended to the hundredths place.

[b]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E} from which was derived the Practical-Academic Factor Model.

Table 52 (continued)

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[c]These results ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing all students' lifelong adaptability ratings in H_{G5E}.

[d]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

root mean square error of approximation upper bound of 90 percent confidence interval = .13, and standardized root mean square residual = .07.

The resulting maximum likelihood estimates for the measurement model based on the single group are presented in Table 53 in the form of the coefficient, standard error, critical ratio, and *p*. All values were entered, rounded, or extended to the hundredths place, except *p* values, which were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001. The value of the path (i.e., the factor loading or coefficient) from the Practical Factor to driver education was set to 1 for scaling purposes. Likewise, the value of the path (i.e., the factor loading or coefficient) from the Academic Factor to English was set to 1 for scaling purposes (Ullman, 2007). With 372 (i.e., *N* - 1) degrees of freedom and with alpha established at .05, the confirmatory factor analysis produced the following maximum likelihood estimates: Practical Factor to driver education (coef. = 1.00); Practical Factor to health (coef. = 1.07, stand. error = .11, critical ratio = 9.74, *p* = .001); Practical Factor to home economics (coef. = 1.14, stand. error = .12, critical ratio = 9.41, *p* = .001); Practical Factor to physical education (coef. = 1.14, stand. error = .13, critical ratio = 8.83, *p* = .001); Academic Factor to English (coef. = 1.00); Academic Factor to

Table 53

General Hypothesis 5E maximum likelihood estimates for the measurement model based on a single group's lifelong adaptability ratings of 15 general school subjects (N = 373)[a]

Estimate	Coef.	Std. Error	Critical Ratio	p[b]	Sig.
Practical to					
Driver Education[c]	1.00	—	—	—	—
Health	1.07	.11	9.74	.001	S
Home Economics	1.14	.12	9.41	.001	S
Physical Education	1.14	.13	8.83	.001	S
Academic to					
English[c]	1.00	—	—	—	—
Foreign Language	1.64	.19	8.55	.001	S
Mathematics	1.27	.15	8.63	.001	S
Science	1.53	.16	9.32	.001	S
Social Studies	1.52	.16	9.46	.001	S

[a]Parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing the single group's lifelong adaptability ratings in H_{G5E} from which was derived the Practical-Academic Factor Model.

[b]All p values were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported p value of .001 may actually have been a p value of < .001.

[c]The value of the path (i.e., the factor loading or coefficient) from the factor to this variable was set to 1 for scaling purposes (Ullman, 2007).

foreign language (coef. = 1.64, stand. error = .19, critical ratio = 8.55, *p* = .001); Academic Factor to mathematics (coef. = 1.27, stand. error = .15, critical ratio = 8.63, *p* = .001); Academic Factor to science (coef. = 1.53, stand. error = .16, critical ratio = 9.32, *p* = .001); and Academic Factor to social studies (coef. = 1.52, stand. error = .16, critical ratio = 9.46, *p* = .001).

The measurement model's chi-square was significant, χ^2 (26, *N* = 373) = 152.27, *p* = .00; the normed chi-square at 5.86 was high; and the root mean square error of approximation at .11 was mediocre. Nonetheless, the comparative fit index at .92 indicated a reasonable fitting model, and the standardized root mean square residual at .07 indicated a good fitting model. The maximum likelihood estimates for the variables revealed that the coefficients were all significant and were all in the predicted direction (i.e., positive). Moreover, the Practical Factor and the Academic Factor were significantly associated with each other (coef. = 69.97, *p* < .001; Appendix 21).

Therefore, it was concluded that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E.

Four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), in order to test the attempt to impose the Practical-Academic Factor Model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model.

Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose the Practical-Academic Factor Model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model.

First, a confirmatory factor analysis (Appendix 22) tested the attempt to impose the Practical-Academic Factor Model on parents' lifelong adaptability ratings of 15 general school subjects. With alpha established at .05 and with an *N* of 215, the confirmatory factor analysis was conducted with maximum likelihood as the estimation method. The resulting path diagram is provided in Figure 108. The resulting chi-square, degrees of freedom, *p*, normed chi-square, comparative fit index, root mean square error of approximation, root mean square error of approximation lower bound of 90 percent confidence interval, root mean square error of approximation upper bound of 90 percent confidence interval, and standardized root mean square residual are displayed in Table 52. All values were entered, rounded, or extended to the hundredths place.

With alpha established at .05, the confirmatory factor analysis produced the following: χ^2 (26, N = 215) = 86.99, p = .00, normed chi-square = 3.35, comparative fit index = .92, root mean square error of approximation = .10, root mean square error of approximation lower bound of 90 percent confidence interval = .08, root mean square error of approximation upper bound of 90 percent confidence interval = .13, and standardized root mean square residual = .08.

The resulting maximum likelihood estimates for the measurement model based on parents' lifelong adaptability ratings of 15 general school subjects are presented in Table 54 in the form of the coefficient, standard error, critical ratio, and *p*. All values were entered, rounded, or extended to the hundredths place, except *p* values, which were

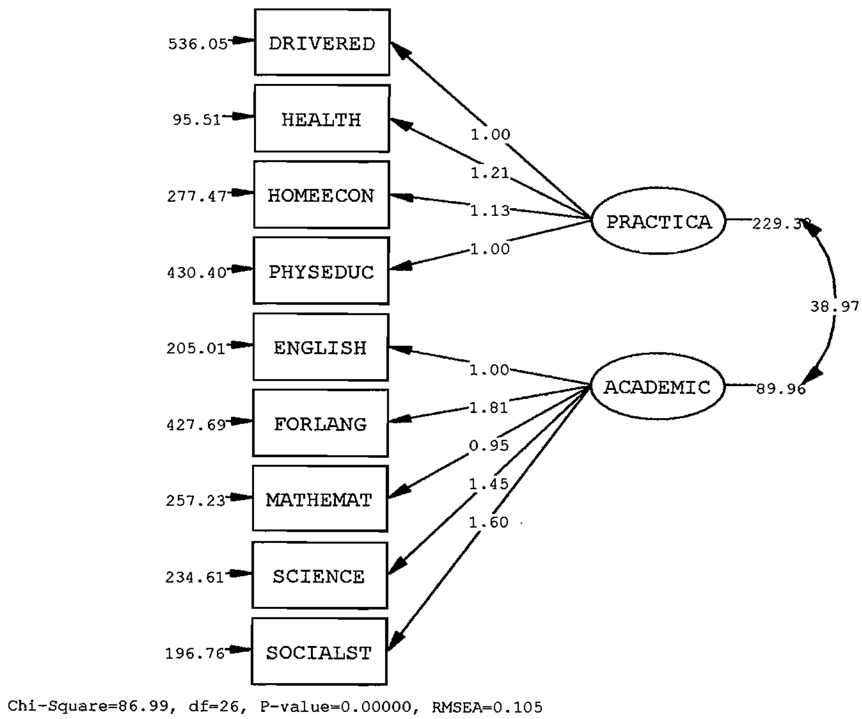

Figure 108. General Hypothesis 5E path diagram of confirmatory factor analysis testing the attempt to impose the Practical-Academic Factor Model on parents' lifelong adaptability ratings of 15 general school subjects (*N* = 215).

entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001. The value of the path (i.e., the factor loading or coefficient) from the Practical Factor to driver education was set to 1 for scaling purposes. Likewise, the value of the path (i.e., the factor loading or coefficient) from the Academic Factor to English was set to 1 for scaling purposes (Ullman, 2007). With 214 (i.e., *N* - 1) degrees of freedom and with alpha established at .05, the confirmatory factor analysis produced the following maximum likelihood estimates: Practical Factor to driver education (coef. = 1.00); Practical Factor to health (coef. = 1.21, stand. error = .16, critical ratio = 7.50, *p* = .001); Practical Factor to home economics (coef. = 1.13,

Table 54

General Hypothesis 5E maximum likelihood estimates for the measurement model based on parents' lifelong adaptability ratings of 15 general school subjects (N = 215)

Estimate	Coef.	Std. Error	Critical Ratio	p^a	Sig.
Practical to					
Driver Education[b]	1.00	—	—	—	—
Health	1.21	.16	7.50	.001	S
Home Economics	1.13	.16	7.27	.001	S
Physical Education	1.00	.15	6.46	.001	S
Academic to					
English[b]	1.00	—	—	—	—
Foreign Language	1.81	.28	6.36	.001	S
Mathematics	.95	.18	5.38	.001	S
Science	1.45	.22	6.51	.001	S
Social Studies	1.60	.24	6.77	.001	S

[a]All *p* values were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001.

[b]The value of the path (i.e., the factor loading or coefficient) from the factor to this variable was set to 1 for scaling purposes (Ullman, 2007).

stand. error = .16, critical ratio = 7.27, *p* = .001); Practical Factor to physical education (coef. = 1.00, stand. error = .15, critical ratio = 6.46, *p* = .001); Academic Factor to English (coef. = 1.00); Academic Factor to foreign language (coef. = 1.81, stand. error = .28, critical ratio = 6.36, $p = .001$); Academic Factor to mathematics (coef. = .95, stand. error = .18, critical ratio = 5.38, $p = .001$); Academic Factor to science (coef. = 1.45, stand. error = .22, critical ratio = 6.51, $p = .001$); and Academic Factor to social studies (coef. = 1.60, stand. error = .24, critical ratio = 6.77, $p = .001$).

The measurement model's chi-square was significant, χ^2 (26, $N = 215$) = 86.99, $p = .00$; the normed chi-square at 3.35 was elevated but near 3.00; and the root mean square error of approximation at .10 was mediocre. Nonetheless, the comparative fit index at .92 indicated a reasonable fitting model, and the standardized root mean square residual at .08 was acceptable. The maximum likelihood estimates for the variables revealed that the coefficients were all significant and were all in the predicted direction (i.e., positive). Moreover, the Practical Factor and the Academic Factor were significantly associated with each other (coef. = 38.97, $p < .01$; Appendix 22).

Therefore, it was concluded that the Practical-Academic Factor Model presented a reasonable fit on parents' lifelong adaptability ratings of 15 general school subjects.

Second, a confirmatory factor analysis (Appendix 23) tested the attempt to impose the Practical-Academic Factor Model on teachers' lifelong adaptability ratings of 15 general school subjects. With alpha established at .05 and with an *N* of 80, the confirmatory factor analysis was conducted with maximum likelihood as the estimation method. The resulting path diagram is provided in Figure 109. The resulting chi-square, degrees of freedom, *p*, normed chi-square, comparative fit index, root mean square error of approximation, root mean square error of approximation lower bound of 90 percent confidence interval, root mean square error of approximation upper bound of 90 percent confidence interval, and standardized root mean square residual are displayed

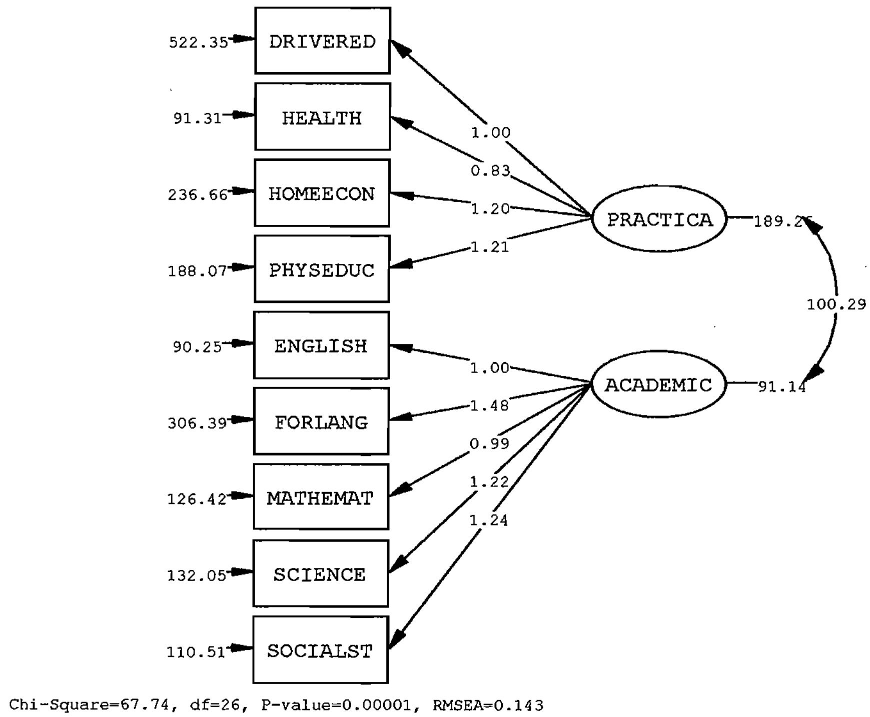

Figure 109. General Hypothesis 5E path diagram of confirmatory factor analysis testing the attempt to impose the Practical-Academic Factor Model on teachers' lifelong adaptability ratings of 15 general school subjects (*N* = 80).

in Table 52. All values were entered, rounded, or extended to the hundredths place.

With alpha established at .05, the confirmatory factor analysis produced the following: χ^2 (26, *N* = 80) = 67.74, *p* = .00, normed chi-square = 2.61, comparative fit index = .92, root mean square error of approximation = .14, root mean square error of approximation lower bound of 90 percent confidence interval = .10, root mean square error of approximation upper bound of 90 percent confidence interval = .18, and standardized root mean square residual = .09.

The resulting maximum likelihood estimates for the measurement model based on teachers' lifelong adaptability ratings of 15 general school subjects are presented in Table 55 in the form of the coefficient, standard error, critical ratio, and *p*. All values

Table 55

General Hypothesis 5E maximum likelihood estimates for the measurement model based on teachers' lifelong adaptability ratings of 15 general school subjects (N = 80)

Estimate	Coef.	Std. Error	Critical Ratio	p^a	Sig.
Practical to					
Driver Education[b]	1.00	—	—	—	—
Health	.83	.20	4.28	.001	S
Home Economics	1.20	.29	4.19	.001	S
Physical Education	1.21	.28	4.29	.001	S
Academic to					
English[b]	1.00	—	—	—	—
Foreign Language	1.48	.30	5.00	.001	S
Mathematics	.99	.19	5.10	.001	S
Science	1.22	.22	5.59	.001	S
Social Studies	1.24	.21	5.84	.001	S

[a]All *p* values were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001.

[b]The value of the path (i.e., the factor loading or coefficient) from the factor to this variable was set to 1 for scaling purposes (Ullman, 2007).

were entered, rounded, or extended to the hundredths place, except *p* values, which were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001. The value of the path (i.e., the factor loading or coefficient) from the Practical Factor to driver education was set to 1 for scaling purposes. Likewise, the value of the path (i.e., the factor loading or coefficient) from the Academic Factor to English was set to 1 for scaling purposes (Ullman, 2007). With 79 (i.e., *N* - 1) degrees of freedom and with alpha established at .05, the confirmatory factor analysis produced the following maximum likelihood estimates: Practical Factor to driver education (coef. = 1.00); Practical Factor to health (coef. = .83, stand. error = .20, critical ratio = 4.28, $p = .001$); Practical Factor to home economics (coef. = 1.20, stand. error = .29, critical ratio = 4.19, $p = .001$); Practical Factor to physical education (coef. = 1.21, stand. error = .28, critical ratio = 4.29, $p = .001$); Academic Factor to English (coef. = 1.00); Academic Factor to foreign language (coef. = 1.48, stand. error = .30, critical ratio = 5.00, $p = .001$); Academic Factor to mathematics (coef. = .99, stand. error = .19, critical ratio = 5.10, $p = .001$); Academic Factor to science (coef. = 1.22, stand. error = .22, critical ratio = 5.59, $p = .001$); and Academic Factor to social studies (coef. = 1.24, stand. error = .21, critical ratio = 5.84, $p = .001$).

The measurement model's chi-square was significant, χ^2 (26, $N = 80$) = 67.74, $p = .00$; and the root mean square error of approximation at .14 was mediocre. Nonetheless, the normed chi-square at 2.61 was less than 3.00, the comparative fit index at .92 indicated a reasonable fitting model, and the standardized root mean square residual at .09 was slightly greater than the acceptable range. The maximum likelihood estimates for the variables revealed that the coefficients were all significant and were all in the predicted direction (i.e., positive). Moreover, the Practical Factor and the Academic Factor were significantly associated with each other (coef. = 100.29, $p < .01$;

Appendix 23).

Therefore, it was concluded that the Practical-Academic Factor Model presented a reasonable fit on teachers' lifelong adaptability ratings of 15 general school subjects.

Third, a confirmatory factor analysis (Appendix 24) tested the attempt to impose the Practical-Academic Factor Model on all students' lifelong adaptability ratings of 15 general school subjects. Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. With alpha established at .05 and with an *N* of 78, the confirmatory factor analysis was conducted with maximum likelihood as the estimation method. The resulting path diagram is provided in Figure 110. The resulting chi-square, degrees of freedom, *p*, normed chi-square, comparative fit index, root mean square error of approximation, root mean square error of approximation lower bound of 90 percent confidence interval, root mean square error of approximation upper bound of 90 percent confidence interval, and standardized root mean square residual are displayed in Table 52. All values were entered, rounded, or extended to the hundredths place.

With alpha established at .05, the confirmatory factor analysis produced the following: χ^2 (26, N = 78) = 67.38, p = .00, normed chi-square = 2.59, comparative fit index = .79, root mean square error of approximation = .14, root mean square error of approximation lower bound of 90 percent confidence interval = .10, root mean square error of approximation upper bound of 90 percent confidence interval = .19, and standardized root mean square residual = .11.

The resulting maximum likelihood estimates for the measurement model based

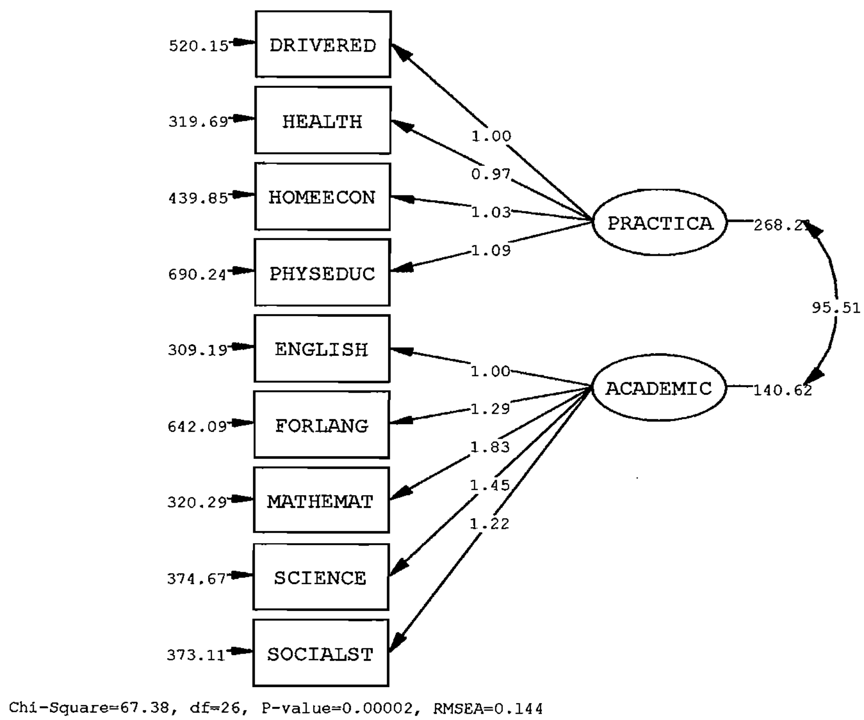

Figure 110. General Hypothesis 5E path diagram of confirmatory factor analysis testing the attempt to impose the Practical-Academic Factor Model on all students' lifelong adaptability ratings of 15 general school subjects (*N* = 78).

on all students' lifelong adaptability ratings of 15 general school subjects are presented in Table 56 in the form of the coefficient, standard error, critical ratio, and *p*. All values were entered, rounded, or extended to the hundredths place, except *p* values, which were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001. The value of the path (i.e., the factor loading or coefficient) from the Practical Factor to driver education was set to 1 for scaling purposes. Likewise, the value of the path (i.e., the factor loading or coefficient) from the Academic Factor to English was set to 1 for scaling purposes (Ullman, 2007). With 77 (i.e., *N* - 1) degrees of freedom and with alpha established at .05, the confirmatory factor

Table 56

General Hypothesis 5E maximum likelihood estimates for the measurement model based on all students' lifelong adaptability ratings of 15 general school subjects (N = 78)[a]

Estimate	Coef.	Std. Error	Critical Ratio	p^b	Sig.
Practical to					
Driver Education[c]	1.00	—	—	—	—
Health	.97	.26	3.72	.001	S
Home Economics	1.03	.28	3.64	.001	S
Physical Education	1.09	.32	3.42	.010	S
Academic to					
English[c]	1.00	—	—	—	—
Foreign Language	1.29	.38	3.42	.010	S
Mathematics	1.83	.43	4.27	.001	S
Science	1.45	.36	4.02	.001	S
Social Studies	1.22	.32	3.78	.001	S

[a]These results ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in H_{G5E} may be thereby unduly influencing all students' lifelong adaptability ratings in H_{G5E}.

[b]All *p* values were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of $< .001$.

[c]The value of the path (i.e., the factor loading or coefficient) from the factor to this variable was set to 1 for scaling purposes (Ullman, 2007).

analysis produced the following maximum likelihood estimates: Practical Factor to driver education (coef. = 1.00); Practical Factor to health (coef. = .97, stand. error = .26, critical ratio = 3.72, p = .001); Practical Factor to home economics (coef. = 1.03, stand. error = .28, critical ratio = 3.64, p = .001); Practical Factor to physical education (coef. = 1.09, stand. error = .32, critical ratio = 3.42, p = .010); Academic Factor to English (coef. = 1.00); Academic Factor to foreign language (coef. = 1.29, stand. error = .38, critical ratio = 3.42, p = .010); Academic Factor to mathematics (coef. = 1.83, stand. error = .43, critical ratio = 4.27, p = .001); Academic Factor to science (coef. = 1.45, stand. error = .36, critical ratio = 4.02, p = .001); and Academic Factor to social studies (coef. = 1.22, stand. error = .32, critical ratio = 3.78, p = .001).

The measurement model's normed chi-square at 2.59 was less than 3.00. But the chi-square was significant, χ^2 (26, N = 78) = 67.38, p = .00; the comparative fit index at .79 was extremely low; the root mean square error of approximation at .14 was mediocre; and the standardized root mean square residual at .11 was conspicuously greater than the acceptable range. The maximum likelihood estimates for the variables revealed that the coefficients were all significant and were all in the predicted direction (i.e., positive). Moreover, the Practical Factor and the Academic Factor were significantly associated with each other (coef. = 95.51, $p < .05$; Appendix 24).

Therefore, it was concluded that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. As reported below, the Practical-Academic Factor Model presented a reasonable fit on culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, culturally literate students' N of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. In other words, culturally literate students' lifelong adaptability ratings may be improving the fit of the Practical-Academic Factor Model on all students' lifelong adaptability ratings, an improvement without which the Practical-Academic Factor Model may have presented an even poorer fit on all students' lifelong adaptability ratings of 15 general school subjects.

Fourth, a confirmatory factor analysis (Appendix 25) tested the attempt to impose the Practical-Academic Factor Model on culturally literate students' lifelong adaptability ratings of 15 general school subjects. These results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. With alpha established at .05 and with an *N* of 51, the confirmatory factor analysis was conducted with maximum likelihood as the estimation method. The resulting path diagram is provided in Figure 111. The resulting chi-square, degrees of freedom, *p*, normed chi-square, comparative fit index, root mean square error of approximation, root mean square error of approximation lower bound of 90 percent confidence interval, root mean square error of approximation upper bound of 90 percent confidence interval, and standardized root mean square residual are displayed in Table 52. All values were entered, rounded, or extended to the hundredths place.

With alpha established at .05, the confirmatory factor analysis produced the following: χ^2 (26, $N = 51$) = 45.75, $p = .01$, normed chi-square = 1.76, comparative fit index = .90, root mean square error of approximation = .12, root mean square error of approximation lower bound of 90 percent confidence interval = .06, root mean square error of approximation upper bound of 90 percent confidence interval = .18, and

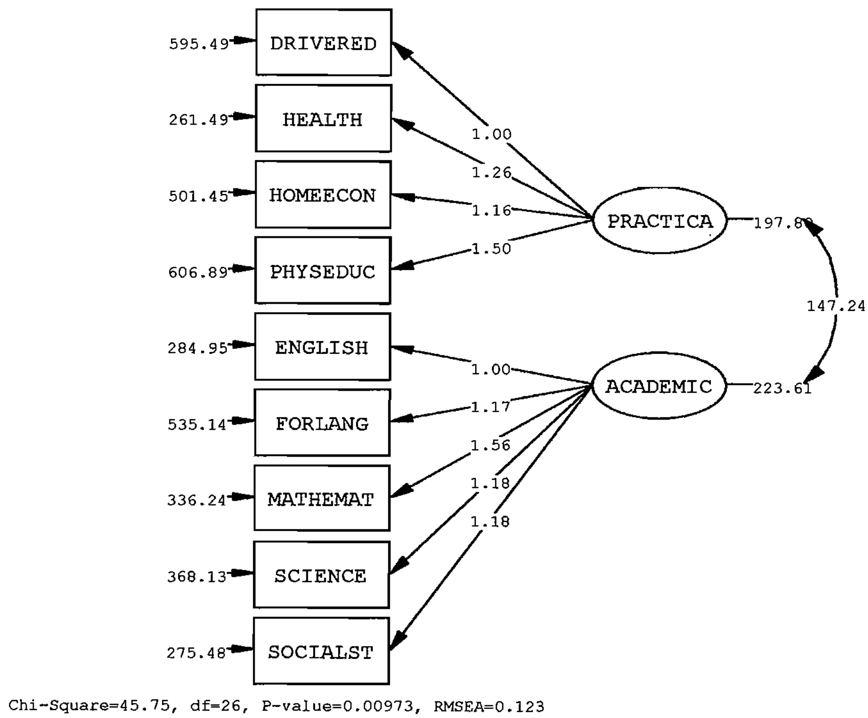

Figure 111. General Hypothesis 5E path diagram of confirmatory factor analysis testing the attempt to impose the Practical-Academic Factor Model on culturally literate students' lifelong adaptability ratings of 15 general school subjects (N = 51).

standardized root mean square residual = .09.

The resulting maximum likelihood estimates for the measurement model based on culturally literate students' lifelong adaptability ratings of 15 general school subjects are presented in Table 57 in the form of the coefficient, standard error, critical ratio, and *p*. All values were entered, rounded, or extended to the hundredths place, except *p* values, which were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001. The value of the path (i.e., the factor loading or coefficient) from the Practical Factor to driver education was set to 1 for scaling purposes. Likewise, the value of the path (i.e., the factor loading or coefficient)

Table 57

General Hypothesis 5E maximum likelihood estimates for the measurement model based on culturally literate students' lifelong adaptability ratings of 15 general school subjects (N = 51)[a]

Estimate	Coef.	Std. Error	Critical Ratio	p[b]	Sig.
Practical to					
Driver Education[c]	1.00	—	—	—	—
Health	1.26	.42	2.99	.010	S
Home Economics	1.16	.43	2.73	.010	S
Physical Education	1.50	.53	2.86	.010	S
Academic to					
English[c]	1.00	—	—	—	—
Foreign Language	1.17	.32	3.66	.001	S
Mathematics	1.56	.35	4.49	.001	S
Science	1.18	.29	4.02	.001	S
Social Studies	1.18	.28	4.26	.001	S

[a]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

[b]All *p* values were entered or extended to the thousandths place and may actually have been less than the values reported. For example, a reported *p* value of .001 may actually have been a *p* value of < .001.

[c]The value of the path (i.e., the factor loading or coefficient) from the factor to this variable was set to 1 for scaling purposes (Ullman, 2007).

from the Academic Factor to English was set to 1 for scaling purposes (Ullman, 2007).

With 50 (i.e., N - 1) degrees of freedom and with alpha established at .05, the confirmatory factor analysis produced the following maximum likelihood estimates: Practical Factor to driver education (coef. = 1.00); Practical Factor to health (coef. = 1.26, stand. error = .42, critical ratio = 2.99, p = .010); Practical Factor to home economics (coef. = 1.16, stand. error = .43, critical ratio = 2.73, p = .010); Practical Factor to physical education (coef. = 1.50, stand. error = .53, critical ratio = 2.86, p = .010); Academic Factor to English (coef. = 1.00); Academic Factor to foreign language (coef. = 1.17, stand. error = .32, critical ratio = 3.66, p = .001); Academic Factor to mathematics (coef. = 1.56, stand. error = .35, critical ratio = 4.49, p = .001); Academic Factor to science (coef. = 1.18, stand. error = .29, critical ratio = 4.02, p = .001); and Academic Factor to social studies (coef. = 1.18, stand. error = .28, critical ratio = 4.26, p = .001).

The measurement model's chi-square was significant, χ^2 (26, N = 51) = 45.75, p = .01; and the root mean square error of approximation at .12 was mediocre. Nonetheless, the normed chi-square at 1.76 was less than 2.00, the comparative fit index at .90 indicated a reasonable fitting model, and the standardized root mean square residual at .09 was slightly greater than the acceptable range. The maximum likelihood estimates for the variables revealed that the coefficients were all significant and were all in the predicted direction (i.e., positive). Moreover, the Practical Factor and the Academic Factor were significantly associated with each other (coef. = 147.24, $p < .05$; Appendix 25).

Therefore, it was concluded that the Practical-Academic Factor Model presented a reasonable fit on culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, these results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

> *Invariance tests across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded reasonable fit of the Practical-Academic Factor Model.*

Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests.

In these invariance tests, a baseline measure with all factor loadings free to vary, except those set to 1 for scaling purposes, across two respondent groups tested the fit of the common factor model on these two respondent groups simultaneously; then a second measure with all factor loadings constrained (i.e., specified to be equal), except those set to 1 for scaling purposes, across the same two respondent groups tested the fit of the common factor model on the two respondent groups simultaneously. A nonsignificant change in chi-square between the baseline measure and the second measure would indicate invariant factor loadings across these two respondent groups. In other words, a nonsignificant change in chi-square between the baseline measure and the second measure would indicate the presence of a common factor model across these two respondent groups. Ultimately, all possible combinations of qualifying respondent groups (parents, teachers, and culturally literate students) were so assessed for the presence of a common factor model.

These invariance tests would identify weak, or less stringent, factorial invariance by examining factor loadings (Byrne, 1998) as opposed to identifying stronger, or more stringent, invariance by examining error variances and covariances. According to Byrne (1998), it is generally thought that examining error variances and covariances "represents an overly restrictive test of the data" (p. 261).

The possible combinations of qualifying respondent groups (parents, teachers, and culturally literate students) to be assessed, through invariance tests, for the presence of a common factor model were parents and teachers, parents and culturally literate students, and teachers and culturally literate students.

First, for parents and teachers, a baseline measure with all factor loadings free to vary, except those set to 1 for scaling purposes, across these two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a baseline model. Then a second measure with all factor loadings constrained (i.e., specified to be equal), except those set to 1 for scaling purposes, across the same two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these same two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a constrained model.

The resulting baseline model chi-square, baseline model degrees of freedom, constrained model chi-square, constrained model degrees of freedom, change in chi-square, and change in degrees of freedom are presented in Table 58. With alpha established at .05 and with a change in degrees of freedom of 7, the change in chi-square was statistically required to equal or exceed the critical value at 14.07 to indicate a significant change in chi-square. The invariance test produced the following: baseline model χ^2 = 154.72, baseline model degrees of freedom = 52, constrained model χ^2 = 166.51, constrained model degrees of freedom = 59, change in chi-square = 11.79, and

Table 58

General Hypothesis 5E invariance test results for parents' and teachers' lifelong adaptability ratings of 15 general school subjects[a]

Model	Comparative Model	χ^2	df	$\Delta\chi^2$	Δ df	Sig.
Baseline		154.72	52			
Constrained	Baseline	166.51	59	11.79	7	NS

[a] $\Delta\chi^2_{critical\ (7)}$ = 14.07 with alpha at .05.

change in degrees of freedom = 7. The change in chi-square at 11.79 between the baseline model and the constrained model failed to equal or exceed the critical value at 14.07 and was consequently nonsignificant.

Therefore, it was concluded that the Practical-Academic Factor Model was invariant across parents' and teachers' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model across these two respondent groups.

Second, for parents and culturally literate students, a baseline measure with all factor loadings free to vary, except those set to 1 for scaling purposes, across these two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a baseline model. Then a second measure with all factor loadings constrained (i.e., specified to be equal), except those set to 1 for scaling purposes, across the same two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these same two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a constrained model.

The resulting baseline model chi-square, baseline model degrees of freedom, constrained model chi-square, constrained model degrees of freedom, change in chi-square, and change in degrees of freedom are presented in Table 59. With alpha established at .05 and with a change in degrees of freedom of 7, the change in chi-square was statistically required to equal or exceed the critical value at 14.07 to indicate a significant change in chi-square. The invariance test produced the following: baseline model χ^2 = 132.74, baseline model degrees of freedom = 52, constrained model χ^2 = 140.57, constrained model degrees of freedom = 59, change in chi-square = 7.83, and change in degrees of freedom = 7. The change in chi-square at 7.83 between the baseline model and the constrained model failed to equal or exceed the critical value at 14.07 and was consequently nonsignificant.

Therefore, it was concluded that the Practical-Academic Factor Model was invariant across parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model across these two respondent groups. Again, these results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

Third, for teachers and culturally literate students, a baseline measure with all factor loadings free to vary, except those set to 1 for scaling purposes, across these two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a baseline model. Then a second measure with all factor loadings constrained (i.e., specified to be equal), except those set to 1 for scaling

Table 59

General Hypothesis 5E invariance test results for parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects[ab]

Model	Comparative Model	χ^2	df	$\Delta\chi^2$	Δ df	Sig.
Baseline		132.74	52			
Constrained	Baseline	140.57	59	7.83	7	NS

[a]$\Delta\chi^2_{\text{critical (7)}}$ = 14.07 with alpha at .05.

[b]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

purposes, across the same two respondent groups simultaneously tested the fit of the Practical-Academic Factor Model on these same two respondent groups' lifelong adaptability ratings of 15 general school subjects; this procedure provided a constrained model.

The resulting baseline model chi-square, baseline model degrees of freedom, constrained model chi-square, constrained model degrees of freedom, change in chi-square, and change in degrees of freedom are presented in Table 60. With alpha established at .05 and with a change in degrees of freedom of 7, the change in chi-square was statistically required to equal or exceed the critical value at 14.07 to indicate a significant change in chi-square. The invariance test produced the following: baseline model χ^2 = 113.49, baseline model degrees of freedom = 52, constrained model χ^2 = 118.73, constrained model degrees of freedom = 59, change in chi-square = 5.24, and change in degrees of freedom = 7. The change in chi-square at 5.24 between the baseline

Table 60

General Hypothesis 5E invariance test results for teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects[ab]

Model	Comparative Model	χ^2	df	$\Delta\chi^2$	Δ df	Sig.
Baseline		113.49	52			
Constrained	Baseline	118.73	59	5.24	7	NS

[a]$\Delta\chi^2_{\text{critical (7)}}$ = 14.07 with alpha at .05.

[b]These results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

model and the constrained model failed to equal or exceed the critical value at 14.07 and was consequently nonsignificant.

Therefore, it was concluded that the Practical-Academic Factor Model was invariant across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model across these two respondent groups. Again, these results ought to be interpreted with caution due to culturally literate students' *N* of only 51.

In summation, an exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived.

Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

Overall, General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Of specific interest in General Hypothesis 5B was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' ($N = 6$) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students'

Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. Again, these observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

In General Hypothesis 5E, an exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings in agreement with those of parents and teachers in General Hypothesis 5B.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through comparison of exploratory factor solutions. In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through comparison of exploratory factor solutions. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

In General Hypothesis 5E, parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for a common factor model. Of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects. Of specific interest was respondent agreement identified through comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, in the present study of lifelong adaptability from a cultural literacy perspective. If such respondent agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5A's, General Hypothesis 5B's, General Hypothesis 5C's, and General Hypothesis 5D's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

Summary

This research investigated students' lifelong adaptability ratings of general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. *Cultural Literacy Test* data from the now out-of-print *Cultural Literacy Test*, *DAT* Verbal Reasoning + Numerical Ability (VR + NA) composite data, and survey data contributed to this primary research objective. This study also incorporated four survey respondent groups in an attempt to achieve consensus or, at least, direction for successfully revising curricula to arm students with lifelong adaptability for relentless change during the 21st century. Accordingly, the following general hypotheses were tested.

General Hypothesis 1 (H_{G1})

H_{G1}: Student intelligence significantly predicts student cultural literacy.

A simple regression equation employed student intelligence as the predictor variable and student cultural literacy as the criterion variable. With alpha established at .05, this equation with an *N* of 63 and with a healthy power of approximately .856 (J. Cohen, 1977; see Table 1) resulted in a highly significant prediction of student cultural literacy from student intelligence, F (1, 61) = 96.82, $p < .0001$. Student intelligence accounted for 61% of the variance in student cultural literacy.

General Hypothesis 2 (H_{G2})

> H_{G2}: Student cultural literacy significantly predicts students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

With alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by student cultural literacy in initial simple regression equations (R_1, R_3, R_4, R_6, R_8, R_9, R_{10}, R_{11}, R_{13}, R_{14}, and R_{15}): art, F (1, 60) = .001, p = .97; computer technology, F (1, 60) = .420, p = .51; driver education, F (1, 60) = 1.157, p = .28; foreign language, F (1, 60) = .372, p = .54; home economics, F (1, 60) = .519, p = .47; industrial technology, F (1, 60) = .000, p = .98; mathematics, F (1, 60) = 2.330, p = .13; music, F (1, 60) = 1.333, p = .25; science, F (1, 60) = 1.158, p = .28; social studies, F (1, 60) = .004, p = .94; and vocational-technical, F (1, 60) = .068, p = .79.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by student cultural literacy in initial simple regression equations (R_2, R_5, R_7, and R_{12}): business, negatively predicted, F (1, 60) = 4.358, p = .04; English, negatively predicted, F (1, 60) = 4.915, p = .03; health, negatively predicted, F (1, 60) = 9.334, p = .00; and physical education, negatively predicted, F (1, 60) = 4.838, p = .03. Commensurate with General Hypothesis 2, R_2, R_5, R_7, and R_{12} were subsequently rerun independent of student intelligence. After controlling for student intelligence, student cultural literacy failed to remain a significant predictor of students' lifelong adaptability ratings of the four general school subjects that it had significantly predicted in initial regression equations (R_2, R_5, R_7, and R_{12}): business, F (1, 59) = .688, $p > .05$; English, F (1, 59) = .200, $p > .05$; health, F (1, 59) = .000, $p > .05$; and physical education F (1, 59) = .875, $p > .05$.

General Hypothesis 3 (H_{G3})

> H_{G3}: There is a significant addition of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

With alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{16}, R_{18}, R_{19}, R_{21}, R_{24}, R_{25}, R_{26}, R_{27}, R_{28}, R_{29}, and R_{30}): art, F (5, 39) = .964, $p = .45$; computer technology, F (5, 39) = 1.412, $p = .24$; driver education, F (5, 39) = .342, $p = .88$; foreign language, F (5, 39) = 1.098, $p = .37$; industrial technology, F (5, 39) = .993, $p = .43$; mathematics, F (5, 39) = .247, $p = .93$; music, F (5, 39) = .672, $p = .64$; physical education, F (5, 39) = .868, $p = .51$; science, F (5, 39) = 1.769, $p = .14$; social studies, F (5, 39) = 1.534, $p = .20$; and vocational-technical, F (5, 39) = .855, $p = .51$.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}): business, F (5, 39) = 2.433, $p = .05$; English, F (5, 39) = 2.676, $p = .03$; health, F (5, 39) = 2.457, $p = .04$; and home economics, F (5, 39) = 2.728, $p = .03$. However, due to the presence of 15 multiple tests in General Hypothesis 3, all four significant multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}) were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Otherwise, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender did not approach ($p < .10$ but $> .05$) significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

Regarding specific predictor variables, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, four predictor variables (student gender, family structure, parental age, and parental educational level) made significant contributions in the attempted prediction of several general school subjects. To begin, student gender was a significant positive contributor in five additive models attempting to predict students' lifelong adaptability ratings of business (stand. coef. = .410, $t = 2.784$, $p = .00$), English (stand. coef. = .415, $t = 2.848$, $p = .00$), health (stand. coef. = .389, $t = 2.643$, $p = .01$), home economics (stand. coef. = .350, $t = 2.405$, $p = .02$), and social studies (stand. coef. = .316, $t = 2.051$, $p = .04$). In other words, the female student assigned a higher lifelong adaptability rating to business, to English, to health, to home economics, and to social studies. Next, family structure was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of science (stand. coef. = .353, $t = 2.155$, $p = .03$). In other words, the student in a two-parent household assigned a higher lifelong adaptability rating to science. Furthermore, parental age was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of home economics (stand. coef. = .338, $t = 2.366$, $p = .02$). In other words, the student with older parents assigned a higher lifelong adaptability rating to home economics. Finally, parental educational level was a significant negative contributor in one additive model attempting to predict students' lifelong adaptability ratings of art (stand. coef. = -.339, t = -1.949, p = .05). In other words, the student with less highly educated parents assigned a higher lifelong adaptability rating to art.

Moreover, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, one predictor variable (student gender) approached significance as a positive contributor in two additive models attempting to predict students' lifelong adaptability ratings of computer technology (stand. coef. = .290, t = 1.868, p = .06) and foreign language (stand. coef. = .293, t = 1.852, p = .07). In other words, the apparent trend was for the female student to assign a higher lifelong adaptability rating to computer technology and to foreign language.

General Hypothesis 4 (H_{G4})

General Hypothesis 4A (H_{G4A}).

H_{G4A}: There are significant main effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Student cultural literacy.

With alpha established at .05, the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{31}, R_{32}, R_{33}, R_{34}, R_{35}, R_{36}, R_{37}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, R_{44}, and R_{45}): art, F (1, 43) = .608, p = .43; business, F (1, 43) = .817, p = .37; computer technology, F (1, 43) = .582, p = .44;

driver education, F (1, 43) = .020, p = .88; English, F (1, 43) = 1.627, p = .20; foreign language, F (1, 43) = .088, p = .76; health, F (1, 43) = 2.884, p = .09; home economics, F (1, 43) = .933, p = .33; industrial technology, F (1, 43) = .161, p = .69; mathematics, F (1, 43) = .379, p = .54; music, F (1, 43) = 1.304, p = .25; physical education, F (1, 43) = .874, p = .35; science, F (1, 43) = 3.570, p = .06; social studies, F (1, 43) = .833, p = .36; and vocational-technical, F (1, 43) = .406, p = .52. Nonetheless, the main effect of student cultural literacy approached ($p < .10$ but > .05) significance in the prediction of students' lifelong adaptability ratings of two of the 15 general school subjects: health, F (1, 43) = 2.884, p = .09; and science, F (1, 43) = 3.570, p = .06. The apparent trend was for the more culturally literate student to assign a lower lifelong adaptability rating to health and a higher lifelong adaptability rating to science.

Family structure.

With alpha established at .05, the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{46}, R_{47}, R_{48}, R_{49}, R_{50}, R_{51}, R_{52}, R_{53}, R_{54}, R_{55}, R_{56}, R_{57}, R_{59}, and R_{60}): art, F (1, 43) = .688, p = .41; business, F (1, 43) = .781, p = .38; computer technology, F (1, 43) = .802, p = .37; driver education, F (1, 43) = .599, p = .44; English, F (1, 43) = 1.089, p = .30; foreign language, F (1, 43) = .207, p = .65; health, F (1, 43) = 1.774, p = .18; home economics, F (1, 43) = .272, p = .60; industrial technology, F (1, 43) = 1.144, p = .29; mathematics, F (1, 43) = .199, p = .65; music, F (1, 43) = .299, p = .58; physical education, F (1, 43) = .376, p = .54; social studies, F (1, 43) = 1.977, p = .16; and vocational-technical, F (1, 43) = .669, p = .41.

Conversely, the main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{58}): science, F (1, 43) = 6.482, p = .01. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{46} through R_{60}, this one significant simple regression equation (R_{58}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Otherwise, the main effect of family structure did not approach significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

Parental age.

With alpha established at .05, the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{61}, R_{62}, R_{63}, R_{64}, R_{65}, R_{66}, R_{67}, R_{69}, R_{70}, R_{71}, R_{72}, R_{73}, R_{74}, and R_{75}): art, F (1, 43) = .102, p = .75; business, F (1, 43) = 1.785, p = .18; computer technology, F (1, 43) = 1.661, p = .20; driver education, F (1, 43) = .542, p = .46; English, F (1, 43) = .365, p = .54; foreign language, F (1, 43) = 1.976, p = .16; health, F (1, 43) = .259, p = .61; industrial technology, F (1, 43) = 1.502, p = .22; mathematics, F (1, 43) = .922, p = .34; music, F (1, 43) = .014, p = .90; physical education, F (1, 43) = 3.388, p = .07; science, F (1, 43) = .038, p = .84; social studies, F (1, 43) = .744, p = .39; and vocational-technical, F (1, 43) = 1.709, p = .19. Nonetheless, the main effect of parental age approached significance in the prediction of students' lifelong adaptability ratings of one of these 14 general school subjects: physical education, F (1, 43) = 3.388, p = .07. The apparent trend was for the student with older parents to assign a lower lifelong adaptability rating to physical education.

Conversely, the main effect of parental age significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{68}): home economics, F (1, 43) = 4.674, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{61} through R_{75}, this one significant simple regression equation (R_{68}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Parental educational level.

With alpha established at .05, the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{76}, R_{77}, R_{78}, R_{79}, R_{80}, R_{81}, R_{82}, R_{83}, R_{84}, R_{85}, R_{86}, R_{87}, R_{88}, R_{89}, and R_{90}): art, F (1, 43) = 1.465, p = .23; business, F (1, 43) = .258, p = .61; computer technology, F (1, 43) = .008, p = .92; driver education, F (1, 43) = .388, p = .53; English, F (1, 43) = .296, p = .58; foreign language, F (1, 43) = .003, p = .95; health, F (1, 43) = 1.176, p = .28; home economics, F (1, 43) = .191, p = .66; industrial technology, F (1, 43) = .393, p = .53; mathematics, F (1, 43) = .355, p = .55; music, F (1, 43) = .088, p = .76; physical education, F (1, 43) = .082, p = .77; science, F (1, 43) = 1.138, p = .29; social studies, F (1, 43) = 2.229, p = .14; and vocational-technical, F (1, 43) = 1.608, p = .21. Furthermore, the main effect of parental educational level did not approach significance in the prediction of students' lifelong adaptability ratings of any of the 15 general school subjects.

Student gender.

With alpha established at .05, the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 11 general school subjects in simple regression equations (R_{91}, R_{93}, R_{94}, R_{96}, R_{99}, R_{100}, R_{101}, R_{102}, R_{103}, R_{104}, and R_{105}): art, F (1, 43) = .079, p = .78; computer technology, F (1, 43) = 2.227, p = .14; driver education, F (1, 43) = .403, p = .52; foreign language, F (1, 43) = 3.014, p = .08; industrial technology, F (1, 43) = .710, p = .40; mathematics, F (1, 43) = .008, p = .92; music, F (1, 43) = 1.722, p = .19; physical education, F (1, 43) = .478, p = .49; science, F (1, 43) = .639, p = .42; social studies, F (1, 43) = 2.376, p = .13; and vocational-technical, F (1, 43) = .000, p = .98. Nonetheless, the main effect of student gender approached significance in the prediction of students' lifelong adaptability ratings of one of these 11 general school subjects: foreign language, F (1, 43) = 3.014, p = .08. The apparent trend was for the female student to assign a higher lifelong adaptability rating to foreign language.

Conversely, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of four of the 15 general school subjects in simple regression equations (R_{92}, R_{95}, R_{97}, and R_{98}): business, F (1, 43) = 7.017, p = .01; English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, the significant p values in R_{92} (.01), in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00) were multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the p value in R_{92} (.15) and thereby leaving significant the respective p values in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00). In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

General Hypothesis 4B (H_{G4B}).

H_{G4B}: There are significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Student cultural literacy x family structure.

With alpha established at .05, the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{106}, R_{107}, R_{108}, R_{109}, R_{111}, R_{112}, R_{113}, R_{114}, R_{115}, R_{116}, R_{117}, R_{118}, R_{119}, and R_{120}): art, F (1, 41) = 1.000, $p > .05$; business, F (1, 41) = 1.261, $p > .05$; computer technology, F (1, 41) = .261, $p > .05$; driver education, F (1, 41) = .125, $p > .05$; foreign language, F (1, 41) = .083, $p > .05$; health, F (1, 41) = .045, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .167, $p > .05$; mathematics, F (1, 41) = .167, $p > .05$; music, F (1, 41) = 1.609, $p > .05$; physical education, F (1, 41) = .208, $p > .05$; science, F (1, 41) = .000, $p > .05$; social studies, F (1, 41) = .000, $p > .05$; and vocational-technical, F (1, 41) = .125, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{110}): English, F (1, 41) = 4.250, $p < .05$ but $> .01$. However, due to the presence of

15 multiple tests in General Hypothesis 4B's R_{106} through R_{120}, this one significant full and restricted regression model pair (R_{110}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Student cultural literacy x parental age.

With alpha established at .05, the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{121}, R_{122}, R_{123}, R_{124}, R_{125}, R_{126}, R_{127}, R_{128}, R_{129}, R_{130}, R_{131}, R_{132}, R_{133}, R_{134}, and R_{135}): art, $F(1, 41) = .250$, $p > .05$; business, $F(1, 41) = .130$, $p > .05$; computer technology, $F(1, 41) = .522$, $p > .05$; driver education, $F(1, 41) = .000$, $p > .05$; English, $F(1, 41) = 1.682$, $p > .05$; foreign language, $F(1, 41) = .478$, $p > .05$; health, $F(1, 41) = .273$, $p > .05$; home economics, $F(1, 41) = .000$, $p > .05$; industrial technology, $F(1, 41) = .174$, $p > .05$; mathematics, $F(1, 41) = .375$, $p > .05$; music, $F(1, 41) = 1.000$, $p > .05$; physical education, $F(1, 41) = 1.364$, $p > .05$; science, $F(1, 41) = .000$, $p > .05$; social studies, $F(1, 41) = .167$, $p > .05$; and vocational-technical, $F(1, 41) = .087$, $p > .05$.

Student cultural literacy x parental educational level.

With alpha established at .05, the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{136}, R_{137}, R_{138}, R_{140}, R_{141}, R_{142}, R_{143}, R_{144}, R_{145}, R_{146}, R_{147}, R_{148}, R_{149}, and R_{150}): art, $F(1, 41) = .773$, $p > .05$; business, $F(1, 41) = 2.273$, $p > .05$; computer technology, $F(1, 41) = .250$, $p > .05$; English, $F(1, 41) =$

.000, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = 3.095, $p > .05$; home economics, F (1, 41) = 1.087, $p > .05$; industrial technology, F (1, 41) = 2.087, $p > .05$; mathematics, F (1, 41) = .042, $p > .05$; music, F (1, 41) = .565, $p > .05$; physical education, F (1, 41) = .000, $p > .05$; science, F (1, 41) = .091, $p > .05$; social studies, F (1, 41) = 1.136, $p > .05$; and vocational-technical, F (1, 41) = 3.091, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{139}): driver education, F (1, 41) = 4.227, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{136} through R_{150}, this one significant full and restricted regression model pair (R_{139}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Student cultural literacy x student gender.

With alpha established at .05, the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{151}, R_{152}, R_{153}, R_{154}, R_{155}, R_{156}, R_{157}, R_{158}, R_{159}, R_{160}, R_{161}, R_{162}, R_{163}, R_{164}, and R_{165}): art, F (1, 41) = 3.364, $p > .05$; business, F (1, 41) = 3.579, $p > .05$; computer technology, F (1, 41) = 2.286, $p > .05$; driver education, F (1, 41) = .167, $p > .05$; English, F (1, 41) = .100, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = .053, $p > .05$; home economics, F (1, 41) = .800, $p > .05$; industrial technology, F (1, 41) = 1.957, $p >$

.05; mathematics, F (1, 41) = 1.042, $p > .05$; music, F (1, 41) = 1.727, $p > .05$; physical education, F (1, 41) = 1.682, $p > .05$; science, F (1, 41) = .409, $p > .05$; social studies, F (1, 41) = 1.095, $p > .05$; and vocational-technical, F (1, 41) = .625, $p > .05$.

Family structure x parental age.

With alpha established at .05, the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{166}, R_{167}, R_{168}, R_{169}, R_{170}, R_{171}, R_{172}, R_{173}, R_{174}, R_{175}, R_{176}, R_{177}, R_{178}, R_{179}, and R_{180}): art, F (1, 41) = .375, $p > .05$; business, F (1, 41) = .261, $p > .05$; computer technology, F (1, 41) = .000, $p > .05$; driver education, F (1, 41) = .261, $p > .05$; English, F (1, 41) = 2.455, $p > .05$; foreign language, F (1, 41) = .696, $p > .05$; health, F (1, 41) = 1.364, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .045, $p > .05$; mathematics, F (1, 41) = 1.348, $p > .05$; music, F (1, 41) = .292, $p > .05$; physical education, F (1, 41) = .500, $p > .05$; science, F (1, 41) = 1.250, $p > .05$; social studies, F (1, 41) = .391, $p > .05$; and vocational-technical, F (1, 41) = .727, $p > .05$.

Family structure x parental educational level.

With alpha established at .05, the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{181}, R_{182}, R_{183}, R_{184}, R_{186}, R_{187}, R_{188}, R_{189}, R_{190}, R_{191}, R_{192}, R_{193}, R_{194}, and R_{195}): art, F (1, 41) = 1.500, $p > .05$; business, F (1, 41) = 2.182, $p > .05$;

computer technology, $F(1, 41) = .042$, $p > .05$; driver education, $F(1, 41) = .375$, $p > .05$; foreign language, $F(1, 41) = .917$, $p > .05$; health, $F(1, 41) = .043$, $p > .05$; home economics, $F(1, 41) = .042$, $p > .05$; industrial technology, $F(1, 41) = .208$, $p > .05$; mathematics, $F(1, 41) = 2.652$, $p > .05$; music, $F(1, 41) = 1.391$, $p > .05$; physical education, $F(1, 41) = 1.261$, $p > .05$; science, $F(1, 41) = .524$, $p > .05$; social studies, $F(1, 41) = .591$, $p > .05$; and vocational-technical, $F(1, 41) = .087$, $p > .05$.

Conversely, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{185}): English, $F(1, 41) = 4.619$, $p < .05$ but $> .01$. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{181} through R_{195}, this one significant full and restricted regression model pair (R_{185}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Family structure x student gender.

With alpha established at .05, the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{196}, R_{197}, R_{198}, R_{199}, R_{200}, R_{201}, R_{202}, R_{203}, R_{204}, R_{205}, R_{206}, R_{207}, R_{208}, R_{209}, and R_{210}): art, $F(1, 41) = .292$, $p > .05$; business, $F(1, 41) = 1.050$, $p > .05$; computer technology, $F(1, 41) = .522$, $p > .05$; driver education, $F(1, 41) = .696$, $p > .05$; English, $F(1, 41) = 3.765$, $p > .05$; foreign language, $F(1, 41) = .130$, $p > .05$; health, $F(1, 41) = .579$, $p > .05$; home economics, $F(1, 41) = .550$, $p > .05$;

industrial technology, $F(1, 41) = .174$, $p > .05$; mathematics, $F(1, 41) = .333$, $p > .05$; music, $F(1, 41) = .000$, $p > .05$; physical education, $F(1, 41) = .042$, $p > .05$; science, $F(1, 41) = 1.048$, $p > .05$; social studies, $F(1, 41) = .000$, $p > .05$; and vocational-technical, $F(1, 41) = .375$, $p > .05$.

Parental age x parental educational level.

With alpha established at .05, the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{211}, R_{212}, R_{213}, R_{214}, R_{215}, R_{216}, R_{217}, R_{218}, R_{219}, R_{220}, R_{221}, R_{222}, R_{223}, R_{224}, and R_{225}): art, $F(1, 41) = .087$, $p > .05$; business, $F(1, 41) = .522$, $p > .05$; computer technology, $F(1, 41) = 2.409$, $p > .05$; driver education, $F(1, 41) = .083$, $p > .05$; English, $F(1, 41) = .208$, $p > .05$; foreign language, $F(1, 41) = 2.318$, $p > .05$; health, $F(1, 41) = .000$, $p > .05$; home economics, $F(1, 41) = 1.667$, $p > .05$; industrial technology, $F(1, 41) = .435$, $p > .05$; mathematics, $F(1, 41) = 3.818$, $p > .05$; music, $F(1, 41) = .208$, $p > .05$; physical education, $F(1, 41) = 1.818$, $p > .05$; science, $F(1, 41) = 2.864$, $p > .05$; social studies, $F(1, 41) = .000$, $p > .05$; and vocational-technical, $F(1, 41) = .227$, $p > .05$.

Parental age x student gender.

With alpha established at .05, the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{226}, R_{227}, R_{228}, R_{229}, R_{230}, R_{231}, R_{232}, R_{233}, R_{234}, R_{236}, R_{237}, R_{238}, R_{239}, and R_{240}): art, $F(1, 41) = .542$, $p > .05$; business, $F(1, 41) = .200$, $p > .05$; computer technology, F (1, 41) = 1.571, $p > .05$; driver education, F (1, 41) = .000, $p > .05$; English, F (1, 41) = 1.947, $p > .05$; foreign language, F (1, 41) = 1.571, $p > .05$; health, F (1, 41) = .579, $p > .05$; home economics, F (1, 41) = .053, $p > .05$; industrial technology, F (1, 41) = .304, $p > .05$; music, F (1, 41) = .043, $p > .05$; physical education, F (1, 41) = .864, $p > .05$; science, F (1, 41) = 1.870, $p > .05$; social studies, F (1, 41) = .500, $p > .05$; and vocational-technical, F (1, 41) = .391, $p > .05$.

Conversely, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{235}): mathematics, F (1, 41) = 5.476, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{226} through R_{240}, this one significant full and restricted regression model pair (R_{235}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Parental educational level x student gender.

With alpha established at .05, the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{241}, R_{242}, R_{243}, R_{244}, R_{245}, R_{246}, R_{247}, R_{248}, R_{249}, R_{250}, R_{251}, R_{252}, R_{253}, R_{254}, and R_{255}): art, F (1, 41) = .174, $p > .05$; business, F (1, 41) = 3.474, $p > .05$; computer technology, F (1, 41) = .043, $p > .05$; driver education, F (1, 41) = 1.130, $p > .05$; English, F (1, 41) = .684, $p > .05$; foreign language, F (1, 41) = .545, $p > .05$; health, F (1, 41) = .789, $p > .05$; home economics, F (1, 41) =

1.000, $p > .05$; industrial technology, $F(1, 41) = .217$, $p > .05$; mathematics, $F(1, 41) = 2.478$, $p > .05$; music, $F(1, 41) = .174$, $p > .05$; physical education, $F(1, 41) = .000$, $p > .05$; science, $F(1, 41) = 1.348$, $p > .05$; social studies, $F(1, 41) = .048$, $p > .05$; and vocational-technical, $F(1, 41) = .522$, $p > .05$.

Overall, General Hypothesis 4 tested for significant main effects of and for significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of 15 general school subjects. After application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of three of the 15 general school subjects in simple regression equations (R_{95}, R_{97}, and R_{98}): English, $F(1, 43) = 10.042$, $p = .00$; health, $F(1, 43) = 10.367$, $p = .00$; and home economics, $F(1, 43) = 7.482$, $p = .00$. In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

General Hypothesis 5 (H_{G5})

General Hypothesis 5A (H_{G5A}) and General Hypothesis 5B (H_{G5B}).

H_{G5A}: There is consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects.

H_{G5B}: There is consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Of specific interest in General Hypothesis 5B was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General

Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' ($N = 6$) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

General Hypothesis 5C (H_{G5C}).

H_{G5C}: There are common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects.

Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

General Hypothesis 5D (H_{G5D}).

> H_{G5D}: There are common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5D, of specific interest was whether common underlying factors exist among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5D, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Common underlying factors among respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. Again, these observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

General Hypothesis 5E (H_{G5E}).

H_{G5E}: Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects share a common factor model.

In General Hypothesis 5E, parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for a common factor model. The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

Initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model.

An exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

Of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists in comparisons of respondent groups in which one of the respondent groups was culturally literate students, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects. Of specific interest was respondent agreement identified through comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, in the present study of lifelong adaptability from a cultural literacy perspective. If such respondent agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5A's, General Hypothesis 5B's, General Hypothesis 5C's, and General Hypothesis 5D's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

In conclusion, the present study answered five research questions.

1. Is it possible to predict student cultural literacy from student intelligence? Yes. Student intelligence accounted for 61% of the variance in student cultural literacy in a simple regression equation, F (1, 61) = 96.82, $p < .0001$.

2. Is it possible to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence? No. Students' lifelong adaptability ratings of four general school subjects were significantly predicted by student cultural literacy in initial simple regression equations: business, negatively predicted, F (1, 60) = 4.358, p = .04; English,

negatively predicted, $F(1, 60) = 4.915$, $p = .03$; health, negatively predicted, $F(1, 60) = 9.334$, $p = .00$; and physical education, negatively predicted, $F(1, 60) = 4.838$, $p = .03$. After controlling for student intelligence, student cultural literacy failed to remain a significant predictor of students' lifelong adaptability ratings of these four general school subjects that it had significantly predicted in initial regression equations: business, $F(1, 59) = .688$, $p > .05$; English, $F(1, 59) = .200$, $p > .05$; health, $F(1, 59) = .000$, $p > .05$; and physical education $F(1, 59) = .875$, $p > .05$.

3. Is it possible to predict students' lifelong adaptability ratings of general school subjects from the additive effect of student cultural literacy and demography? No. Students' lifelong adaptability ratings of four general school subjects were significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations: business, $F(5, 39) = 2.433$, $p = .05$; English, $F(5, 39) = 2.676$, $p = .03$; health, $F(5, 39) = 2.457$, $p = .04$; and home economics, $F(5, 39) = 2.728$, $p = .03$. However, due to the presence of multiple tests, all four significant multiple regression equations were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

4. Is it possible to predict students' lifelong adaptability ratings of general school subjects from main effects of or from two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender? Yes. The main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation: science, $F(1, 43) = 6.482$, $p = .01$. Similarly, the main effect of parental age significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation: home

economics, $F(1, 43) = 4.674$, $p = .03$. However, due to the presence of multiple tests, these two significant simple regression equations were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of four of the 15 general school subjects in simple regression equations: business, $F(1, 43) = 7.017$, $p = .01$; English, $F(1, 43) = 10.042$, $p = .00$; health, $F(1, 43) = 10.367$, $p = .00$; and home economics, $F(1, 43) = 7.482$, $p = .00$. However, due to the presence of multiple tests, only three of these significant simple regression equations remained significant after application of the Bonferroni correction factor (Darlington, 1990). In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

The two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: English, $F(1, 41) = 4.250$, $p < .05$ but $> .01$. Comparably, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: driver education, $F(1, 41) = 4.227$, $p < .05$ but $> .01$. Similarly, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: English, $F(1, 41) = 4.619$, $p < .05$ but $> .01$. Likewise, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: mathematics, $F(1, 41) = 5.476$, $p < .05$ but $> .01$. However, due to the presence of multiple tests, these four significant full and restricted regression model pairs were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Overall, after application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of three of the 15 general school subjects in simple regression equations: English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

5. Is there consensus across, are there common underlying factors among, or is there a common factor model shared by parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects? Partially. In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Of specific interest in General Hypothesis 5B was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy*

Test, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' (N = 6) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' N of 51 accounting for a majority, 65%, of all students' N of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller N of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. Again, these observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

In General Hypothesis 5E, an exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic

Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects. Of specific interest was respondent agreement identified through comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, in the present study of lifelong adaptability from a cultural literacy perspective. If such respondent agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5A's, General Hypothesis 5B's, General Hypothesis 5C's, and General Hypothesis 5D's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary of the Study

Statement of the Problem

Due to observed trends of accelerated future change, the intent of this study was to address a predictably unstable 21st century and to explore an appropriate educational response. A need for student adaptability, especially in the workplace, suggested identification of curricular content for strengthening lifelong adaptability. One perspective from which to study lifelong adaptability appeared to be cultural literacy, which is inextricably linked with language, which in turn is linked with communication, which ultimately is linked with lifelong adaptability (see Figure 1). Therefore, this study attempted to identify commonly acceptable curricular content for enhancing students' lifelong adaptability as viewed from a cultural literacy perspective.

This research investigated students' lifelong adaptability ratings of general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. This study also incorporated four survey respondent groups (parents, teachers, administrators, and students) in an attempt to achieve consensus or, at least, direction for successfully revising curricula to arm students with lifelong adaptability for relentless change during the 21st century. Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and *culturally literate* students' lifelong adaptability ratings of general school subjects in this study of lifelong adaptability from a cultural literacy perspective.

Procedures

Survey data. The researcher developed appropriate surveys; piloted them by proxy (Appendix 2); and ultimately employed the Lifelong Adaptability Survey (Parent) included in Appendix 5, the Lifelong Adaptability Survey (Teacher) included in Appendix 6, the Lifelong Adaptability Survey (Administrator) included in Appendix 7, and the Lifelong Adaptability Survey (Student) included in Appendix 8.

Parent-supplied demographic data along with parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects were collected through initial survey solicitations involving 665 to 1,109 (the range due to the unknown number of one or two parents per household) potential respondents (with 2 parent survey solicitations [i.e., to one household] returned as undeliverable by the United States Postal Service). Although the exact number of total Lifelong Adaptability Survey (Parent) solicitations was unknown due to possible spousal separations, divorces, deaths, remarriages, or other family structure changes unreflected in school district records, those records did indicate that of the 444 total high school seniors' households 108 (24%) were single-parent households and 336 (76%) were two-parent households. Approximately 78 second survey solicitations (i.e., to 39 households) were made to nonrespondent parents of those students who had taken the *Cultural Literacy Test*. These second survey solicitations were made to this select parent subgroup in order to acquire necessary demographic data to bolster the power of General Hypothesis 3. Student gender data were obtained through Millcreek Township School District student *Differential Aptitude Tests (DAT)* records or, if unavailable, through other student records in the district. This study's data collection targeted the population of all qualified subjects involved with Millcreek Township School District.

Test data. Student cultural literacy data were secured by administration of the *Cultural Literacy Test*, hand-scored Survey Edition Form B to 75 high school seniors who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site. This was accomplished during one school day in a single test-survey session for mainstream seniors only. Absentee make-up testing of 11 other high school seniors who had been granted parental permission to participate in the present study, who themselves agreed to participate, and who reported to the school test-survey site was conducted through the *Cultural Literacy Test*, machine-scored Form A due to apprehensions regarding test security in that there could be possible absentee score inflation caused by inevitable absentee student conversation with fellow students already tested on the initial test-survey day with the *Cultural Literacy Test*, hand-scored Survey Edition Form B. Students completed both the *Cultural Literacy Test* and the Lifelong Adaptability Survey (Student) in a single session (initial or make-up) at the school test-survey site. Prior parental permission was secured for administration of the now out-of-print *Cultural Literacy Test*, for completion of the Lifelong Adaptability Survey (Student), and for use of students' 10th-grade *DAT* results (Appendix 4).

Of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 1 (1%) withdrew from the study, 79 (91%) provided valid *Cultural Literacy Test* data, 71 (82%) had 10th-grade *DAT* VR + NA composite raw scores which were subsequently employed as student intelligence proxy scores in the present research, 53 (61%) had parent-provided demographic data, 6 (7%) were removed due to their receiving remedial special education services, and 1 (1%) was removed due to being a Dutch exchange student.

Ultimately, due to subsequent concerns regarding the parallelism of Form A and Form B of the *Cultural Literacy Test*, only Form B results were employed in the statistical analyses. This decision was based on issues raised by reviewers (Gilmer, 1994; Gullickson, 1994). Consequently, in the present study, minority Form A results were dropped from the database. Therefore, of 87 high school seniors reporting for the *Cultural Literacy Test* at the school test-survey site, 68 (78%) provided valid *Cultural Literacy Test*, Form B data.

Because of an inability to manipulate this study's variables, an ex post facto design was warranted. Five research questions incorporating survey data and test data were answered through the statistical treatments of linear regression and factor analysis.

Research Questions

The present study addressed the following research questions.

1. Is it possible to predict student cultural literacy from student intelligence?

2. Is it possible to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence?

3. Is it possible to predict students' lifelong adaptability ratings of general school subjects from the additive effect of student cultural literacy and demography?

4. Is it possible to predict students' lifelong adaptability ratings of general school subjects from main effects of or from two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender?

5. Is there consensus across, are there common underlying factors among,

or is there a common factor model shared by parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects?

Conclusions and Discussion

General Hypothesis 1 (H_{G1})

H_{G1}: Student intelligence significantly predicts student cultural literacy.

General Hypothesis 1 employed a simple regression equation with student intelligence as the predictor variable and student cultural literacy as the criterion variable. With alpha established at .05, this equation with an *N* of 63 and with a healthy power of approximately .856 (J. Cohen, 1977; see Table 1) resulted in a highly significant prediction of student cultural literacy from student intelligence, $F\ (1,\ 61) = 96.82$, $p < .0001$. Student intelligence accounted for 61% of the variance in student cultural literacy.

This finding was anticipated because cultural literacy entails achieving basic cultural information (Hirsch, 1987) which can be successfully taught to students (M. S. Smith et al., 1990) and for which there existed an achievement test (Riverside Publishing Company, 1989). In other words, cultural literacy's reliance on acquiring learnable information or knowledge, which can be assessed, seems to place cultural literacy in the achievement domain. Therefore, the present researcher expected to find a highly significant relationship between intelligence and cultural literacy.

Moreover, although conspicuously limited research is available on the intelligence-cultural literacy relationship, a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990). There is a suggestion that the *Cultural Literacy Test* measured aptitude (Gullickson, 1994). In addition, an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Furthermore, research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kundert et al., 1995; Kuusinen et al., 1988; Lassiter et al., 1995; D. S. Watts et al., 1991).

Therefore, in General Hypothesis 1, the highly significant prediction of student cultural literacy from student intelligence ($p < .0001$) was to be expected.

General Hypothesis 2 (H_{G2})

> H_{G2}: Student cultural literacy significantly predicts students' lifelong adaptability ratings of general school subjects after controlling for student intelligence.

General Hypothesis 2 utilized student cultural literacy as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables in initial simple regression equations testing for a main effect of student cultural literacy. If any of these initial simple regressions proved significant, then they were subsequently rerun with full and restricted regression model pairs testing for a covariate effect of student intelligence.

With alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by student cultural literacy in initial simple regression equations (R_1, R_3, R_4, R_6, R_8, R_9, R_{10}, R_{11}, R_{13}, R_{14}, and R_{15}): art, $F(1, 60) = .001$, $p = .97$; computer technology, $F(1, 60) = .420$, $p = .51$; driver education, $F(1, 60) = 1.157$, $p = .28$; foreign language, $F(1, 60) = .372$, $p = .54$; home economics, $F(1, 60) = .519$, $p = .47$; industrial technology, $F(1, 60) = .000$, $p = .98$; mathematics, $F(1, 60) = 2.330$, $p = .13$; music, $F(1, 60) = 1.333$, p

= .25; science, F (1, 60) = 1.158, p = .28; social studies, F (1, 60) = .004, p = .94; and vocational-technical, F (1, 60) = .068, p = .79. Consequently, no further analyses involving these 11 general school subjects were undertaken to covary student intelligence.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by student cultural literacy in initial simple regression equations (R_2, R_5, R_7, and R_{12}): business, negatively predicted, F (1, 60) = 4.358, p = .04; English, negatively predicted, F (1, 60) = 4.915, p = .03; health, negatively predicted, F (1, 60) = 9.334, p = .00; and physical education, negatively predicted, F (1, 60) = 4.838, p = .03. In other words, the more culturally literate student assigned a lower lifelong adaptability rating to business, to English, to health, and to physical education. Commensurate with General Hypothesis 2, R_2, R_5, R_7, and R_{12} were subsequently rerun independent of student intelligence. After controlling for student intelligence, student cultural literacy failed to remain a significant predictor of students' lifelong adaptability ratings of the four general school subjects that it had significantly predicted in initial regression equations (R_2, R_5, R_7, and R_{12}): business, F (1, 59) = .688, $p > .05$; English, F (1, 59) = .200, $p > .05$; health, F (1, 59) = .000, $p > .05$; and physical education, F (1, 59) = .875, $p > .05$.

Controlling for student intelligence in a general hypothesis involving cultural literacy was suggested by the intelligence-cultural literacy relationship in which a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990). In addition, an alleged cultural bias of intelligence testing has been suggested (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992). Research on the broader intelligence-achievement relationship has spawned a preponderance of evidence that ability and academic achievement are unquestionably related (Cool et al., 1991; Haertel et al., 1980; Kundert et al., 1995; Kuusinen et al., 1988; Lassiter et al., 1995; D. S. Watts et al., 1991). Intelligence has also been reported as an effective covariate (Creemers et al., 1996).

Therefore, in General Hypothesis 2, student cultural literacy either failed initially to predict students' lifelong adaptability ratings of general school subjects or failed subsequently to predict students' lifelong adaptability ratings of general school subjects after student intelligence had been considered. It ought to be noted that General Hypothesis 2 was conducted with an *N* of 62 and with a healthy power of approximately .850 (J. Cohen, 1977; see Table 1). Because the research literature offers no prior studies investigating General Hypothesis 2, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

General Hypothesis 3 (H_{G3})

> H_{G3}: There is a significant addition of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

For each of the 15 general school subjects, General Hypothesis 3 utilized a multiple regression equation in which student cultural literacy, family structure, parental age, parental educational level, and student gender acted as the predictor variables and students' lifelong adaptability ratings of each respective general school subject acted as the criterion variable.

With alpha established at .05, students' lifelong adaptability ratings of 11 general school subjects were not significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{16}, R_{18}, R_{19}, R_{21}, R_{24}, R_{25}, R_{26}, R_{27}, R_{28}, R_{29}, and R_{30}): art, F (5, 39) = .964, p = .45; computer technology, F (5, 39) = 1.412, p = .24; driver education, F (5, 39) = .342, p = .88; foreign language, F (5, 39) = 1.098, p = .37; industrial technology, F (5, 39) = .993, p = .43; mathematics, F (5, 39) = .247, p = .93; music, F (5, 39) = .672, p = .64; physical education, F (5, 39) = .868, p = .51; science, F (5, 39) = 1.769, p = .14; social studies, F (5, 39) = 1.534, p = .20; and vocational-technical, F (5, 39) = .855, p = .51.

Conversely, students' lifelong adaptability ratings of four general school subjects were significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}): business, F (5, 39) = 2.433, p = .05; English, F (5, 39) = 2.676, p = .03; health, F (5, 39) = 2.457, p = .04; and home economics, F (5, 39) = 2.728, p = .03. However, due to the presence of 15 multiple tests in General Hypothesis 3, all four significant multiple regression equations (R_{17}, R_{20}, R_{22}, and R_{23}) were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Regarding specific predictor variables, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, four predictor variables (student gender, family structure, parental age, and parental educational level) made significant contributions in the attempted prediction of several general school subjects. To begin, student gender was a significant positive contributor in five additive models attempting to predict students' lifelong adaptability ratings of business (stand. coef. = .410, t = 2.784, p = .00), English (stand. coef. = .415, t =

2.848, $p = .00$), health (stand. coef. = .389, $t = 2.643$, $p = .01$), home economics (stand. coef. = .350, $t = 2.405$, $p = .02$), and social studies (stand. coef. = .316, $t = 2.051$, $p = .04$). In other words, the female student assigned a higher lifelong adaptability rating to business, to English, to health, to home economics, and to social studies. Next, family structure was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of science (stand. coef. = .353, $t = 2.155$, $p = .03$). In other words, the student in a two-parent household assigned a higher lifelong adaptability rating to science. Furthermore, parental age was a significant positive contributor in one additive model attempting to predict students' lifelong adaptability ratings of home economics (stand. coef. = .338, $t = 2.366$, $p = .02$). In other words, the student with older parents assigned a higher lifelong adaptability rating to home economics. Finally, parental educational level was a significant negative contributor in one additive model attempting to predict students' lifelong adaptability ratings of art (stand. coef. = -.339, $t = -1.949$, $p = .05$). In other words, the student with less highly educated parents assigned a higher lifelong adaptability rating to art.

Moreover, in the additive model of student cultural literacy, family structure, parental age, parental educational level, and student gender, one predictor variable (student gender) approached ($p < .10$ but $> .05$) significance as a positive contributor in two additive models attempting to predict students' lifelong adaptability ratings of computer technology (stand. coef. = .290, $t = 1.868$, $p = .06$) and foreign language (stand. coef. = .293, $t = 1.852$, $p = .07$). In other words, the apparent trend was for the female student to assign a higher lifelong adaptability rating to computer technology and to foreign language.

Overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987;

Xie et al., 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

Therefore, in General Hypothesis 3, students' lifelong adaptability ratings of general school subjects were not significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender. These findings were not surprising due to the debatable merit of demographic variables as discriminating research variables. Nonetheless, it ought to be noted that with an *N* of 45 General Hypothesis 3 was conducted with a power of approximately .420 (J. Cohen, 1977; see Table 1). This study's nonrandom convenience, or volunteer, sample presented an inability to control *N* and therefore presented a concomitant inability to control power. This lower power necessitated a cautious interpretation of General Hypothesis 3's results.

Variables in real life seldom act in isolation. Consequently, the current study attempted to reveal an additive effect of student cultural literacy and demography in predicting students' lifelong adaptability ratings of general school subjects. But because the research literature offers no prior studies investigating General Hypothesis 3, there was no basis for directly anticipating the nonsignificant findings in this general hypothesis.

General Hypothesis 4 (H_{G4})

Of concern in the current study was demonstration of possible two-way interactions among student cultural literacy and demography in predicting students' lifelong adaptability ratings of general school subjects. The demographic variables included in General Hypothesis 4 were the same as those demographic variables (family structure, parental age, parental educational level, and student gender) included in General Hypothesis 3. Both main effects and interaction effects were examined.

General Hypothesis 4A (H_{G4A}).

H_{G4A}: There are significant main effects of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

Student cultural literacy.

In simple regression equations testing for a main effect of student cultural literacy, General Hypothesis 4A utilized student cultural literacy as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables. In these equations with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the main effect of student cultural literacy did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{31}, R_{32}, R_{33}, R_{34}, R_{35}, R_{36}, R_{37}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, R_{44}, and R_{45}): art, F (1, 43) = .608, p = .43; business, F (1, 43) = .817, p = .37; computer technology, F (1, 43) = .582, p = .44; driver education, F (1, 43) = .020, p = .88; English, F (1, 43) = 1.627, p = .20; foreign language, F (1, 43) = .088, p = .76;

health, F (1, 43) = 2.884, p = .09; home economics, F (1, 43) = .933, p = .33; industrial technology, F (1, 43) = .161, p = .69; mathematics, F (1, 43) = .379, p = .54; music, F (1, 43) = 1.304, p = .25; physical education, F (1, 43) = .874, p = .35; science, F (1, 43) = 3.570, p = .06; social studies, F (1, 43) = .833, p = .36; and vocational-technical, F (1, 43) = .406, p = .52. Nonetheless, the main effect of student cultural literacy approached (p < .10 but > .05) significance in the prediction of students' lifelong adaptability ratings of two of the 15 general school subjects: health, F (1, 43) = 2.884, p = .09; and science, F (1, 43) = 3.570, p = .06. The apparent trend was for the more culturally literate student to assign a lower lifelong adaptability rating to health and a higher lifelong adaptability rating to science.

Therefore, in General Hypothesis 4A, student cultural literacy failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating student cultural literacy as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Family structure.

In simple regression equations testing for a main effect of family structure, General Hypothesis 4A utilized family structure as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables. In these equations with alpha established at .05, with an N of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the main effect of family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{46}, R_{47}, R_{48}, R_{49}, R_{50}, R_{51}, R_{52}, R_{53}, R_{54}, R_{55}, R_{56}, R_{57}, R_{59}, and R_{60}): art, F (1, 43) = .688, p = .41; business, F

(1, 43) = .781, p = .38; computer technology, F (1, 43) = .802, p = .37; driver education, F (1, 43) = .599, p = .44; English, F (1, 43) = 1.089, p = .30; foreign language, F (1, 43) = .207, p = .65; health, F (1, 43) = 1.774, p = .18; home economics, F (1, 43) = .272, p = .60; industrial technology, F (1, 43) = 1.144, p = .29; mathematics, F (1, 43) = .199, p = .65; music, F (1, 43) = .299, p = .58; physical education, F (1, 43) = .376, p = .54; social studies, F (1, 43) = 1.977, p = .16; and vocational-technical, F (1, 43) = .669, p = .41.

Conversely, the main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{58}): science, F (1, 43) = 6.482, p = .01. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{46} through R_{60}, this one significant simple regression equation (R_{58}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Therefore, in General Hypothesis 4A, family structure failed to predict students' lifelong adaptability ratings of general school subjects. These findings were not surprising due to the debatable merit of demographic variables as discriminating research variables. Because the research literature offers no prior studies investigating family structure as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating these nonsignificant findings in this general hypothesis.

Parental age.

In simple regression equations testing for a main effect of parental age, General Hypothesis 4A utilized parental age as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables. In these equations with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the main effect of parental age did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in simple regression equations (R_{61}, R_{62}, R_{63}, R_{64}, R_{65}, R_{66}, R_{67}, R_{69}, R_{70}, R_{71}, R_{72}, R_{73}, R_{74}, and R_{75}): art, F (1, 43) = .102, p = .75; business, F (1, 43) = 1.785, p = .18; computer technology, F (1, 43) = 1.661, p = .20; driver education, F (1, 43) = .542, p = .46; English, F (1, 43) = .365, p = .54; foreign language, F (1, 43) = 1.976, p = .16; health, F (1, 43) = .259, p = .61; industrial technology, F (1, 43) = 1.502, p = .22; mathematics, F (1, 43) = .922, p = .34; music, F (1, 43) = .014, p = .90; physical education, F (1, 43) = 3.388, p = .07; science, F (1, 43) = .038, p = .84; social studies, F (1, 43) = .744, p = .39; and vocational-technical, F (1, 43) = 1.709, p = .19. Nonetheless, the main effect of parental age approached significance in the prediction of students' lifelong adaptability ratings of one of these 14 general school subjects: physical education, F (1, 43) = 3.388, p = .07. The apparent trend was for the student with older parents to assign a lower lifelong adaptability rating to physical education.

Conversely, the main effect of parental age significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation (R_{68}): home economics, F (1, 43) = 4.674, p = .03.

However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{61} through R_{75}, this one significant simple regression equation (R_{68}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Therefore, in General Hypothesis 4A, parental age failed to predict students' lifelong adaptability ratings of general school subjects. These findings were not surprising due to the debatable merit of demographic variables as discriminating research variables. Because the research literature offers no prior studies investigating parental age as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating these nonsignificant findings in this general hypothesis.

Parental educational level.

In simple regression equations testing for a main effect of parental educational level, General Hypothesis 4A utilized parental educational level as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables. In these equations with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the main effect of parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in simple regression equations (R_{76}, R_{77}, R_{78}, R_{79}, R_{80}, R_{81}, R_{82}, R_{83}, R_{84}, R_{85}, R_{86}, R_{87}, R_{88}, R_{89}, and R_{90}): art, $F(1, 43) = 1.465$, $p = .23$; business, $F(1, 43) = .258$, $p = .61$; computer technology, F (1, 43) = .008, p = .92; driver education, F (1, 43) = .388, p = .53; English, F (1, 43) = .296, p = .58; foreign language, F (1, 43) = .003, p = .95; health, F (1, 43) = 1.176, p = .28; home economics, F (1, 43) = .191, p = .66; industrial technology, F (1, 43) = .393, p = .53; mathematics, F (1, 43) = .355, p = .55; music, F (1, 43) = .088, p = .76; physical education, F (1, 43) = .082, p = .77; science, F (1, 43) = 1.138, p = .29; social studies, F (1, 43) = 2.229, p = .14; and vocational-technical, F (1, 43) = 1.608, p = .21.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987; Xie et al., 1996) as a discriminating research variable.

Therefore, in General Hypothesis 4A, parental educational level failed to predict students' lifelong adaptability ratings of general school subjects. These findings were not surprising due to the debatable merit of demographic variables as discriminating research variables. Because the research literature offers no prior studies investigating parental educational level as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating these nonsignificant findings in this general hypothesis.

Student gender.

In simple regression equations testing for a main effect of student gender, General Hypothesis 4A utilized student gender as the predictor variable and students' lifelong adaptability ratings of 15 general school subjects as the criterion variables. In these equations with alpha established at .05, with an N of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the main effect of student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 11 general school subjects in simple regression equations (R_{91}, R_{93}, R_{94}, R_{96}, R_{99}, R_{100}, R_{101}, R_{102}, R_{103}, R_{104}, and R_{105}): art, F (1, 43) = .079, p = .78; computer technology, F (1, 43) = 2.227, p = .14; driver education, F (1, 43) = .403, p = .52; foreign language, F (1, 43) = 3.014, p = .08; industrial technology, F (1, 43) = .710, p = .40; mathematics, F (1, 43) = .008, p = .92; music, F (1, 43) = 1.722, p = .19; physical education, F (1, 43) = .478, p = .49; science, F (1, 43) = .639, p = .42; social studies, F (1, 43) = 2.376, p = .13; and vocational-technical, F (1, 43) = .000, p = .98. Nonetheless, the main effect of student gender approached significance in the prediction of students' lifelong adaptability ratings of one of these 11 general school subjects: foreign language, F (1, 43) = 3.014, p = .08. The apparent trend was for the female student to assign a higher lifelong adaptability rating to foreign language.

Conversely, the main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of four of the 15 general school subjects in simple regression equations (R_{92}, R_{95}, R_{97}, and R_{98}): business, F (1, 43) = 7.017, p = .01; English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. However, due to the presence of 15 multiple tests in General Hypothesis 4A's R_{91} through R_{105}, the significant p values in R_{92} (.01), in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00) were multiplied by the Bonferroni correction factor (Darlington, 1990) of 15, thereby rendering nonsignificant the p value in R_{92} (.15) and thereby leaving significant the respective p values in R_{95} (.00), in R_{97} (.00), and in R_{98} (.00). In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

Therefore, in General Hypothesis 4A, student gender significantly predicted students' lifelong adaptability ratings of English, health, and home economics in that the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. These findings were not surprising due to the debatable merit of demographic variables as discriminating research variables. Because the research literature offers no prior studies investigating student gender as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating these significant findings in this general hypothesis.

General Hypothesis 4B (H_{G4B}).

> H_{G4B}: There are significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of general school subjects.

The research literature reports interaction effects involving the present study's demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Bronstein et al., 1993; Ensminger et al., 1992; Feldman et al., 1993; Gringlas et al., 1995; Kaiser, 1994; Å. Murray et al., 1990; Teachman, 1987; Zimiles et al., 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (Cherian, 1994; S. M. Dornbusch et al., 1987; S. M. Dornbusch et al., 1991; Ensminger et al., 1992; Entwisle et al., 1995; J. D. Finn et al., 1994; Gringlas et al., 1995; J. D. House, 1996; J. D. House et al., 1989; T. E. Smith, 1992; Spencer et al., 1993). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus et al., 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink et al., 1989; Thomson et al., 1994) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Kundert et al., 1995; Lutzer, 1986; C. J. Patterson et al., 1990).

Student cultural literacy x family structure.

In full and restricted regression model pairs testing for a two-way interaction of student cultural literacy and family structure, General Hypothesis 4B utilized student cultural literacy x family structure as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of student cultural literacy and family structure did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{106}, R_{107}, R_{108}, R_{109}, R_{111}, R_{112}, R_{113}, R_{114}, R_{115}, R_{116}, R_{117}, R_{118}, R_{119}, and R_{120}): art, F (1, 41) = 1.000, $p > .05$; business, F (1,

41) = 1.261, $p > .05$; computer technology, F (1, 41) = .261, $p > .05$; driver education, F (1, 41) = .125, $p > .05$; foreign language, F (1, 41) = .083, $p > .05$; health, F (1, 41) = .045, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .167, $p > .05$; mathematics, F (1, 41) = .167, $p >$ .05; music, F (1, 41) = 1.609, $p > .05$; physical education, F (1, 41) = .208, $p > .05$; science, F (1, 41) = .000, $p > .05$; social studies, F (1, 41) = .000, $p > .05$; and vocational-technical, F (1, 41) = .125, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{110}): English, F (1, 41) = 4.250, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{106} through R_{120}, this one significant full and restricted regression model pair (R_{110}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of student cultural literacy main effects or of family structure main effects by interaction effects.

Therefore, in General Hypothesis 4B, the two-way interaction of student cultural literacy and family structure failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating student cultural literacy x family structure as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Student cultural literacy x parental age.

In full and restricted regression model pairs testing for a two-way interaction of student cultural literacy and parental age, General Hypothesis 4B utilized student cultural literacy x parental age as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of student cultural literacy and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{121}, R_{122}, R_{123}, R_{124}, R_{125}, R_{126}, R_{127}, R_{128}, R_{129}, R_{130}, R_{131}, R_{132}, R_{133}, R_{134}, and R_{135}): art, F (1, 41) = .250, $p > .05$; business, F (1, 41) = .130, $p > .05$; computer technology, F (1, 41) = .522, $p > .05$; driver education, F (1, 41) = .000, $p > .05$; English, F (1, 41) = 1.682, $p > .05$; foreign language, F (1, 41) = .478, $p > .05$; health, F (1, 41) = .273, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .174, $p > .05$; mathematics, F (1, 41) = .375, $p > .05$; music, F (1, 41) = 1.000, $p > .05$; physical education, F (1, 41) = 1.364, $p > .05$; science, F (1, 41) = .000, $p > .05$; social studies, F (1, 41) = .167, $p > .05$; and vocational-technical, F (1, 41) = .087, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of student cultural literacy and parental age failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating student cultural literacy x parental age as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Student cultural literacy x parental educational level.

In full and restricted regression model pairs testing for a two-way interaction of student cultural literacy and parental educational level, General Hypothesis 4B utilized student cultural literacy x parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of student cultural literacy and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{136}, R_{137}, R_{138}, R_{140}, R_{141}, R_{142}, R_{143}, R_{144}, R_{145}, R_{146}, R_{147}, R_{148}, R_{149}, and R_{150}): art, F (1, 41) = .773, $p > .05$; business, F (1, 41) = 2.273, $p > .05$; computer technology, F (1, 41) = .250, $p > .05$; English, F (1, 41) = .000, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = 3.095, $p > .05$; home economics, F (1, 41) = 1.087, $p > .05$; industrial technology, F (1, 41) = 2.087, $p > .05$; mathematics, F (1, 41) = .042, $p > .05$; music, F (1, 41) = .565, $p > .05$; physical education, F (1, 41) = .000, $p > .05$; science, F (1, 41) = .091, $p > .05$; social studies, F (1, 41) = 1.136, $p > .05$; and vocational-technical, F (1, 41) = 3.091, $p > .05$.

Conversely, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{139}): driver education, F (1, 41) = 4.227, $p < .05$ but $> .01$. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{136} through R_{150}, this one significant full and restricted regression model pair (R_{139}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of student cultural literacy main effects or of parental educational level main effects by interaction effects.

Therefore, in General Hypothesis 4B, the two-way interaction of student cultural literacy and parental educational level failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating student cultural literacy x parental educational level as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Student cultural literacy x student gender.

In full and restricted regression model pairs testing for a two-way interaction of student cultural literacy and student gender, General Hypothesis 4B utilized student cultural literacy x student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of student cultural literacy and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{151}, R_{152}, R_{153}, R_{154}, R_{155}, R_{156}, R_{157}, R_{158}, R_{159}, R_{160}, R_{161}, R_{162}, R_{163}, R_{164}, and R_{165}): art, F (1, 41) = 3.364, $p > .05$; business, F (1, 41) = 3.579, $p > .05$; computer technology, F (1, 41) = 2.286, $p > .05$; driver education, F (1, 41) = .167, $p > .05$; English, F (1, 41) = .100, $p > .05$; foreign language, F (1, 41) = .000, $p > .05$; health, F (1, 41) = .053, $p > .05$; home economics, F (1, 41) = .800, $p > .05$; industrial technology, F (1, 41) = 1.957, $p >$ .05; mathematics, F (1, 41) = 1.042, $p > .05$; music, F (1, 41) = 1.727, $p > .05$;

physical education, F (1, 41) = 1.682, $p > .05$; science, F (1, 41) = .409, $p > .05$; social studies, F (1, 41) = 1.095, $p > .05$; and vocational-technical, F (1, 41) = .625, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of student cultural literacy and student gender failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating student cultural literacy x student gender as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Family structure x parental age.

In full and restricted regression model pairs testing for a two-way interaction of family structure and parental age, General Hypothesis 4B utilized family structure x parental age as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an N of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of family structure and parental age did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{166}, R_{167}, R_{168}, R_{169}, R_{170}, R_{171}, R_{172}, R_{173}, R_{174}, R_{175}, R_{176}, R_{177}, R_{178}, R_{179}, and R_{180}): art, F (1, 41) = .375, $p > .05$; business, F (1, 41) = .261, $p > .05$; computer technology, F (1, 41) = .000, $p > .05$; driver education, F (1, 41) = .261, $p > .05$; English, F (1, 41) = 2.455, $p > .05$; foreign language, F (1, 41) = .696, $p > .05$; health, F (1, 41) = 1.364, $p > .05$; home economics, F (1, 41) = .000, $p > .05$; industrial technology, F (1, 41) = .045, $p > .05$; mathematics, F (1, 41) = 1.348, $p > .05$; music, F (1, 41) =

.292, $p > .05$; physical education, $F(1, 41) = .500$, $p > .05$; science, $F(1, 41) = 1.250$, $p > .05$; social studies, $F(1, 41) = .391$, $p > .05$; and vocational-technical, $F(1, 41) = .727$, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of family structure and parental age failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating family structure x parental age as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Family structure x parental educational level.

In full and restricted regression model pairs testing for a two-way interaction of family structure and parental educational level, General Hypothesis 4B utilized family structure x parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an N of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of family structure and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{181}, R_{182}, R_{183}, R_{184}, R_{186}, R_{187}, R_{188}, R_{189}, R_{190}, R_{191}, R_{192}, R_{193}, R_{194}, and R_{195}): art, $F(1, 41) = 1.500$, $p > .05$; business, $F(1, 41) = 2.182$, $p > .05$; computer technology, $F(1, 41) = .042$, $p > .05$; driver education, $F(1, 41) = .375$, $p > .05$; foreign language, $F(1, 41) = .917$, $p > .05$; health, $F(1, 41) = .043$, $p > .05$; home economics, $F(1, 41) = .042$, $p > .05$; industrial technology, $F(1, 41) = .208$, $p > .05$; mathematics, $F(1, 41) = 2.652$, $p >$

.05; music, F (1, 41) = 1.391, $p > .05$; physical education, F (1, 41) = 1.261, $p >$ .05; science, F (1, 41) = .524, $p > .05$; social studies, F (1, 41) = .591, $p > .05$; and vocational-technical, F (1, 41) = .087, $p > .05$.

Conversely, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{185}): English, F (1, 41) = 4.619, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{181} through R_{195}, this one significant full and restricted regression model pair (R_{185}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of family structure main effects or of parental educational level main effects by interaction effects.

Therefore, in General Hypothesis 4B, the two-way interaction of family structure and parental educational level failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating family structure x parental educational level as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Family structure x student gender.

In full and restricted regression model pairs testing for a two-way interaction of family structure and student gender, General Hypothesis 4B utilized family structure x student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an N of 45, and with a power of approximately .717

(J. Cohen, 1977; see Table 1), the two-way interaction of family structure and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{196}, R_{197}, R_{198}, R_{199}, R_{200}, R_{201}, R_{202}, R_{203}, R_{204}, R_{205}, R_{206}, R_{207}, R_{208}, R_{209}, and R_{210}): art, $F\ (1,\ 41) = .292$, $p > .05$; business, $F\ (1,\ 41) = 1.050$, $p > .05$; computer technology, $F\ (1,\ 41) = .522$, $p > .05$; driver education, $F\ (1,\ 41) = .696$, $p > .05$; English, $F\ (1,\ 41) = 3.765$, $p > .05$; foreign language, $F\ (1,\ 41) = .130$, $p > .05$; health, $F\ (1,\ 41) = .579$, $p > .05$; home economics, $F\ (1,\ 41) = .550$, $p > .05$; industrial technology, $F\ (1,\ 41) = .174$, $p > .05$; mathematics, $F\ (1,\ 41) = .333$, $p > .05$; music, $F\ (1,\ 41) = .000$, $p > .05$; physical education, $F\ (1,\ 41) = .042$, $p > .05$; science, $F\ (1,\ 41) = 1.048$, $p > .05$; social studies, $F\ (1,\ 41) = .000$, $p > .05$; and vocational-technical, $F\ (1,\ 41) = .375$, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of family structure and student gender failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating family structure x student gender as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Parental age x parental educational level.

In full and restricted regression model pairs testing for a two-way interaction of parental age and parental educational level, General Hypothesis 4B utilized parental age x parental educational level as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an N of 45, and with a power of approximately

.717 (J. Cohen, 1977; see Table 1), the two-way interaction of parental age and parental educational level did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{211}, R_{212}, R_{213}, R_{214}, R_{215}, R_{216}, R_{217}, R_{218}, R_{219}, R_{220}, R_{221}, R_{222}, R_{223}, R_{224}, and R_{225}): art, F (1, 41) = .087, $p > .05$; business, F (1, 41) = .522, $p > .05$; computer technology, F (1, 41) = 2.409, $p > .05$; driver education, F (1, 41) = .083, $p > .05$; English, F (1, 41) = .208, $p > .05$; foreign language, F (1, 41) = 2.318, $p > .05$; health, F (1, 41) = .000, $p > .05$; home economics, F (1, 41) = 1.667, $p > .05$; industrial technology, F (1, 41) = .435, $p > .05$; mathematics, F (1, 41) = 3.818, $p > .05$; music, F (1, 41) = .208, $p > .05$; physical education, F (1, 41) = 1.818, $p > .05$; science, F (1, 41) = 2.864, $p > .05$; social studies, F (1, 41) = .000, $p > .05$; and vocational-technical, F (1, 41) = .227, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of parental age and parental educational level failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating parental age x parental educational level as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Parental age x student gender.

In full and restricted regression model pairs testing for a two-way interaction of parental age and student gender, General Hypothesis 4B utilized parental age x student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an N of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of parental age and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of 14 general school subjects in full and restricted regression model pairs (R_{226}, R_{227}, R_{228}, R_{229}, R_{230}, R_{231}, R_{232}, R_{233}, R_{234}, R_{236}, R_{237}, R_{238}, R_{239}, and R_{240}): art, F (1, 41) = .542, $p > .05$; business, F (1, 41) = .200, $p > .05$; computer technology, F (1, 41) = 1.571, $p > .05$; driver education, F (1, 41) = .000, $p > .05$; English, F (1, 41) = 1.947, $p >$ .05; foreign language, F (1, 41) = 1.571, $p > .05$; health, F (1, 41) = .579, $p > .05$; home economics, F (1, 41) = .053, $p > .05$; industrial technology, F (1, 41) = .304, p > .05; music, F (1, 41) = .043, $p > .05$; physical education, F (1, 41) = .864, $p > .05$; science, F (1, 41) = 1.870, $p > .05$; social studies, F (1, 41) = .500, $p > .05$; and vocational-technical, F (1, 41) = .391, $p > .05$.

Conversely, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair (R_{235}): mathematics, F (1, 41) = 5.476, $p < .05$ but > .01. However, due to the presence of 15 multiple tests in General Hypothesis 4B's R_{226} through R_{240}, this one significant full and restricted regression model pair (R_{235}) was rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). Furthermore, there was no attenuation of parental age main effects or of student gender main effects by interaction effects.

Therefore, in General Hypothesis 4B, the two-way interaction of parental age and student gender failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating parental age x student gender as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

Parental educational level x student gender.

In full and restricted regression model pairs testing for a two-way interaction of parental educational level and student gender, General Hypothesis 4B utilized parental educational level x student gender as a predictor of students' lifelong adaptability ratings of each respective general school subject. In these full and restricted regression model pairs with alpha established at .05, with an *N* of 45, and with a power of approximately .717 (J. Cohen, 1977; see Table 1), the two-way interaction of parental educational level and student gender did not significantly enhance prediction of students' lifelong adaptability ratings of any of the 15 general school subjects in full and restricted regression model pairs (R_{241}, R_{242}, R_{243}, R_{244}, R_{245}, R_{246}, R_{247}, R_{248}, R_{249}, R_{250}, R_{251}, R_{252}, R_{253}, R_{254}, and R_{255}): art, F (1, 41) = .174, $p > .05$; business, F (1, 41) = 3.474, $p > .05$; computer technology, F (1, 41) = .043, $p > .05$; driver education, F (1, 41) = 1.130, $p > .05$; English, F (1, 41) = .684, $p > .05$; foreign language, F (1, 41) = .545, $p > .05$; health, F (1, 41) = .789, $p > .05$; home economics, F (1, 41) = 1.000, $p > .05$; industrial technology, F (1, 41) = .217, $p > .05$; mathematics, F (1, 41) = 2.478, $p > .05$; music, F (1, 41) = .174, $p > .05$; physical education, F (1, 41) = .000, $p > .05$; science, F (1, 41) = 1.348, $p > .05$; social studies, F (1, 41) = .048, $p > .05$; and vocational-technical, F (1, 41) = .522, $p > .05$.

Therefore, in General Hypothesis 4B, the two-way interaction of parental educational level and student gender failed to predict students' lifelong adaptability ratings of general school subjects. Because the research literature offers no prior studies investigating parental educational level x student gender as a predictor of students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the nonsignificant findings in this general hypothesis.

In summation, General Hypothesis 4 tested for significant main effects of and for significant two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender in predicting students' lifelong adaptability ratings of 15 general school subjects. After application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of three of the 15 general school subjects in simple regression equations (R_{95}, R_{97}, and R_{98}): English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

Again, overall, the importance of demography to student outcomes has found supporters (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) and detractors (S. Dornbusch, 1986; Sauer et al., 1985; Stickney et al., 1987). Consequently, the effect of student demography on educational outcomes seems to be debatable. This debate has not forestalled but rather has fueled a plethora of studies involving demography. Accordingly, the present study incorporated conventional demography in the form of family structure, parental age, parental educational level, and student gender.

Reflecting the controversy surrounding the relevance of demography, these four demographic variables themselves have received mixed reviews concerning their effects on student achievement, on student development, or on other student outcomes. Respectively defined by individual study, these four demographic variables have collectively and individually received both support and relative nonsupport as discriminating research variables.

Family structure has received support (N. M. Astone et al., 1991; Barbarin et al., 1993; Featherstone et al., 1992; Gill, 1992; Kurdek et al., 1988; Mulkey et al., 1991) and relative nonsupport (Eagle, 1989; Grissmer et al., 1994; S. T. Johnson, 1992; Kaiser, 1991; Marsh, 1992; M. S. Thompson et al., 1988) as a discriminating research variable.

Parental age has received support (Grissmer et al., 1994; Mare et al., 1989; Rose et al., 1985) and relative nonsupport (Ensminger et al., 1992; Kinard et al., 1987) as a discriminating research variable.

Parental educational level has received support (DeBaz, 1994; Duncan, 1994; Grissmer et al., 1994; T. Lee, 1987; LeTendre, 1991; W. G. Mitchell et al., 1991; K. A. Moore et al., 1991; Rogers et al., 1987; Sack et al., 1987; S. Sinha et al., 1988; H. L. Smith et al., 1986; K. R. Wilson et al., 1987) and relative nonsupport (D. Adams et al., 1994; Crook et al., 1989; Eddins, 1982; Gibson, 1983; D. L. Stevenson et al., 1987; Xie et al., 1996) as a discriminating research variable.

Student gender has received support (D. Adams et al., 1994; E. L. Baker, 1992; Barbarin et al., 1993; N. J. Cohen, 1989; Cool et al., 1991; J. V. Couch et al., 1983; DeBaz, 1994; Duran et al., 1992; Furr, 1992; Kinard et al., 1987; Lummis et al., 1990; Lynn, 1996; Lynn et al., 1983; Lynn et al., 1993; Marshall, 1987; K. J. Roberts, 1986; Sandqvist, 1995; Thibadoux et al., 1993; J. O. Undheim et al., 1995) and relative nonsupport (Alspach, 1988; J. R. Cannon et al., 1992; Fisher, 1995; B. Jones, 1990; C. R. King, 1988; Kosmoski et al., 1990; Kundert et al., 1995; Manahan, 1984a; Norman, 1988; Stocking et al., 1992; Stoneberg, 1985; Tracy, 1990; Vance et al., 1992) as a discriminating research variable.

The research literature reports interaction effects involving the present study's demographic variables, respectively defined by individual study. There is evidence suggesting that two or more of these demographic variables may interact internally with each other (Bronstein et al., 1993; Ensminger et al., 1992; Feldman et al., 1993; Gringlas et al., 1995; Kaiser, 1994; Å. Murray et al., 1990; Teachman, 1987; Zimiles et al., 1991), and there is evidence suggesting that one or more of these demographic variables may interact externally with variables outside the present study's interaction hypothesis (Cherian, 1994; S. M. Dornbusch et al., 1987; S. M. Dornbusch et al., 1991; Ensminger et al., 1992; Entwisle et al., 1995; J. D. Finn et al., 1994; Gringlas et al., 1995; J. D. House, 1996; J. D. House et al., 1989; T. E. Smith, 1992; Spencer et al., 1993). There also exist evidence suggesting an absence of internal interaction effects (Ketterlinus et al., 1991; Kinard et al., 1987; Kurdek et al., 1988; Mensink et al., 1989; Thomson et al., 1994) and evidence suggesting an absence of external interaction effects (S. M. Dornbusch et al., 1987; Kundert et al., 1995; Lutzer, 1986; C. J. Patterson et al., 1990).

Accordingly, the findings in General Hypothesis 4 were not surprising due to the debatable merit of demographic variables and their interactions as discriminating research variables.

General Hypothesis 5 (H_{G5})

General Hypothesis 5A (H_{G5A}) and General Hypothesis 5B (H_{G5B}).

H_{G5A}: There is consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects.

H_{G5B}: There is consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Of specific interest in General Hypothesis 5B was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' (N = 6) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

The present study's findings were not surprising due to their resemblance with the findings of two major studies involving the "importance" quality (Survey Research Systems, 1990) and the "should be required" quality (Gallup, 1981) of general school subjects. General Hypothesis 5A's and General Hypothesis 5B's lifelong adaptability rankings for English, computer technology, and music resembled the "importance" rankings of Survey Research Systems (1990). General Hypothesis 5A's and General Hypothesis 5B's lifelong adaptability rankings for English and music resembled the "should be required" rankings of Gallup (1981). Because the research literature offers two major prior studies investigating rankings of general school subjects, there was a basis for anticipating the findings in General Hypothesis 5A and General Hypothesis 5B.

General Hypothesis 5C (H_{G5C}).

H_{G5C}: There are common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

Because the research literature offers no prior studies investigating common underlying factors among parents', teachers', and all students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the findings in this general hypothesis.

General Hypothesis 5D (H_{G5D}).

H_{G5D}: There are common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5D, of specific interest was whether common underlying factors exist among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5D, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Common underlying factors among respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and

General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. Again, these observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

Because the research literature offers no prior studies investigating common underlying factors among parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects, there was no direct basis for anticipating the findings in this general hypothesis.

General Hypothesis 5E (H_{G5E}).

> H_{G5E}: Parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects share a common factor model.

In General Hypothesis 5E, parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for a common factor model. The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5E, of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

Initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model.

An exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' N of 215 accounted for a majority, 58%, of the single group's N of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

Of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists in comparisons of respondent groups in which one of the respondent groups was culturally literate students, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

Because the research literature offers no prior studies investigating parents', teachers', all students', and culturally literate students' lifelong adaptability ratings of general school subjects sharing a common factor model, there was no direct basis for anticipating the findings in this general hypothesis.

General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects. Of specific interest was respondent agreement identified through comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, in the present study of lifelong adaptability from a cultural literacy perspective. If such respondent agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5A's, General Hypothesis 5B's, General Hypothesis 5C's, and General Hypothesis 5D's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

In conclusion, the present study answered five research questions.

1. Is it possible to predict student cultural literacy from student intelligence? Yes. Student intelligence accounted for 61% of the variance in student cultural literacy in a simple regression equation, $F\ (1,\ 61) = 96.82$, $p < .0001$.

2. Is it possible to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence? No. Students' lifelong adaptability ratings of four general school subjects were

significantly predicted by student cultural literacy in initial simple regression equations: business, negatively predicted, F (1, 60) = 4.358, p = .04; English, negatively predicted, F (1, 60) = 4.915, p = .03; health, negatively predicted, F (1, 60) = 9.334, p = .00; and physical education, negatively predicted, F (1, 60) = 4.838, p = .03. After controlling for student intelligence, student cultural literacy failed to remain a significant predictor of students' lifelong adaptability ratings of these four general school subjects that it had significantly predicted in initial regression equations: business, F (1, 59) = .688, p > .05; English, F (1, 59) = .200, p > .05; health, F (1, 59) = .000, p > .05; and physical education F (1, 59) = .875, p > .05.

3. Is it possible to predict students' lifelong adaptability ratings of general school subjects from the additive effect of student cultural literacy and demography? No. Students' lifelong adaptability ratings of four general school subjects were significantly predicted by the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender in multiple regression equations: business, F (5, 39) = 2.433, p = .05; English, F (5, 39) = 2.676, p = .03; health, F (5, 39) = 2.457, p = .04; and home economics, F (5, 39) = 2.728, p = .03. However, due to the presence of multiple tests, all four significant multiple regression equations were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

4. Is it possible to predict students' lifelong adaptability ratings of general school subjects from main effects of or from two-way interactions of student cultural literacy, family structure, parental age, parental educational level, and student gender? Yes. The main effect of family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation: science, F (1, 43) = 6.482, p = .01. Similarly, the main effect of

parental age significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a simple regression equation: home economics, F (1, 43) = 4.674, p = .03. However, due to the presence of multiple tests, these two significant simple regression equations were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990). The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of four of the 15 general school subjects in simple regression equations: business, F (1, 43) = 7.017, p = .01; English, F (1, 43) = 10.042, p = .00; health, F (1, 43) = 10.367, p = .00; and home economics, F (1, 43) = 7.482, p = .00. However, due to the presence of multiple tests, only three of these significant simple regression equations remained significant after application of the Bonferroni correction factor (Darlington, 1990). In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics.

The two-way interaction of student cultural literacy and family structure significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: English, F (1, 41) = 4.250, $p < .05$ but > .01. Comparably, the two-way interaction of student cultural literacy and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: driver education, F (1, 41) = 4.227, $p < .05$ but > .01. Similarly, the two-way interaction of family structure and parental educational level significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: English, F (1, 41) = 4.619, $p < .05$ but > .01. Likewise, the two-way interaction of parental age and student gender significantly enhanced prediction of students' lifelong adaptability ratings of one of the 15 general school subjects in a full and restricted regression model pair: mathematics, $F\ (1, 41) = 5.476$, $p < .05$ but $> .01$. However, due to the presence of multiple tests, these four significant full and restricted regression model pairs were rendered nonsignificant by the Bonferroni correction factor (Darlington, 1990).

Overall, after application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. The main effect of student gender significantly enhanced prediction of students' lifelong adaptability ratings of three of the 15 general school subjects in simple regression equations: English, $F\ (1, 43) = 10.042$, $p = .00$; health, $F\ (1, 43) = 10.367$, $p = .00$; and home economics, $F\ (1, 43) = 7.482$, $p = .00$. In other words, ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

5. Is there consensus across, are there common underlying factors among, or is there a common factor model shared by parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects? Partially. In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. Of specific interest in General Hypothesis 5B was whether overall respondent agreement exists across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. If such agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

The current study deemed a student culturally literate if he or she had achieved a composite national percentile rank above the 50th percentile on the *Cultural Literacy Test*, Form B. This criterion established an above average degree of cultural literacy as a perspective from which to compare respondent lifelong adaptability ratings of general school subjects. In General Hypothesis 5B, all intergroup comparisons were conducted with culturally literate students' rather than with all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. Consensus across respondent ratings would, therefore, politically expedite curricular revision from a cultural literacy perspective.

Culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5B may be thereby unduly influencing all students' results in General Hypothesis 5A.

In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' ($N = 6$) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and all students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for all students ought to be interpreted with caution due to culturally literate students' *N* of 51 accounting for a majority, 65%, of all students' *N* of 78. Culturally literate students' results in General Hypothesis 5D may be thereby unduly influencing all students' results in General Hypothesis 5C. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and all students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. Again, these observations and this conclusion were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population.

In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. Factor analysis was possible for these three groups (parents, teachers, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983) although the factor analytical results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51. The remaining respondent group (administrators) with a smaller *N* of only 6, which nonetheless reflected 100 percent of the respondent population, was then speculatively compared with the other three respondent groups having larger *N*'s. This comparison was accomplished by inspecting means and standard deviations.

Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

Administrators as a group assigned higher and more polarized lifelong adaptability ratings to art, foreign language, physical education, and social studies than did all of the other three respondent groups. Administrators as a group assigned lower and more polarized lifelong adaptability ratings to computer technology than did all of the other three respondent groups. It appeared that administrators did not wholly agree with parents, teachers, and culturally literate students in their lifelong adaptability ratings of 15 general school subjects. In fact, administrators' lifelong adaptability rankings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability rankings of the same general school subjects. General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and

General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. Again, these observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

In General Hypothesis 5E, initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model (Byrne, 1998). Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model.

An exploratory factor analysis of a single group consisting of parents', teachers', and all students' lifelong adaptability ratings of 15 general school subjects produced the Practical-Academic Factor Model. A confirmatory factor analysis revealed that the Practical-Academic Factor Model presented a reasonable fit on the single group's lifelong adaptability ratings of 15 general school subjects. This single group was the group from which the Practical-Academic Factor Model had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), revealed that the Practical-Academic Factor Model presented a reasonable fit on parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects but that the Practical-Academic Factor Model presented a poor fit on all students' lifelong adaptability ratings of 15 general school subjects. Finally, invariance tests were conducted across individual respondent groups (parents, teachers, and culturally literate students), whose lifelong adaptability ratings of 15 general school subjects had yielded a reasonable fit of the Practical-Academic Factor Model. The remaining respondent group (all students), whose lifelong adaptability ratings of 15 general school subjects had yielded a poor fit of the Practical-Academic Factor Model, was excluded from these invariance tests. The Practical-Academic Factor Model was invariant across parents' and teachers', across parents' and culturally literate students', and across teachers' and culturally literate students' lifelong adaptability ratings of 15 general school subjects. In other words, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. Again, parents' *N* of 215 accounted for a majority, 58%, of the single group's *N* of 373. Parents' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing the single group's lifelong adaptability ratings in General Hypothesis 5E. Additionally, culturally literate students' *N* of 51 accounted for a majority, 65%, of all students' *N* of 78. Culturally literate students' lifelong adaptability ratings in General Hypothesis 5E may be thereby unduly influencing all students' lifelong adaptability ratings in General Hypothesis 5E. Furthermore, results for culturally literate students ought to be interpreted with caution due to culturally literate students' *N* of only 51.

Of specific interest were culturally literate students' rather than all students' lifelong adaptability ratings of general school subjects in the present study of lifelong adaptability from a cultural literacy perspective. If a common factor model exists in comparisons of respondent groups in which one of the respondent groups was culturally literate students, then a noncontroversial approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change. General Hypothesis 5E revealed such a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and all students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and all students) comparison of exploratory factor solutions. In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors through application of three within-group (parents, teachers, and culturally literate students) exploratory factor analyses of the 15 variables (lifelong adaptability ratings of 15 general school subjects) and a subsequent between-group (parents, teachers, and culturally literate students) comparison of exploratory factor solutions. In General Hypothesis 5E, initially, an exploratory factor analysis of the 15 variables (lifelong adaptability ratings of 15 general school subjects) was conducted on a single group consisting of parents, teachers, and all students. This statistical treatment provided a factor model for these respondents overall. Then a confirmatory factor analysis tested the attempt to impose this factor model on the single group from which it had been derived. Subsequently, four confirmatory factor analyses, one for each of the four individual respondent groups (parents, teachers, all students, and culturally literate students), tested the attempt to impose this factor model on each respondent group's lifelong adaptability ratings of 15 general school subjects, thereby testing the possibility of a common factor model. Finally, if warranted, the respondent groups underwent invariance tests to assess the fit of the common factor model. Factor analysis was possible for four respondent groups (parents, teachers, all students, and culturally literate students) due to their larger *N*'s (Tabachnick et al., 1983). The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from this investigation of a possible common factor model.

The contrast of General Hypothesis 5A stipulating all students with General Hypothesis 5B stipulating culturally literate students was intended to identify in General

Hypothesis 5B greater consensus across the four respondent groups involving culturally literate students within this present study of lifelong adaptability from a cultural literacy perspective. Likewise, the contrast of General Hypothesis 5C stipulating all students with General Hypothesis 5D stipulating culturally literate students was intended to identify in General Hypothesis 5D a greater number of common underlying factors across the four respondent groups involving culturally literate students within this present study of lifelong adaptability from a cultural literacy perspective. Such agreement across the four respondent groups involving culturally literate students would, therefore, politically expedite curricular revision for lifelong adaptability from a cultural literacy perspective. Unfortunately, General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D in tandem revealed greater disharmony across the four respondent groups' lifelong adaptability ratings of general school subjects with the stipulation of culturally literate students in General Hypothesis 5B and in General Hypothesis 5D. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

Implications

The current research on lifelong adaptability from a cultural literacy perspective generated some interesting curricular implications.

To begin, based upon the present study's proposed lifelong adaptability chain of components (see Figure 1), a salient component of lifelong adaptability is cultural literacy (Hirsch, 1987). Related research suggesting intelligence as a potentially differentiating factor in student cultural literacy (Kosmoski et al., 1990) and in lifelong adaptability (Church et al., 1985), especially in the workplace (J. E. Hunter, 1986), dovetailed well with General Hypothesis 1's highly significant prediction of student cultural literacy from student intelligence.

It is conceivable that intelligence may manifest itself in the form of cultural literacy, thereby providing lifelong adaptability indirectly through cultural literacy rather than directly through intelligence. This possibility aligns with other limited research on the intelligence-cultural literacy relationship in which a high correlation has been reported (Kosmoski, 1989; Kosmoski et al., 1990) and with the suggestion of an alleged cultural bias of intelligence testing (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992).

If educators assume that intelligence does manifest itself through cultural literacy and that cultural literacy enhances lifelong adaptability, then the curricular implication is clear—cultural literacy ought to be taught in the classroom. This implication appears feasible for the classroom because cultural literacy entails achieving basic cultural information (Hirsch, 1987) which can be successfully taught to students (M. S. Smith et al., 1990) and for which there existed a now out-of-print achievement test (Riverside Publishing Company, 1989).

Another curricular implication of the current study derived jointly from General Hypothesis 1 and General Hypothesis 2. General Hypothesis 2 failed to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence. Curricular revision to promote lifelong adaptability received no direction from this nonsignificant finding. Apparently, cultural literacy was not a viable perspective from which to identify those general school subjects most valuable to lifelong adaptability.

This conclusion did not negate cultural literacy's assumed role in lifelong adaptability; it merely disparaged cultural literacy's usefulness in predicting a curriculum for lifelong adaptability. Indeed, General Hypothesis 1 in conjunction with General Hypothesis 2 implied that cultural literacy may not be the perspective from which to identify a lifelong adaptability curriculum but rather that cultural literacy itself may be the lifelong adaptability curriculum.

As noted above, General Hypothesis 2 failed to predict students' lifelong adaptability ratings of general school subjects from student cultural literacy after controlling for student intelligence. General Hypotheses 3 and 4 represented the demographic extension of General Hypothesis 2. General Hypothesis 3 allowed student demographic variables (family structure, parental age, parental educational level, and student gender) to complement student cultural literacy in the prediction of students' lifelong adaptability ratings of general school subjects. General Hypothesis 4 allowed student demographic variables (family structure, parental age, parental educational level, and student gender) and student cultural literacy to act alone as main effects or to interact with each other in the prediction of students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 3's additive models, after application of the Bonferroni correction factor (Darlington, 1990), no additive effects remained significant. In other words, the additive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender failed to predict students' lifelong adaptability ratings of general school subjects.

In General Hypothesis 4's main effect models and interaction effect models, after application of the Bonferroni correction factor (Darlington, 1990), only three main effects, all involving student gender, remained significant. In other words, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

With the exception of the female student assigning a significantly higher lifelong adaptability rating to English, to health, and to home economics, neither General Hypothesis 3's additive models nor General Hypothesis 4's main effect models and interaction effect models produced significant results. Ultimately, General Hypotheses 3 and 4 demonstrated overall that the main effect, additive effect, or interactive effect of student cultural literacy, family structure, parental age, parental educational level, and student gender proved nonsignificant in predicting students' preferences for a lifelong adaptability curriculum.

Auspiciously, lack of an overall demographic effect suggested that students had judged the lifelong adaptability value of their general school subjects independent of the overall influence of their genders, family structures, parental ages, and parental educational levels. This conclusion implied that perhaps educators need not battle potential demographic effects (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) in encouraging students to appreciate the lifelong adaptability value of formal education via the general school subjects.

Finally, General Hypothesis 5 sought to identify consensus across, common underlying factors among, or a common factor model shared by respondents' lifelong adaptability ratings of general school subjects. Of specific interest was respondent agreement identified through comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, in the present study of lifelong adaptability from a cultural literacy perspective. If such respondent agreement exists, then a popular approach materializes for revising curricula to improve lifelong adaptability from a cultural literacy perspective so that students can more easily adapt to future impartial change.

General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D revealed that administrators as a group distinguished themselves from the other respondent groups in their lifelong adaptability ratings of general school subjects. These observations and these conclusions were extremely speculative due to administrators' small sample size ($N = 6$), which nonetheless reflected 100 percent of the respondent population. General Hypothesis 5C allowed for a greater number of possible common underlying factors than did General Hypothesis 5D. In General Hypothesis 5C, all students viewed the curriculum as containing a Practical Factor similar to but not identical to parents' Practical Factor, and all students viewed the curriculum as containing a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. In General Hypothesis 5D, culturally literate students viewed the curriculum as containing a Practical Factor identical to parents' Practical Factor, but culturally literate students did not view the curriculum as containing any other factors resembling parents' factors.

Specifically, General Hypothesis 5A's, General Hypothesis 5B's, General Hypothesis 5C's, and General Hypothesis 5D's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was all students, rather than culturally literate students, thereby failing to support a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. Several thought-provoking implications evolved.

From a professional education perspective, General Hypothesis 5's results implied that if teachers and administrators wish consensus regarding a lifelong adaptability curriculum, then they must undertake the formidable task of persuading the public to view curriculum somewhat differently, they must rethink their own curricular views, or they must accept a compromise between the public's views and their own views.

From a marketing perspective, General Hypothesis 5C's and General Hypothesis 5D's results implied that perhaps The Customer Is Always Right philosophy should be espoused by educators because those who paid the taxes (parents) and those who received the services (students) shared the most compatible views regarding a lifelong adaptability curriculum.

From an educational administration perspective, General Hypothesis 5A's and General Hypothesis 5B's results implied that if administrators wish consensus regarding a lifelong adaptability curriculum, then they must undertake the formidable task of persuading parents, teachers, and students to view curriculum somewhat differently, they must rethink their own curricular views, or they must accept a compromise between parents', teachers', and students' views and their own views. For administrators, the most practical approach appears to be rethinking their own curricular views.

But from the present study's perspective, a cultural literacy perspective, there already exists a *partial* consensus whereby the debut of a lifelong adaptability curriculum might be politically expeditious with a minimum of resistance from any of the four respondent groups. In General Hypothesis 5B, parents', teachers', administrators', and culturally literate students' lifelong adaptability rankings of 15 general school subjects (see Table 39) simply revealed that across all four respondent groups English was consistently ranked 1st or 2nd with computer technology consistently ranked 1st, 2nd, or 3rd. Health was consistently ranked 3rd, 4th, or 5th. Science was consistently ranked 5th, 6th, or 7th. Vocational-technical was consistently ranked 7th, 8th, or 9th. Three of the four groups (parents, teachers, and culturally literate students) ranked music 14th or 15th. Due to the fact that these results were obtained from parents, teachers, administrators, and culturally literate students, they may furnish the tentative basis of a noncontroversial lifelong adaptability curriculum from a cultural literacy perspective. Moreover, General Hypothesis 5E's results revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective. In tandem, General Hypothesis 5B's and General Hypothesis 5E's results implied that from a cultural literacy perspective the debut of a lifelong adaptability curriculum might be politically expeditious if such a curriculum emphasized English, computer technology, foreign language, mathematics, science, and social studies within an Academic aspect of the curriculum along with driver education, health, home economics, and physical education within a Practical aspect of the curriculum.

Additionally, the noncontroversial nature of a lifelong adaptability curriculum was implied by General Hypothesis 5's lifelong adaptability rankings for English, computer technology, and music resembling the "importance" rankings of Survey Research Systems (1990) and by General Hypothesis 5's lifelong adaptability rankings for English and music resembling the "should be required" rankings of Gallup (1981). The present study's resemblance with these two major studies involved some of the high and low extremes of the curricular rankings and implied that other research respondents may have been considering lifelong adaptability when they were asked to consider the "importance" quality (Survey Research Systems, 1990) or the "should be required" quality (Gallup, 1981) of general school subjects.

If other research respondents are indeed considering lifelong adaptability when they respond to their respective studies, then implementing a publicly acceptable lifelong adaptability curriculum from a cultural literacy perspective may be politically expeditious not only in Millcreek Township School District but also in other districts, for it bodes well that some of the present study's results apparently resemble major studies' results (Gallup, 1981; Survey Research Systems, 1990).

Suggested Future Research

Four directions for future research present themselves as a result of the current research findings or as a result of the current research literature review.

First, the most definitive finding of the present study was the highly significant prediction of student cultural literacy from student intelligence ($p < .0001$) with student intelligence accounting for 61% of the variance in student cultural literacy. This finding aligns with the reportedly high correlation between intelligence and cultural literacy (Kosmoski, 1989; Kosmoski et al., 1990) although the current research was the first study employing the now out-of-print *Cultural Literacy Test* (Riverside Publishing Company, 1989). Future research ought to examine more narrowly the intelligence-cultural literacy relationship to address the possibility that standardized intelligence tests actually measure cultural knowledge rather than native intelligence. This possibility was suggested by Kosmoski et al. (1990). Moreover, an alleged cultural bias of intelligence testing has been speculated by researchers (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992).

Second, the understanding of lifelong adaptability may be enhanced by research perspectives besides a cultural literacy perspective. Some other logical perspectives include an intelligence perspective (Church et al., 1985; J. E. Hunter, 1986); an academic skills perspective such as a communication skills perspective (Carnevale, 1991a, 1991b; Illinois University Department of Vocational and Technical Education, 1989); and a social competence perspective (S. H. McConaughy & D. R. Ritter, 1986; Wentzel, 1991). It seems reasonable that, like cultural literacy, other variables such as intelligence, academic skills, and social competence are indeed components of lifelong adaptability. In fact, they may be more significant predictors of lifelong adaptability ratings of general school subjects than was cultural literacy in the current research.

Third, student adjustment to change, especially within the workplace, over the course of an entire lifetime may be better understood through a longitudinal study of lifelong adaptability, which could reveal relative long-term advantages of certain general school subjects. But because a longitudinal study remains a snapshot of the present even if that present spans twenty years, the inherent difficulty of a longitudinal study is its inability *to predict* those general school subjects necessary for *the future*. In other words, a longitudinal study cannot *predict* due to the fact that it assumes a historical perspective from which to view the present or the past as opposed to assuming a cultural literacy perspective, an intelligence perspective, an academic skills perspective, a social competence perspective, or some other perspective from which to view the future. Nonetheless, a longitudinal study may identify a fresh perspective, overlooked at present, from which to view lifelong adaptability.

Fourth, consensus on a lifelong adaptability curriculum across all four of the key respondent groups (parents, teachers, administrators, and students) within an educational system could be more readily achieved if their lifelong adaptability expectations relative to their perceptions of the future were better understood. For example, an instrument measuring these respondent groups' perceptions of the future may reveal insights or misconceptions influencing their lifelong adaptability ratings of general school subjects. Ultimately, this instrument would permit any insights concerning the future to be shared with the other respondent groups and any misconceptions concerning documented future trends to be addressed accordingly. Consequently, studies like the present study might realize consensus or nearer consensus on a lifelong adaptability curriculum across all four of the key respondent groups (parents, teachers, administrators, and students) within an educational system.

Summary

Due to observed trends of accelerated future change, the intent of this study was to address a predictably unstable 21st century and to identify curricular content for strengthening lifelong adaptability. One perspective from which to study lifelong adaptability appeared to be cultural literacy (see Figure 1). This research investigated students' lifelong adaptability ratings of general school subjects as predicted by family structure, parental age, parental educational level, student cultural literacy, and student gender; student intelligence was covaried with student cultural literacy. This study also incorporated four survey respondent groups (parents, teachers, administrators, and students) in an attempt to achieve consensus or, at least, direction for successfully revising curricula to arm students with lifelong adaptability for relentless change during the 21st century. Of specific interest was whether overall respondent agreement exists across parents', teachers', administrators', and *culturally literate* students' lifelong adaptability ratings of general school subjects in this study of lifelong adaptability from a cultural literacy perspective.

Lifelong Adaptability Survey data, *Cultural Literacy Test* data, *DAT* data, and demographic data contributed to the present ex post facto study's five research questions, which yielded the following findings.

1. Student intelligence significantly predicted student cultural literacy. Student intelligence accounted for 61% of the variance in student cultural literacy in a simple regression equation, $F\ (1, 61) = 96.82$, $p < .0001$.

2. After controlling for student intelligence, student cultural literacy did not significantly predict students' lifelong adaptability ratings of any of the 15 general school subjects.

3. After application of the Bonferroni correction factor (Darlington, 1990), the additive effect of student cultural literacy and demography (family structure, parental age, parental educational level, and student gender) did not significantly predict students' lifelong adaptability ratings of any of the 15 general school subjects.

4. After application of the Bonferroni correction factor (Darlington, 1990) in the testing of five main effects (student cultural literacy, family structure, parental age, parental educational level, and student gender), only the main effect of student gender significantly predicted students' lifelong adaptability ratings of three of the 15 general school subjects. Ultimately, the female student assigned a significantly higher lifelong adaptability rating to English, to health, and to home economics. After application of the Bonferroni correction factor (Darlington, 1990), no interaction effects remained significant. Therefore, there was no attenuation of these significant student gender main effects by interaction effects.

5. There was partial consensus across parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects. In General Hypothesis 5A and in General Hypothesis 5B, possible consensus was investigated by ranking respondent groups' lifelong adaptability ratings of 15 general school subjects in descending order by their means. In General Hypothesis 5A, there was partial consensus across parents', teachers', administrators', and all students' lifelong adaptability ratings of general school subjects. In other words, parents, teachers, and all students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. Similarly, in General Hypothesis 5B, there was partial consensus across parents', teachers', administrators', and culturally literate students' lifelong adaptability ratings

of general school subjects. In other words, parents, teachers, and culturally literate students deemed English and computer technology to have the greatest value for lifelong adaptability, whereas they deemed music to have the least value for lifelong adaptability. General Hypothesis 5A allowed for greater consensus than did General Hypothesis 5B in that all students' lifelong adaptability ratings of music were in greater agreement with those of parents and teachers in General Hypothesis 5A than were culturally literate students' lifelong adaptability ratings of music in agreement with those of parents and teachers in General Hypothesis 5B. In both General Hypothesis 5A and General Hypothesis 5B, administrators' ($N = 6$) lifelong adaptability ratings of general school subjects appeared to be in distinct disharmony with the other three respondent groups' lifelong adaptability ratings of general school subjects.

In investigating common underlying factors among parents', teachers', administrators', and students' lifelong adaptability ratings of general school subjects, one respondent group (administrators) with a smaller N of only 6 was omitted from the exploratory factor analyses involved in this investigation. In examining parents', teachers', and students' lifelong adaptability ratings of general school subjects, there were similarities of underlying factors among parents' and students' lifelong adaptability ratings of general school subjects. In General Hypothesis 5C, parents', teachers', and all students' lifelong adaptability ratings of general school subjects were examined for common underlying factors. Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from all students, whereas parents' and all students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarities with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor.

This perspective was comparable to that of all students, who viewed the curriculum as containing a similar but not identical Practical Factor and a Social Studies Factor, which perhaps was aspiring to be an Academic Factor similar to parents' Academic Factor. Dissimilarly, all students' Artistic Factor did not appear among parents' factors. In General Hypothesis 5D, parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects were examined for common underlying factors. Generally, teachers' lifelong adaptability ratings of 15 general school subjects appeared to distinguish teachers from parents and from culturally literate students, whereas parents' and culturally literate students' lifelong adaptability ratings of 15 general school subjects exhibited greater similarity with each other. Specifically, teachers viewed the curriculum as containing a large Peripheral Factor only. But parents viewed the curriculum as containing a Practical Factor and an Academic Factor. This perspective was comparable to that of culturally literate students, who also viewed the curriculum as containing a Practical Factor. Dissimilarly, culturally literate students' Occupational Factor and Artistic Factor did not appear among parents' factors.

There was a common factor model partially shared by parents', teachers', and students' lifelong adaptability ratings of general school subjects. The remaining respondent group (administrators) with a smaller *N* of only 6 was omitted from the exploratory factor analysis and confirmatory factor analyses involved in this investigation. In General Hypothesis 5E, the Practical-Academic Factor Model was a common factor model shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of 15 general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. The Practical-Academic Factor Model consisted of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies).

The contrast of General Hypothesis 5A stipulating all students with General Hypothesis 5B stipulating culturally literate students was intended to identify in General Hypothesis 5B greater consensus across the four respondent groups involving culturally literate students within this present study of lifelong adaptability from a cultural literacy perspective. Likewise, the contrast of General Hypothesis 5C stipulating all students with General Hypothesis 5D stipulating culturally literate students was intended to identify in General Hypothesis 5D a greater number of common underlying factors across the four respondent groups involving culturally literate students within this present study of lifelong adaptability from a cultural literacy perspective. Such agreement across the four respondent groups involving culturally literate students would, therefore, politically expedite curricular revision for lifelong adaptability from a cultural literacy perspective. Unfortunately, General Hypothesis 5A, General Hypothesis 5B, General Hypothesis 5C, and General Hypothesis 5D in tandem revealed greater disharmony across the four respondent groups' lifelong adaptability ratings of general school subjects with the stipulation of culturally literate students in General Hypothesis 5B and in General Hypothesis 5D. But General Hypothesis 5E revealed a common factor model, the Practical-Academic Factor Model, consisting of a Practical Factor (driver education, health, home economics, and physical education) and an Academic Factor (English, foreign language, mathematics, science, and social studies), that was shared by parents', teachers', and culturally literate students' lifelong adaptability ratings of general school subjects. It was not shared by all students' lifelong adaptability ratings of general school subjects. In other words, General Hypothesis 5E's results supported greater overall respondent agreement in comparisons of respondent groups in which one of the respondent groups was culturally literate students, rather than all students, thereby supporting a popular approach for revising curricula to improve lifelong adaptability from a cultural literacy perspective.

These findings generated some interesting curricular implications. To begin, if educators assume that intelligence does manifest itself through cultural literacy and that cultural literacy enhances lifelong adaptability, then the curricular implication is clear—cultural literacy ought to be taught in the classroom. This implication appears feasible for the classroom because cultural literacy entails achieving basic cultural information (Hirsch, 1987) which can be successfully taught to students (M. S. Smith et al., 1990) and for which there existed a now out-of-print achievement test (Riverside Publishing Company, 1989). Moreover, cultural literacy may not be the perspective from which to identify a lifelong adaptability curriculum, but cultural literacy itself may be the lifelong adaptability curriculum. Additionally, lack of an overall demographic effect suggested that students had judged the lifelong adaptability value of their general school subjects independent of the overall influence of their genders, family structures, parental ages, and parental educational levels. This conclusion implied that perhaps educators need not battle potential demographic effects (Boocock, 1980; J. S. Coleman et al., 1966; Dumaret, 1985) in encouraging students to appreciate the lifelong adaptability value of formal education via the general school subjects.

From a professional education perspective, if teachers and administrators wish consensus regarding a lifelong adaptability curriculum, then they must undertake the formidable task of persuading the public to view curriculum somewhat differently, they must rethink their own curricular views, or they must accept a compromise between the public's views and their own views.

From a marketing perspective, perhaps The Customer Is Always Right philosophy should be espoused by educators because those who paid the taxes (parents) and those who received the services (students) shared the most compatible views regarding a lifelong adaptability curriculum.

From an educational administration perspective, if administrators wish consensus regarding a lifelong adaptability curriculum, then they must undertake the formidable task of persuading parents, teachers, and students to view curriculum somewhat differently, they must rethink their own curricular views, or they must accept a compromise between parents', teachers', and students' views and their own views. For administrators, the most practical approach appears to be rethinking their own curricular views.

But from the present study's perspective, a cultural literacy perspective, there already exists a *partial* consensus whereby the debut of a lifelong adaptability curriculum might be politically expeditious with a minimum of resistance from any of the four respondent groups (parents, teachers, administrators, and students). It appears that such a curriculum would emphasize English, computer technology, foreign language, mathematics, science, and social studies within an Academic aspect of the curriculum along with driver education, health, home economics, and physical education within a Practical aspect of the curriculum.

Furthermore, if other research respondents are considering lifelong adaptability when they respond to their respective studies, then implementing a publicly acceptable lifelong adaptability curriculum from a cultural literacy perspective may be politically expeditious not only in Millcreek Township School District but also in other districts, for it bodes well that some of the present study's results apparently resemble major studies' results (Gallup, 1981; Survey Research Systems, 1990).

Four directions for future research present themselves. First, future research ought to examine more narrowly the intelligence-cultural literacy relationship to address the possibility that standardized intelligence tests actually measure cultural knowledge rather than native intelligence. This possibility was suggested by Kosmoski et al. (1990). Moreover, an alleged cultural bias of intelligence testing has been speculated by researchers (Brescia et al., 1988; S. Graham et al., 1989; Nash, 1984; G. M. Pugh et al., 1991; Weinberg et al., 1992).

Second, the understanding of lifelong adaptability may be enhanced by research perspectives besides a cultural literacy perspective. Some other logical perspectives include an intelligence perspective (Church et al., 1985; J. E. Hunter, 1986); an academic skills perspective such as a communication skills perspective (Carnevale, 1991a, 1991b; Illinois University Department of Vocational and Technical Education, 1989); and a social competence perspective (S. H. McConaughy et al., 1986; Wentzel, 1991).

Third, student adjustment to change, especially within the workplace, over the course of an entire lifetime may be better understood through a longitudinal study of lifelong adaptability, which could reveal relative long-term advantages of certain general school subjects or which may identify a fresh perspective, overlooked at present, from which to view lifelong adaptability.

Fourth, consensus on a lifelong adaptability curriculum across all four of the key respondent groups (parents, teachers, administrators, and students) within an educational system could be more readily achieved if their lifelong adaptability expectations relative to their perceptions of the future were better understood. Such understanding may reveal insights or misconceptions influencing their lifelong adaptability ratings of general school subjects. Additionally, such understanding would permit any insights concerning the future to be shared with the other respondent groups and any misconceptions concerning documented future trends to be addressed accordingly. Consequently, studies like the present study might realize consensus or nearer consensus on a lifelong adaptability curriculum across all four of the key respondent groups (parents, teachers, administrators, and students) within an educational system.

The current study's implications and suggested future research areas could advance the identification of a lifelong adaptability curriculum to help prepare students for a predictably unstable 21st century on the cusp of the third millennium.

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APPENDICES

APPENDIX 1

GENERAL SCHOOL SUBJECTS OF TWELVE SECONDARY SCHOOLS IN THE MILLCREEK TOWNSHIP SCHOOL DISTRICT VICINITY

GEN. SCHOOL SUBJECT / SCHOOL	1	2	3	4	5	6	7	8	9	10	11	12	Total of 12
Agriculture	X			X	X					X	X		5
Art	X	X	X	X	X	X	X	X	X	X	X	X	12
Business	X	X	X	X	X	X	X	X	X	X	X	X	12
Computer Technology	X	X	X	X	X	X	X	X	X	X	X	X	12
Driver Education	X	X	X	X	X	X	X	X	X	X	X		11
English	X	X	X	X	X	X	X	X	X	X	X	X	12
Foreign Language	X	X	X	X	X	X	X	X	X	X	X	X	12
Health	X	X	X	X	X	X	X	X	X	X	X	X	12
Home Economics	X	X	X	X	X	X	X	X	X	X	X	X	12
Industrial Technology	X	X	X	X	X	X	X	X	X	X	X	X	12
Mathematics	X	X	X	X	X	X	X	X	X	X	X	X	12
Music	X	X	X	X	X	X	X	X	X	X	X	X	12
Physical Education	X	X	X	X	X	X	X	X	X	X	X	X	12
Science	X	X	X	X	X	X	X	X	X	X	X	X	12
Social Studies	X	X	X	X	X	X	X	X	X	X	X	X	12
Vocational-Technical	X	X	X	X	X	X	X	X	X	X	X	X	12

School Codes

1 = Corry
2 = East
3 = Fairview
4 = Fort LeBoeuf
5 = General McLane
6 = Girard
7 = Harbor Creek
8 = Iroquois
9 = McDowell
10 = Northwestern
11 = Seneca
12 = Strong Vincent

Note: This table was constructed by the researcher using unpublished raw data (Northwest Tri-County Intermediate Unit 5, 1989).

APPENDIX 2

LIFELONG ADAPTABILITY SURVEY PILOT COVER LETTER

LIFELONG
ADAPTABILITY
RESEARCH

April 28, 1994

Dear Pilot Group Member:

Enclosed is a pilot Lifelong Adaptability Survey. Your participation in this university-approved study is entirely voluntary. Directions are included. It would be appreciated if you would take time to respond to this trial survey regarding students' ability to adapt to change, especially in the workplace, over the course of their lifetimes.

Please place your name on the survey so that you may receive a follow-up thank you letter from the researcher during the month of June this year; so that, if the need arises, the researcher can double check with you regarding any suggestions you make to improve this survey; and so that your data may be withdrawn if you wish to do so at any time without penalty. This pilot survey is confidential; its response tabulations and any ensuing publications are anonymous and confidential. Following the directions as closely as possible, please try to respond to every item. Writing anywhere on the survey itself, make any notes that you wish concerning unclear or confusing items. Your suggestions for wording any items differently would be appreciated. Please return your survey sealed in its matching envelope.

Parents, students, teachers, and administrators are being asked to complete similar pilot surveys in an attempt to determine how well this Lifelong Adaptability Survey functions in gathering an overview of opinions on lifelong adaptability.

If you have any questions concerning this pilot Lifelong Adaptability Survey, or if you wish at any time without penalty to withdraw your data from this pilot study, please contact the pilot survey administrator, Dr. Don Beckman of Edinboro University, at 732-2801. Thank you for your response. A follow-up thank you letter from the researcher will arrive by mail during the month of June this year.

Sincerely,
LIFELONG ADAPTABILITY RESEARCH PILOT
c/o Dr. Don Beckman
Professor of Education
Director of School Administration/Supervision
312 Butterfield Hall
Edinboro University of Pennsylvania
Edinboro, PA 16444

CONFIDENTIAL

APPENDIX 3

LIFELONG ADAPTABILITY SURVEY PILOT FOLLOW-UP LETTER

LIFELONG
ADAPTABILITY
RESEARCH

June 30, 1994

Dear Pilot Group Respondent:

Thank you for completing the Lifelong Adaptability Survey pilot in April. Along with the *Cultural Literacy Test* and other data, it is one component of a larger educational study sanctioned by The University of Akron in partial fulfillment of requirements for a Ph.D. in Secondary Education.

Millcreek School District and The University of Akron granted my request to remain an anonymous researcher during the data collection phase of this Lifelong Adaptability Research. I wished to maintain anonymity due to the fact that research of this nature, in which respondents rate general school subjects, can produce tainted data if respondents know that the researcher is an English teacher, that the researcher holds a degree in computer technology, that the researcher is in secondary education, etc. In other words, any personal knowledge of the researcher can contaminate the database.

My formal dissertation defense may not occur until the spring of 1996. In the interim, if you have any questions regarding this Lifelong Adaptability Research pilot and its university approval, or if you wish at any time without penalty to withdraw your data from this pilot study, please write to the Institutional Review Board for the Protection of Human Subjects, c/o Mary Dingler, Research Services, The University of Akron, Akron, OH 44325-2102 or telephone Mary Dingler at (216)972-7774.

Thank you again for your valuable contribution to my Lifelong Adaptability Research.

With kindest regards,

John T. Moyer
University of Akron Ph.D. Student
Millcreek School District English Teacher

APPENDIX 4

PARENTAL PERMISSION LETTER AND PERMISSION SLIP

3740 West 26th Street
Erie, Pennsylvania 16506-2096
(814) 835-5300

April 22, 1994

Dear Parent(s)/Guardian(s):

The Millcreek School Board has granted permission for McDowell High School to administer to the Class of 1994 a 50-minute standardized test entitled *Cultural Literacy Test*, which measures general knowledge. It is one component of a larger, university-approved educational study, and the school district itself is interested in learning the level of general knowledge of its seniors. The *Cultural Literacy Test* includes questions about the humanities, social sciences, and sciences. Within the humanities section are five general knowledge questions on the Bible; these questions do not promote any religious beliefs but rather deal with general knowledge information. The *Cultural Literacy Test* is of no cost to either your student or you. Results of the test do not in any way affect graduation, transcript grades, or class rank. The test is scheduled to be administered during regular school hours to mainstream McDowell seniors in May 1994.

A second component of this larger study is the results from the *Differential Aptitude Tests* (*DAT*) which your senior took during his or her tenth grade year.

A third component of the study, to be completed at school next month, is a survey on general school subjects to ask for your senior's opinion on preparing students to adapt to change, especially in the workplace, over the course of their lifetimes.

A fourth component of this educational research is a similar parent survey, which will arrive by mail at your residence sometime during May of this year.

The *Cultural Literacy Test* results entered in the research database, all tabulations, and any ensuing research publications are confidential and anonymous. This applies equally to the *DAT* results, the student opinion survey, and the upcoming parent survey.

Participation in this study using the *Cultural Literacy Test*, tenth grade *DAT* results, the student opinion survey, and the upcoming parent survey is entirely voluntary. If you give permission for your senior to sit for the *Cultural Literacy Test*, for his or her *DAT* results to be used in this educational research, and for your senior to complete the opinion survey on general school subjects at school next month, please sign the enclosed permission slip and return it in the postage-paid envelope addressed to Mr. Ed Grzelak at McDowell High School.

If you have any questions, or if at any time without penalty you wish to withdraw your data from this study, please feel free to contact Dr. R. Alan Zito, Supervisor of Secondary Education, in Millcreek Education Center at 835-5369. Thank you for your cooperation. A follow-up thank you letter from the researcher will arrive by mail during June of this year.

Yours truly,

Edward Grzelak

Mr. Ed Grzelak
McDowell High School Principal

cc: Mr. Agnew, Superintendent
Dr. Zito, Secondary Supervisor

April 25, 1994

My McDowell senior, ______________________, has permission to
(student name*)
take part in this university-approved and school district-approved educational study involving the *Cultural Literacy Test*, his or her tenth grade *DAT* results, and a student opinion survey on general school subjects. I understand that at any time without penalty my senior's data may be withdrawn from this study.

____
(parent/guardian signature)

*If you have more than one McDowell senior, please list all their names.

(Please return this signed permission slip in the enclosed postage-paid envelope addressed to Mr. Grzelak at McDowell High School. Please do <u>not</u> send it to school with your student.)

APPENDIX 5

PARENT COVER LETTER AND LIFELONG ADAPTABILITY SURVEY (PARENT)

LIFELONG
ADAPTABILITY
RESEARCH

May 20, 1994

Dear Parent(s)/Guardian(s):

In April of this year, you received from McDowell High School a letter explaining that Millcreek School Board had approved the *Cultural Literacy Test* for this year's seniors as part of a larger educational study, that your permission was requested for your senior to sit for that test, that your permission was requested for your senior's tenth grade *DAT* results to be used in the study, that your permission was requested for your senior to complete an opinion survey on general school subjects, and that a parent survey component of that larger study would arrive during this month. This mailing contains that parent survey which will finish this comprehensive, university-approved lifelong adaptability study.

Enclosed are Lifelong Adaptability Survey forms and a matching white postage-paid return envelope. Your participation in this survey is entirely voluntary. Directions are included. Whether or not you permitted your senior to participate in this study, it would be appreciated if you would take time to respond regarding students' ability to adapt to change, especially in the workplace, over the course of their lifetimes.

The Lifelong Adaptability Survey forms show the name of your McDowell High School senior. Both the survey forms and the matching white return envelope are number coded and color coded (white). Therefore, please do not place your name on your survey(s) or on the return envelope; only the number code and color code will be used for research purposes. All data will be reported as group-level statistics, not as individual respondent statistics. This survey is confidential; its response tabulations and any ensuing publications are anonymous and confidential. Millcreek Education Center has agreed to collect and to channel your sealed responses.

Parents, students, teachers, and administrators are being asked to complete similar surveys in an attempt to gain an overview of opinions on lifelong adaptability. Please do not allow anyone other than a parent/stepparent/guardian/foster parent/ etc. of the indicated high school senior to complete the enclosed survey forms. Following the directions as closely as possible, please try to respond to every item. Use the enclosed postage-paid white envelope to return your survey. Please do not send it to school with your student.

If you have any questions concerning this Lifelong Adaptability Survey, or if you wish at any time without penalty to withdraw your data from this study, please contact Dr. R. Alan Zito in Millcreek Education Center at 835-5369. Thank you for your response. A follow-up thank you letter from the researcher will arrive by mail during the month of June this year.

Sincerely,
LIFELONG ADAPTABILITY RESEARCH
c/o Dr. R. A. Zito
Supervisor of Sec. Ed.
3740 West 26th Street
Erie, PA 16506-2096

CONFIDENTIAL

Lifelong Adaptability Survey
(Parent)

To the Parent(s)/Guardian(s) of

In order to meet the demands of an ever-changing society and workplace, your opinion is needed regarding the contribution of general school subjects to students' ability to adapt to inevitable change over the course of their lifetimes. In other words, this survey will indicate your "lifelong adaptability" ratings of different school subjects. This will be explained in detail later in the survey.

This survey is confidential. Your name, address, and student's name will not be revealed.

If, at this mailing address, the student currently lives within a one-parent/one-stepparent/one-guardian/one-foster parent family structure, then would that one parent/stepparent/guardian/foster parent please return one completed survey form in the enclosed postage-paid white envelope; the second survey form may be discarded.

If, at this mailing address, the student currently lives within a two-parent/two-stepparent/two-guardian/two-foster parent family structure, then would each parent/stepparent/guardian/foster parent please complete a separate survey form; both survey forms should be returned in the enclosed postage-paid white envelope.

If, at this mailing address, the student currently lives within some other family structure (a multiple-guardian group home, etc.), then would each of the two guardians/adult caretakers/etc. closest to the student please complete a separate survey form; both survey forms should be returned in the enclosed postage-paid white envelope. (If there is only one guardian/adult caretaker/etc. within this "other" family structure, would that one guardian/adult caretaker/etc. please complete one survey form and return it in the enclosed postage-paid white envelope; the second survey form may be discarded.)

Beginning on this page, this survey consists of Sections 1 and 2. Following the directions as closely as possible, please try to respond to every item.

Section 1

In this section, please provide the following information. Place a check mark (√) beside the appropriate category.

FAMILY STRUCTURE (THE STUDENT IS CURRENTLY LIVING WITHIN WHICH OF THE FOLLOWING AVAILABLE FAMILY STRUCTURES?)

_____ 1. FEMALE ONLY PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC.

_____ 2. MALE ONLY PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC.

_____ 3. BOTH FEMALE AND MALE PARENTS/STEPPARENTS/GUARDIANS/FOSTER PARENTS/ETC.

_____ 4. OTHER (MULTIPLE-GUARDIAN GROUP HOME, FOSTER HOME, ETC.)

GENDER OF PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC. COMPLETING *THIS* SURVEY FORM

_____ 1. FEMALE PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC.

_____ 2. MALE PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC.

AGE RANGE OF PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC. COMPLETING *THIS* SURVEY FORM

_____ 1. 20-29 YEARS OF AGE

_____ 2. 30-39 YEARS OF AGE

_____ 3. 40-49 YEARS OF AGE

_____ 4. 50-59 YEARS OF AGE

_____ 5. 60-69 YEARS OF AGE

_____ 6. 70-79 YEARS OF AGE

_____ 7. 80-89 YEARS OF AGE

_____ 8. 90- 100 YEARS OF AGE

FORMAL EDUCATION OF PARENT/STEPPARENT/GUARDIAN/FOSTER PARENT/ETC. COMPLETING *THIS* SURVEY FORM

_____ 1. ELEMENTARY, JUNIOR HIGH, OR SENIOR HIGH SCHOOL BUT NO HIGH SCHOOL DIPLOMA

_____ 2. HIGH SCHOOL DIPLOMA OR ITS EQUIVALENT (G.E.D., ETC.)

_____ 3. ADULT VOCATIONAL SCHOOL DEGREE AFTER HIGH SCHOOL DIPLOMA

_____ 4. COLLEGE OR UNIVERSITY ASSOCIATE DEGREE

_____ 5. BACHELOR'S DEGREE

_____ 6. MASTER'S DEGREE

_____ 7. LAW DEGREE

_____ 8. EARNED DOCTORATE (M.D., D.D.S., PH.D., J.D., ED.D., ETC.)

Please proceed to Section 2 beginning on page 4.

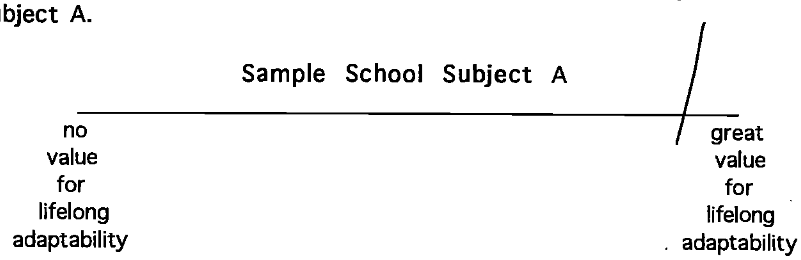
Section 2

As mentioned earlier, your opinion is needed regarding the impact of various school subjects on students' ability to adapt to inevitable change over the course of their lifetimes. Section 2 will indicate your "lifelong adaptability" ratings of different school subjects.

The 15 general school subjects in this section of the survey are commonly studied in the Millcreek School District vicinity. To indicate your rating of each general school subject's contribution to students' lifelong adaptability, simply place a pen or pencil mark vertically on the horizontal rating scale ranging from "no value for lifelong adaptability" to "great value for lifelong adaptability."

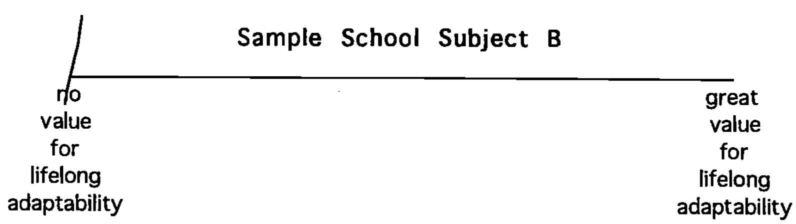
Here is a sample. The vertical pen or pencil mark shows a high, but not the highest possible, lifelong adaptability rating for Sample School Subject A.

Sample School Subject A



Here is another sample. The vertical pen or pencil mark in this sample shows the lowest possible lifelong adaptability rating for Sample School Subject B.

Sample School Subject B



Here is a final sample. The vertical pen or pencil mark in this sample shows a medium lifelong adaptability rating for Sample School Subject C.

Sample School Subject C

no value for lifelong adaptability — great value for lifelong adaptability

Assume, for the purposes of this survey, that it is possible to rate school subjects' value for lifelong adaptability. Beginning on page 6, please rate the following 15 alphabetized general school subjects by placing a pen or pencil mark vertically <u>anywhere</u> along the horizontal rating scale to indicate your rating of that particular school subject's contribution to students' lifelong adaptability. Even if you have not personally taken some of the 15 general school subjects listed on the following pages, please try to rate each general school subject for its contribution to students' lifelong adaptability. An open comment section is provided at the end of this Lifelong Adaptability Survey.

Lifelong adaptability is defined as the ability to adapt to change, especially within the workplace, over an entire lifetime.

* *

1. Art
(crafts, fine arts, graphic arts, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

2. Business
(accounting, job skills, law, shorthand, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

3. Computer Technology
(programming, word processing, etc. separately or in any subject area)

no value for lifelong adaptability	great value for lifelong adaptability

* *

4. Driver Education
(classroom instruction, driving, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

5. English
(composition, grammar, literature, speech, etc.)

no value for lifelong adaptability — great value for lifelong adaptability

* *

6. Foreign Language
(French, German, Latin, Spanish, etc.)

no value for lifelong adaptability — great value for lifelong adaptability

* *

7. Health
(anatomy, hygiene, etc.)

no value for lifelong adaptability — great value for lifelong adaptability

* *

8. Home Economics
(clothing, foods, etc.)

no value for lifelong adaptability — great value for lifelong adaptability

*

9. Industrial Technology
(electronics, mechanical drawing, metalworking, woodworking, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

10. Mathematics
(algebra, geometry, trigonometry, calculus, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

11. Music
(band, chorus, orchestra, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

12. Physical Education
(aquatics, gym class, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

13. Science

(biology, chemistry, earth and space science, nuclear physics, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

14. Social Studies

(cultures, economics, geography, government, history, psychology, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

15. Vocational-Technical

(automotive, carpentry, commercial art, computer programming, cosmetology, drafting, electromechanical, graphics, health assistant, maintenance, masonry, tool and dye, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

Please use the back of this page for any comments you wish to add and return your survey(s) sealed in the enclosed postage-paid white envelope to Lifelong Adaptability, c/o Dr. R. A. Zito, Supervisor of Sec. Ed., 3740 West 26th Street, Erie, PA 16506-2096. Thank you for your information, ratings, and any comments.

CONFIDENTIAL

APPENDIX 6

TEACHER COVER LETTER, LIFELONG ADAPTABILITY SURVEY (TEACHER),

AND SAMPLE ADDITIONAL SPECIALIZED LETTER

LIFELONG
ADAPTABILITY
RESEARCH

May 17, 1994

Dear Faculty Member:

Here is a Lifelong Adaptability Survey with its matching return envelope. Your participation in this university-approved study is entirely voluntary. Directions are included. It would be appreciated if you would take time to respond regarding students' ability to adapt to change, especially in the workplace, over the course of their lifetimes.

The Lifelong Adaptability Survey and its matching return envelope are name coded, color coded (gray), and number coded for research purposes; only the color code and number code will be used in research tabulations. All data will be reported as group-level statistics, not as individual respondent statistics. This survey is confidential; its response tabulations and any ensuing publications are anonymous and confidential. Millcreek Education Center has agreed to collect and to channel your sealed responses.

Teachers, administrators, students, and parents are being asked to complete similar surveys in an attempt to gain an overview of opinions on lifelong adaptability. Following the directions as closely as possible, please try to respond to every item. Please return your completed survey sealed in its matching envelope.

If you have any questions concerning this Lifelong Adaptability Survey, or if you wish at any time without penalty to withdraw your data from this study, please contact Dr. R. Alan Zito at 835-5369. Thank you for your response. A follow-up thank you letter from the researcher will arrive by mail during the month of June this year.

Sincerely,

Mr. Gary Rathbun
MEA President

Mr. Robert J. Agnew
Superintendent

CONFIDENTIAL

Lifelong Adaptability Survey
(Teacher)

To

In order to meet the demands of an ever-changing society and workplace, your opinion is needed regarding the contribution of general school subjects to students' ability to adapt to inevitable change over the course of their lifetimes. In other words, this survey will indicate your "lifelong adaptability" ratings of different school subjects. This will be explained in detail later in the survey.

<u>This survey is confidential. Following the directions as closely as possible, please try to respond to every item.</u>

The 15 general school subjects in this survey are commonly studied in the Millcreek School District vicinity. To indicate your rating of each general school subject's contribution to students' lifelong adaptability, simply place a pen or pencil mark vertically on the horizontal rating scale ranging from "no value for lifelong adaptability" to "great value for lifelong adaptability."

Here is a sample. The vertical pen or pencil mark shows a high, but not the highest possible, lifelong adaptability rating for Sample School Subject A.

Sample School Subject A

no value for lifelong adaptability ——————————————————/—— great value for lifelong adaptability

Here is another sample. The vertical pen or pencil mark in this sample shows the lowest possible lifelong adaptability rating for Sample School Subject B.

Sample School Subject B

no value for lifelong adaptability	great value for lifelong adaptability

Here is a final sample. The vertical pen or pencil mark in this sample shows a medium lifelong adaptability rating for Sample School Subject C.

Sample School Subject C

no value for lifelong adaptability	great value for lifelong adaptability

Assume, for the purposes of this survey, that it is possible to rate school subjects' value for lifelong adaptability. Beginning on page 3, please rate the following 15 alphabetized general school subjects by placing a pen or pencil mark vertically <u>anywhere</u> along the horizontal rating scale to indicate your rating of that particular school subject's contribution to students' lifelong adaptability. Even if you have not personally taken some of the 15 general school subjects listed on the following pages, please try to rate each general school subject for its contribution to students' lifelong adaptability. An open comment section is provided at the end of this Lifelong Adaptability Survey.

Lifelong adaptability is defined as the ability to adapt to change, especially within the workplace, over an entire lifetime.

* *

1. Art
(crafts, fine arts, graphic arts, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

2. Business
(accounting, job skills, law, shorthand, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

3. Computer Technology
(programming, word processing, etc. separately or in any subject area)

no value for lifelong adaptability	great value for lifelong adaptability

* *

4. Driver Education
(classroom instruction, driving, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

5. English
(composition, grammar, literature, speech, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

6. Foreign Language
(French, German, Latin, Spanish, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

7. Health
(anatomy, hygiene, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

8. Home Economics
(clothing, foods, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

9. Industrial Technology
(electronics, mechanical drawing, metalworking, woodworking, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

10. Mathematics
(algebra, geometry, trigonometry, calculus, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

11. Music
(band, chorus, orchestra, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

12. Physical Education
(aquatics, gym class, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

13. Science
(biology, chemistry, earth and space science, nuclear physics, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

14. Social Studies
(cultures, economics, geography, government, history, psychology, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

15. Vocational-Technical
(automotive, carpentry, commercial art, computer programming, cosmetology, drafting, electromechanical, graphics, health assistant, maintenance, masonry, tool and dye, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

Please use the back of this page for any comments you wish to add and return your survey sealed in its matching gray envelope to Lifelong Adaptability, c/o Dr. R. A. Zito, Supervisor of Secondary Education, 3740 West 26th Street, Erie, PA 16506-2096. Thank you for your ratings and any comments.

CONFIDENTIAL

LIFELONG
ADAPTABILITY
RESEARCH

May 17, 1994

Dear :

Because you are the parent of a McDowell senior, you are not receiving a teacher survey to complete. Instead you are included in the parent survey group consisting of all parents of McDowell seniors.

Accordingly, a more detailed parent survey will arrive by mail at your home address. It would be greatly appreciated if you would please complete it when it arrives.

Sincerely,
LIFELONG ADAPTABILITY RESEARCH

APPENDIX 7

ADMINISTRATOR COVER LETTER AND LIFELONG

ADAPTABILITY SURVEY (ADMINISTRATOR)

LIFELONG
ADAPTABILITY
RESEARCH

May 16, 1994

Dear Administrator:

Here is a Lifelong Adaptability Survey with its matching return envelope. Your participation in this university-approved study is entirely voluntary. Directions are included. It would be appreciated if you would take time to respond regarding students' ability to adapt to change, especially in the workplace, over the course of their lifetimes.

The Lifelong Adaptability Survey and its matching return envelope are name coded, color coded (pink), and number coded for research purposes; only the color code and number code will be used in research tabulations. All data will be reported as group-level statistics, not as individual respondent statistics. This survey is confidential; its response tabulations and any ensuing publications are anonymous and confidential. Millcreek Education Center has agreed to collect and to channel your sealed responses. We, the undersigned, have approved this survey.

Administrators, students, teachers, and parents are being asked to complete similar surveys in an attempt to gain an overview of opinions on lifelong adaptability. Following the directions as closely as possible, please try to respond to every item. Please return your completed survey sealed in its matching envelope.

If you have any questions concerning this Lifelong Adaptability Survey, or if you wish at any time without penalty to withdraw your data from this study, please contact Dr. R. Alan Zito at 835-5369. Thank you for your response. A follow-up thank you letter from the researcher will arrive by mail during the month of June this year.

Sincerely,

Mr. Robert J. Agnew
Superintendent of Schools

Mr. Gary Rathbun
MEA President

CONFIDENTIAL

Lifelong Adaptability Survey
(Administrator)

To

In order to meet the demands of an ever-changing society and workplace, your opinion is needed regarding the contribution of general school subjects to students' ability to adapt to inevitable change over the course of their lifetimes. In other words, this survey will indicate your "lifelong adaptability" ratings of different school subjects. This will be explained in detail later in the survey.

This survey is confidential. Following the directions as closely as possible, please try to respond to every item.

The 15 general school subjects in this survey are commonly studied in the Millcreek School District vicinity. To indicate your rating of each general school subject's contribution to students' lifelong adaptability, simply place a pen or pencil mark vertically on the horizontal rating scale ranging from "no value for lifelong adaptability" to "great value for lifelong adaptability."

Here is a sample. The vertical pen or pencil mark shows a high, but not the highest possible, lifelong adaptability rating for Sample School Subject A.

Sample School Subject A

no value for lifelong adaptability	great value for lifelong adaptability

Here is another sample. The vertical pen or pencil mark in this sample shows the lowest possible lifelong adaptability rating for Sample School Subject B.

Sample School Subject B

no value for lifelong adaptability	great value for lifelong adaptability

Here is a final sample. The vertical pen or pencil mark in this sample shows a medium lifelong adaptability rating for Sample School Subject C.

Sample School Subject C

no value for lifelong adaptability	great value for lifelong adaptability

Assume, for the purposes of this survey, that it is possible to rate school subjects' value for lifelong adaptability. Beginning on page 3, please rate the following 15 alphabetized general school subjects by placing a pen or pencil mark vertically <u>anywhere</u> along the horizontal rating scale to indicate your rating of that particular school subject's contribution to students' lifelong adaptability. Even if you have not personally taken some of the 15 general school subjects listed on the following pages, please try to rate each general school subject for its contribution to students' lifelong adaptability. An open comment section is provided at the end of this Lifelong Adaptability Survey.

Lifelong adaptability is defined as the ability to adapt to change, especially within the workplace, over an entire lifetime.

* *

1. Art
(crafts, fine arts, graphic arts, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

2. Business
(accounting, job skills, law, shorthand, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

3. Computer Technology
(programming, word processing, etc. separately or in any subject area)

no value for lifelong adaptability	great value for lifelong adaptability

* *

4. Driver Education
(classroom instruction, driving, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

5. English
(composition, grammar, literature, speech, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

6. Foreign Language
(French, German, Latin, Spanish, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

7. Health
(anatomy, hygiene, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

8. Home Economics
(clothing, foods, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

9. Industrial Technology
(electronics, mechanical drawing, metalworking, woodworking, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

10. Mathematics
(algebra, geometry, trigonometry, calculus, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

11. Music
(band, chorus, orchestra, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

12. Physical Education
(aquatics, gym class, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

13. Science
(biology, chemistry, earth and space science, nuclear physics, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

14. Social Studies
(cultures, economics, geography, government, history, psychology, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

15. Vocational-Technical
(automotive, carpentry, commercial art, computer programming, cosmetology, drafting, electromechanical, graphics, health assistant, maintenance, masonry, tool and dye, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

Please use the back of this page for any comments you wish to add and return your survey sealed in its matching pink envelope to Lifelong Adaptability, c/o Dr. R. A. Zito, Supervisor of Secondary Education, 3740 West 26th Street, Erie, PA 16506-2096. Thank you for your ratings and any comments.

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APPENDIX 8

STUDENT COVER LETTER AND LIFELONG ADAPTABILITY SURVEY (STUDENT)

LIFELONG
ADAPTABILITY
RESEARCH

May 18, 1994

Dear Student:

Here is a Lifelong Adaptability Survey with its matching return envelope. Your participation in this university-approved study is entirely voluntary. Directions are included. It would be appreciated if you would take time to respond regarding students' ability to adapt to change, especially in the workplace, over the course of their lifetimes.

The Lifelong Adaptability Survey and its matching return envelope are name coded, color coded (yellow), and number coded for research purposes; only the color code and number code will be used in research tabulations. All data will be reported as group-level statistics, not as individual respondent statistics. This survey is confidential; its response tabulations and any ensuing publications are anonymous and confidential. Millcreek Education Center has agreed to collect and to channel your sealed responses.

Students, teachers, parents, and principals are being asked to complete similar surveys in an attempt to gain an overview of opinions on lifelong adaptability. Following the directions as closely as possible, please try to respond to every item. Please return your survey sealed in its matching envelope.

If you have any questions concerning this Lifelong Adaptability Survey, or if you wish at any time without penalty to withdraw your data from this study, please contact Dr. R. Alan Zito in Millcreek Education Center at 835-5369. Thank you for your response. A follow-up thank you letter from the researcher will arrive by mail during the month of June this year.

Sincerely,
LIFELONG ADAPTABILITY RESEARCH
c/o Dr. R. A. Zito
Supervisor of Sec. Ed.
3740 West 26th Street
Erie, PA 16506-2096

CONFIDENTIAL

Lifelong Adaptability Survey
(Student)

To

In order to meet the demands of an ever-changing society and workplace, your opinion is needed regarding the contribution of general school subjects to students' ability to adapt to inevitable change over the course of their lifetimes. In other words, this survey will indicate your "lifelong adaptability" ratings of different school subjects. This will be explained in detail later in the survey.

This survey is confidential. Following the directions as closely as possible, please try to respond to every item.

The 15 general school subjects in this survey are commonly studied in the Millcreek School District vicinity. To indicate your rating of each general school subject's contribution to students' lifelong adaptability, simply place a pen or pencil mark vertically on the horizontal rating scale ranging from "no value for lifelong adaptability" to "great value for lifelong adaptability."

Here is a sample. The vertical pen or pencil mark shows a high, but not the highest possible, lifelong adaptability rating for Sample School Subject A.

Sample School Subject A

no value for lifelong adaptability — great value for lifelong adaptability

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Here is another sample. The vertical pen or pencil mark in this sample shows the lowest possible lifelong adaptability rating for Sample School Subject B.

Sample School Subject B

no value for lifelong adaptability	great value for lifelong adaptability

Here is a final sample. The vertical pen or pencil mark in this sample shows a medium lifelong adaptability rating for Sample School Subject C.

Sample School Subject C

no value for lifelong adaptability	great value for lifelong adaptability

Assume, for the purposes of this survey, that it is possible to rate school subjects' value for lifelong adaptability. Beginning on page 3, please rate the following 15 alphabetized general school subjects by placing a pen or pencil mark vertically <u>anywhere</u> along the horizontal rating scale to indicate your rating of that particular school subject's contribution to students' lifelong adaptability. Even if you have not personally taken some of the 15 general school subjects listed on the following pages, please try to rate each general school subject for its contribution to students' lifelong adaptability. An open comment section is provided at the end of this Lifelong Adaptability Survey.

Lifelong adaptability is defined as the ability to adapt to change, especially within the workplace, over an entire lifetime.

* *

1. Art
(crafts, fine arts, graphic arts, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

2. Business
(accounting, job skills, law, shorthand, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

* *

3. Computer Technology
(programming, word processing, etc. separately or in any subject area)

no value for lifelong adaptability		great value for lifelong adaptability

* *

4. Driver Education
(classroom instruction, driving, etc.)

no value for lifelong adaptability		great value for lifelong adaptability

*

5. English
(composition, grammar, literature, speech, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

6. Foreign Language
(French, German, Latin, Spanish, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

7. Health
(anatomy, hygiene, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

*

8. Home Economics
(clothing, foods, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

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* *

9. Industrial Technology
(electronics, mechanical drawing, metalworking, woodworking, etc.)

no value for lifelong adaptability	______________________________	great value for lifelong adaptability

* *

10. Mathematics
(algebra, geometry, trigonometry, calculus, etc.)

no value for lifelong adaptability	______________________________	great value for lifelong adaptability

* *

11. Music
(band, chorus, orchestra, etc.)

no value for lifelong adaptability	______________________________	great value for lifelong adaptability

* *

12. Physical Education
(aquatics, gym class, etc.)

no value for lifelong adaptability	______________________________	great value for lifelong adaptability

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* *

13. Science

(biology, chemistry, earth and space science, nuclear physics, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

14. Social Studies

(cultures, economics, geography, government, history, psychology, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

15. Vocational-Technical

(automotive, carpentry, commercial art, computer programming, cosmetology, drafting, electromechanical, graphics, health assistant, maintenance, masonry, tool and dye, etc.)

no value for lifelong adaptability	great value for lifelong adaptability

* *

Please use the back of this page for any comments you wish to add and return your survey sealed in its matching yellow envelope to Lifelong Adaptability, c/o Dr. R. A. Zito, Supervisor of Secondary Education, 3740 West 26th Street, Erie, PA 16506-2096. Thank you for your ratings and any comments.

CONFIDENTIAL

APPENDIX 9

LIFELONG ADAPTABILITY SURVEY RESPONDENT FOLLOW-UP LETTERS

LIFELONG
ADAPTABILITY
RESEARCH

June 30, 1994

Dear Survey Respondent(s):

Thank you for completing the Lifelong Adaptability Survey of last month. Along with the *Cultural Literacy Test* and other data, it is one component of a larger educational study sanctioned by The University of Akron in partial fulfillment of requirements for a Ph.D. in Secondary Education.

Millcreek School District and The University of Akron granted my request to remain an anonymous researcher during the data collection phase of this Lifelong Adaptability Research. I wished to maintain anonymity due to the fact that research of this nature, in which respondents rate general school subjects, can produce tainted data if respondents know that the researcher is an English teacher, that the researcher holds a degree in computer technology, that the researcher is in secondary education, etc. In other words, any personal knowledge of the researcher can contaminate the database.

My formal dissertation defense may not occur until the spring of 1996. In the interim, if you have any questions regarding this Lifelong Adaptability Research and its university approval, or if you wish at any time without penalty to withdraw your data from this study, please write to the Institutional Review Board for the Protection of Human Subjects, c/o Mary Dingler, Research Services, The University of Akron, Akron, OH 44325-2102 or telephone Mary Dingler at (216)972-7774.

Thank you again for your valuable contribution to my Lifelong Adaptability Research.

With kindest regards,

John T. Moyer
University of Akron Ph.D. Student
Millcreek School District English Teacher

Cultural Literacy Test Results

The McDowell graduate named below was given permission to sit for the *Cultural Literacy Test* administered during May of this year. It is a 115-item standardized general knowledge test from the Riverside Publishing Company. Results of that test are reported here as a national percentile rank, not as a raw score.

A national percentile rank, unlike a raw score, indicates a relative score compared with other students who have taken the test. For example, a raw score of 53 out of 115 on the *Cultural Literacy Test* reveals little about a student's performance on the test, whereas a national percentile rank of 35 means that a student did better than 35 percent of those other students who took the test nationally.

The McDowell graduate's *Cultural Literacy Test* national percentile rank is the number at the bottom of the label affixed inside the box on this page.

If you have any questions, please call Dr. R. Alan Zito, Supervisor of Secondary Education, Millcreek Education Center, at 835-5369.

Thank you again.

Cultural Literacy Test Results

The McDowell graduates named below were given permission to sit for the *Cultural Literacy Test* administered during May of this year. It is a 115-item standardized general knowledge test from the Riverside Publishing Company. Results of that test are reported here as national percentile ranks, not as raw scores.

A national percentile rank, unlike a raw score, indicates a relative score compared with other students who have taken the test. For example, a raw score of 53 out of 115 on the *Cultural Literacy Test* reveals little about a student's performance on the test, whereas a national percentile rank of 35 means that a student did better than 35 percent of those other students who took the test nationally.

The McDowell graduates' national percentile ranks are the respective numbers at the bottom of the labels affixed inside the boxes on this page.

If you have any questions, please call Dr. R. Alan Zito, Supervisor of Secondary Education, Millcreek Education Center, at 835-5369.

Thank you again.

LIFELONG
ADAPTABILITY
RESEARCH

June 30, 1994

Dear Faculty Member:

If you chose to participate in the Lifelong Adaptability Survey of last month, your participation was greatly appreciated. Along with the *Cultural Literacy Test* and other data, it is one component of a larger educational study sanctioned by The University of Akron in partial fulfillment of requirements for a Ph.D. in Secondary Education.

Millcreek School District and The University of Akron granted my request to remain an anonymous researcher during the data collection phase of this Lifelong Adaptability Research. I wished to maintain anonymity due to the fact that research of this nature, in which respondents rate general school subjects, can produce tainted data if respondents know that the researcher is an English teacher, that the researcher holds a degree in computer technology, that the researcher is in secondary education, etc. In other words, any personal knowledge of the researcher can contaminate the database.

My formal dissertation defense may not occur until the spring of 1996. In the interim, if you have any questions regarding this Lifelong Adaptability Research and its university approval, or if you wish at any time without penalty to withdraw your data from this study, please write to the Institutional Review Board for the Protection of Human Subjects, c/o Mary Dingler, Research Services, The University of Akron, Akron, OH 44325-2102 or telephone Mary Dingler at (216)972-7774.

Thank you again for your valuable contribution to my Lifelong Adaptability Research.

With kindest regards,

John T. Moyer
University of Akron Ph.D. Student
Millcreek School District English Teacher

LIFELONG
ADAPTABILITY
RESEARCH

June 30, 1994

Dear Administrator:

Thank you for completing the Lifelong Adaptability Survey of last month. Along with the *Cultural Literacy Test* and other data, it is one component of a larger educational study sanctioned by The University of Akron in partial fulfillment of requirements for a Ph.D. in Secondary Education.

Millcreek School District and The University of Akron granted my request to remain an anonymous researcher during the data collection phase of this Lifelong Adaptability Research. I wished to maintain anonymity due to the fact that research of this nature, in which respondents rate general school subjects, can produce tainted data if respondents know that the researcher is an English teacher, that the researcher holds a degree in computer technology, that the researcher is in secondary education, etc. In other words, any personal knowledge of the researcher can contaminate the database.

My formal dissertation defense may not occur until the spring of 1996. In the interim, if you have any questions regarding this Lifelong Adaptability Research and its university approval, or if you wish at any time without penalty to withdraw your data from this study, please write to the Institutional Review Board for the Protection of Human Subjects, c/o Mary Dingler, Research Services, The University of Akron, Akron, OH 44325-2102 or telephone Mary Dingler at (216)972-7774.

Thank you again for your valuable contribution to my Lifelong Adaptability Research.

With kindest regards,

John T. Moyer
University of Akron Ph.D. Student
Millcreek School District English Teacher

APPENDIX 10

FAIRVIEW SCHOOL DISTRICT LETTER OF PILOT APPROVAL

FAIRVIEW SCHOOL DISTRICT

7460 McCray Road
Fairview, Pennsylvania 16415
FAX: (814) 474-5497

Dr. William J. Stockebrand
Superintendent
(814) 474-1311

Dr. Douglas L. Allen
Director of Curriculum & Instruction
(814) 474-1319

April 19, 1994

Institutional Review Board for the Protection of Human Subjects
Research Services
The University of Akron
Akron, Ohio 44325-2102

Dear Committee Members:

Mr. John T. Moyer has been granted permission to conduct a pilot of the Lifelong Adaptability Survey in Fairview School District.

He is maintaining research confidentiality and researcher anonymity by limiting his explanation of the study to Dr. Douglas L. Allen, Director of Curriculum & Instruction. Even Dr. Allen's secretary, for example, has no detailed knowledge of this study. Therefore, if you wish to question any aspect of the proposed research, please contact the researcher directly at unlisted (814) 838-9606.

Thank you for your time and consideration regarding Mr. John T. Moyer's proposed doctoral research.

Sincerely,

Doug L. Allen

Dr. Douglas L. Allen
Director of Curriculum & Instruction

jtm

APPENDIX 11

MILLCREEK TOWNSHIP SCHOOL DISTRICT LETTER OF RESEARCH APPROVAL

3740 West 26th Street
Erie, Pennsylvania 16506-2096
(814) 835-5300

March 10, 1994

Institutional Review Board for the Protection of Human Subjects
Research Services
The University of Akron
Akron, Ohio 44325-2102

Dear Committee Members:

Mr. John T. Moyer has been granted permission to conduct his doctoral research as stipulated in his dissertation proposal.

He is maintaining research confidentiality and researcher anonymity by limiting his explanation of the study to Mr. Robert J. Agnew, Superintendent of Schools, and to Dr. R. Alan Zito, Supervisor of Secondary Education. Even their respective secretaries, for example, have no knowledge of this study. Therefore, if you wish to question any aspect of the proposed research, please contact the researcher directly at unlisted (814) 838-9606.

Thank you for your time and consideration regarding Mr. John T. Moyer's proposed doctoral research.

Sincerely,

Mr. Robert J. Agnew
Superintendent of Schools

Dr. R. Alan Zito
Supervisor of Secondary Education

jtm

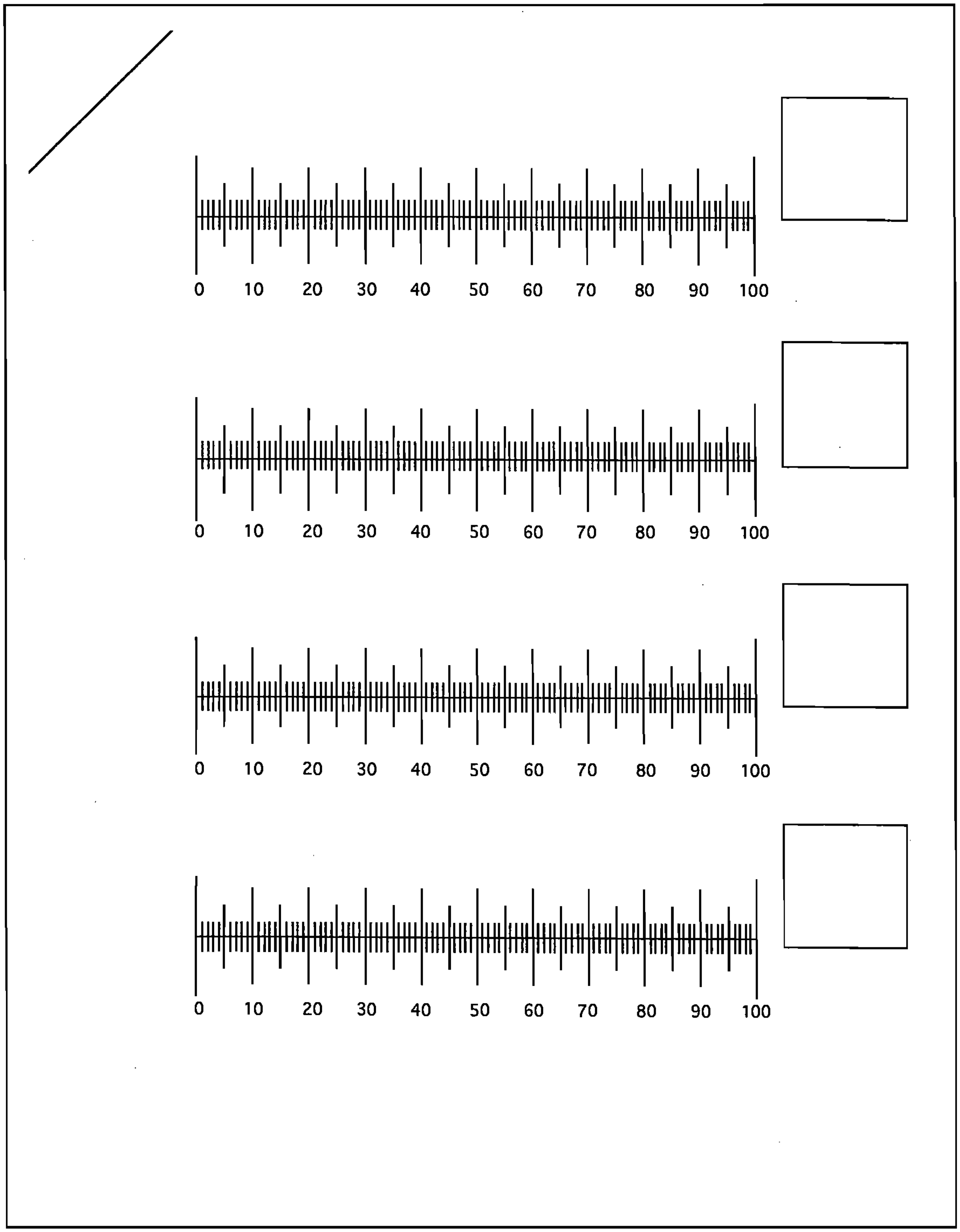
ROBERT J. AGNEW,
Superintendent of Schools
(814) 835-5307
DR. VEREL R. SALMON,
Assistant Superintendent of Schools
(814) 835-5329
DR. KATHLEEN T. BUKOWSKI,
Supervisor of Elementary Education
(814) 835-5328

VINCENT V. SAVELLI,
Supervisor of Administrative Services
(814) 835-5309
DR. R. ALAN ZITO,
Supervisor of Secondary Education
(814)835-5369
R. H. WILGA,
Director of Information Services
(814) 835-5305

DR. FRED W. GARNON JR.,
Director of Business Affairs
(814) 835-5316
THOMAS P. MUDGER,
Director of Finance
(814) 835-5317
MARYANN ANDERSON,
Supervisor of Special Education
(814) 835-5334/5324

APPENDIX 12

LIFELONG ADAPTABILITY SURVEY RATING TEMPLATE


0 10 20 30 40 50 60 70 80 90 100
0 10 20 30 40 50 60 70 80 90 100
0 10 20 30 40 50 60 70 80 90 100
0 10 20 30 40 50 60 70 80 90 100

APPENDIX 13

GENERAL HYPOTHESIS 2 *F* TESTS

R_2: BUSINESS

F test of intelligence covariate (full-versus-restricted model)

$N = \underline{62}$; $df_1 = m_1^* - m_2^* = 3 - 2 = \underline{1}$; $df_2 = N - m_1 = 62 - 3 = \underline{59}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.072 - .061)/1}{(1 - .072)/59} = \frac{.011/1}{.928/59} = \frac{.011}{.016} = .688 = NS$$

R_5: ENGLISH

F test of intelligence covariate (full-versus-restricted model)

$N = \underline{62}$; $df_1 = m_1^* - m_2^* = 3 - 2 = \underline{1}$; $df_2 = N - m_1 = 62 - 3 = \underline{59}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.095 - .092)/1}{(1 - .095)/59} = \frac{.003/1}{.905/59} = \frac{.003}{.015} = .200 = NS$$

R_7: HEALTH

F test of intelligence covariate (full-versus-restricted model)

$N = \underline{62}$; $df_1 = m_1^* - m_2^* = 3 - 2 = \underline{1}$; $df_2 = N - m_1 = 62 - 3 = \underline{59}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.215 - .215)/1}{(1 - .215)/59} = \frac{.000/1}{.785/59} = \frac{.000}{.013} = .000 = NS$$

R_{12}: PHYSICAL EDUCATION

F test of intelligence covariate (full-versus-restricted model)

$N = \underline{62}$; $df_1 = m_1^* - m_2^* = 3 - 2 = \underline{1}$; $df_2 = N - m_1 = 62 - 3 = \underline{59}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.079 - .065)/1}{(1 - .079)/59} = \frac{.014/1}{.921/59} = \frac{.014}{.016} = .875 = NS$$

---

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

APPENDIX 14

GENERAL HYPOTHESIS 4B *F* TESTS

R_{106}: ART

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.046 - .023)/1}{(1 - .046)/41} = \frac{.023/1}{.954/41} = \frac{.023}{.023} = 1.000 = NS$$

R_{107}: BUSINESS

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.057 - .028)/1}{(1 - .057)/41} = \frac{.029/1}{.943/41} = \frac{.029}{.023} = 1.261 = NS$$

R_{108}: COMPUTER TECHNOLOGY

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.050 - .044)/1}{(1 - .050)/41} = \frac{.006/1}{.950/41} = \frac{.006}{.023} = .261 = NS$$

R_{109}: DRIVER EDUCATION

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.017 - .014)/1}{(1 - .017)/41} = \frac{.003/1}{.983/41} = \frac{.003}{.024} = .125 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{110}: ENGLISH

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.170 - .085)/1}{(1 - .170)/41} = \frac{.085/1}{.830/41} = \frac{.085}{.020} = 4.250 = S$$

R_{111}: FOREIGN LANGUAGE

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.007 - .005)/1}{(1 - .007)/41} = \frac{.002/1}{.993/41} = \frac{.002}{.024} = .083 = NS$$

R_{112}: HEALTH

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.082 - .081)/1}{(1 - .082)/41} = \frac{.001/1}{.918/41} = \frac{.001}{.022} = .045 = NS$$

R_{113}: HOME ECONOMICS

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.023 - .023)/1}{(1 - .023)/41} = \frac{.000/1}{.977/41} = \frac{.000}{.024} = .000 = NS$$

---

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{114}: INDUSTRIAL TECHNOLOGY

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.030 - .026)/1}{(1 - .030)/41} = \frac{.004/1}{.970/41} = \frac{.004}{.024} = .167 = NS$$

R_{115}: MATHEMATICS

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.015 - .011)/1}{(1 - .015)/41} = \frac{.004/1}{.985/41} = \frac{.004}{.024} = .167 = NS$$

R_{116}: MUSIC

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.068 - .031)/1}{(1 - .068)/41} = \frac{.037/1}{.932/41} = \frac{.037}{.023} = 1.609 = NS$$

R_{117}: PHYSICAL EDUCATION

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.028 - .023)/1}{(1 - .028)/41} = \frac{.005/1}{.972/41} = \frac{.005}{.024} = .208 = NS$$

---

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{118}: SCIENCE

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.164 - .164)/1}{(1 - .164)/41} = \frac{.000/1}{.836/41} = \frac{.000}{.020} = .000 = NS$$

R_{119}: SOCIAL STUDIES

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.051 - .051)/1}{(1 - .051)/41} = \frac{.000/1}{.949/41} = \frac{.000}{.023} = .000 = NS$$

R_{120}: VOCATIONAL-TECHNICAL

F test of cultural literacy x family structure interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.022 - .019)/1}{(1 - .022)/41} = \frac{.003/1}{.978/41} = \frac{.003}{.024} = .125 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{121}: ART

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.021 - .015)/1}{(1 - .021)/41} = \frac{.006/1}{.979/41} = \frac{.006}{.024} = .250 = NS$$

R_{122}: BUSINESS

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.054 - .051)/1}{(1 - .054)/41} = \frac{.003/1}{.946/41} = \frac{.003}{.023} = .130 = NS$$

R_{123}: COMPUTER TECHNOLOGY

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.071 - .059)/1}{(1 - .071)/41} = \frac{.012/1}{.929/41} = \frac{.012}{.023} = .522 = NS$$

R_{124}: DRIVER EDUCATION

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.014 - .014)/1}{(1 - .014)/41} = \frac{.000/1}{.986/41} = \frac{.000}{.024} = .000 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{125}: ENGLISH

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.089 - .052)/1}{(1 - .089)/41} = \frac{.037/1}{.911/41} = \frac{.037}{.022} = 1.682 = NS$$

R_{126}: FOREIGN LANGUAGE

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.055 - .044)/1}{(1 - .055)/41} = \frac{.011/1}{.945/41} = \frac{.011}{.023} = .478 = NS$$

R_{127}: HEALTH

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.083 - .077)/1}{(1 - .083)/41} = \frac{.006/1}{.917/41} = \frac{.006}{.022} = .273 = NS$$

R_{128}: HOME ECONOMICS

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.137 - .137)/1}{(1 - .137)/41} = \frac{.000/1}{.863/41} = \frac{.000}{.021} = .000 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{129}: INDUSTRIAL TECHNOLOGY

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.046 - .042)/1}{(1 - .046)/41} = \frac{.004/1}{.954/41} = \frac{.004}{.023} = .174 = NS$$

R_{130}: MATHEMATICS

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.035 - .026)/1}{(1 - .035)/41} = \frac{.009/1}{.965/41} = \frac{.009}{.024} = .375 = NS$$

R_{131}: MUSIC

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.053 - .030)/1}{(1 - .053)/41} = \frac{.023/1}{.947/41} = \frac{.023}{.023} = 1.000 = NS$$

R_{132}: PHYSICAL EDUCATION

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.113 - .083)/1}{(1 - .113)/41} = \frac{.030/1}{.887/41} = \frac{.030}{.022} = 1.364 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{133}: SCIENCE

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.082 - .082)/1}{(1 - .082)/41} = \frac{.000/1}{.918/41} = \frac{.000}{.022} = .000 = NS$$

R_{134}: SOCIAL STUDIES

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.035 - .031)/1}{(1 - .035)/41} = \frac{.004/1}{.965/41} = \frac{.004}{.024} = .167 = NS$$

R_{135}: VOCATIONAL-TECHNICAL

F test of cultural literacy x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.057 - .055)/1}{(1 - .057)/41} = \frac{.002/1}{.943/41} = \frac{.002}{.023} = .087 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{136}: ART

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.089 - .072)/1}{(1 - .089)/41} = \frac{.017/1}{.911/41} = \frac{.017}{.022} = .773 = NS$$

R_{137}: BUSINESS

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.087 - .037)/1}{(1 - .087)/41} = \frac{.050/1}{.913/41} = \frac{.050}{.022} = 2.273 = NS$$

R_{138}: COMPUTER TECHNOLOGY

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.023 - .017)/1}{(1 - .023)/41} = \frac{.006/1}{.977/41} = \frac{.006}{.024} = .250 = NS$$

R_{139}: DRIVER EDUCATION

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.102 - .009)/1}{(1 - .102)/41} = \frac{.093/1}{.898/41} = \frac{.093}{.022} = 4.227 = S$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{140}: ENGLISH

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.037 - .037)/1}{(1 - .037)/41} = \frac{.000/1}{.963/41} = \frac{.000}{.023} = .000 = NS$$

R_{141}: FOREIGN LANGUAGE

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.003 - .003)/1}{(1 - .003)/41} = \frac{.000/1}{.997/41} = \frac{.000}{.024} = .000 = NS$$

R_{142}: HEALTH

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.134 - .069)/1}{(1 - .134)/41} = \frac{.065/1}{.866/41} = \frac{.065}{.021} = 3.095 = NS$$

R_{143}: HOME ECONOMICS

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.046 - .021)/1}{(1 - .046)/41} = \frac{.025/1}{.954/41} = \frac{.025}{.023} = 1.087 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{144}: INDUSTRIAL TECHNOLOGY

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.058 - .010)/1}{(1 - .058)/41} = \frac{.048/1}{.942/41} = \frac{.048}{.023} = 2.087 = NS$$

R_{145}: MATHEMATICS

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.013 - .012)/1}{(1 - .013)/41} = \frac{.001/1}{.987/41} = \frac{.001}{.024} = .042 = NS$$

R_{146}: MUSIC

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.056 - .043)/1}{(1 - .056)/41} = \frac{.013/1}{.944/41} = \frac{.013}{.023} = .565 = NS$$

R_{147}: PHYSICAL EDUCATION

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.020 - .020)/1}{(1 - .020)/41} = \frac{.000/1}{.980/41} = \frac{.000}{.024} = .000 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{148}: SCIENCE

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.083 - .081)/1}{(1 - .083)/41} = \frac{.002/1}{.917/41} = \frac{.002}{.022} = .091 = NS$$

R_{149}: SOCIAL STUDIES

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.078 - .053)/1}{(1 - .078)/41} = \frac{.025/1}{.922/41} = \frac{.025}{.022} = 1.136 = NS$$

R_{150}: VOCATIONAL-TECHNICAL

F test of cultural literacy x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.105 - .037)/1}{(1 - .105)/41} = \frac{.068/1}{.895/41} = \frac{.068}{.022} = 3.091 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{151}: ART

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.088 - .014)/1}{(1 - .088)/41} = \frac{.074/1}{.912/41} = \frac{.074}{.022} = 3.364 = NS$$

R_{152}: BUSINESS

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.210 - .142)/1}{(1 - .210)/41} = \frac{.068/1}{.790/41} = \frac{.068}{.019} = 3.579 = NS$$

R_{153}: COMPUTER TECHNOLOGY

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.131 - .083)/1}{(1 - .131)/41} = \frac{.048/1}{.869/41} = \frac{.048}{.021} = 2.286 = NS$$

R_{154}: DRIVER EDUCATION

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.013 - .009)/1}{(1 - .013)/41} = \frac{.004/1}{.987/41} = \frac{.004}{.024} = .167 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{155}: ENGLISH

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.197 - .195)/1}{(1 - .197)/41} = \frac{.002/1}{.803/41} = \frac{.002}{.020} = .100 = \text{NS}$$

R_{156}: FOREIGN LANGUAGE

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.066 - .066)/1}{(1 - .066)/41} = \frac{.000/1}{.934/41} = \frac{.000}{.023} = .000 = \text{NS}$$

R_{157}: HEALTH

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.213 - .212)/1}{(1 - .213)/41} = \frac{.001/1}{.787/41} = \frac{.001}{.019} = .053 = \text{NS}$$

R_{158}: HOME ECONOMICS

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.166 - .150)/1}{(1 - .166)/41} = \frac{.016/1}{.834/41} = \frac{.016}{.020} = .800 = \text{NS}$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{159}: INDUSTRIAL TECHNOLOGY

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.071 - .026)/1}{(1 - .071)/41} = \frac{.045/1}{.929/41} = \frac{.045}{.023} = 1.957 = NS$$

R_{160}: MATHEMATICS

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.035 - .010)/1}{(1 - .035)/41} = \frac{.025/1}{.965/41} = \frac{.025}{.024} = 1.042 = NS$$

R_{161}: MUSIC

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.091 - .053)/1}{(1 - .091)/41} = \frac{.038/1}{.909/41} = \frac{.038}{.022} = 1.727 = NS$$

R_{162}: PHYSICAL EDUCATION

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.079 - .042)/1}{(1 - .079)/41} = \frac{.037/1}{.921/41} = \frac{.037}{.022} = 1.682 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{163}: SCIENCE

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.088 - .079)/1}{(1 - .088)/41} = \frac{.009/1}{.912/41} = \frac{.009}{.022} = .409 = NS$$

R_{164}: SOCIAL STUDIES

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.119 - .096)/1}{(1 - .119)/41} = \frac{.023/1}{.881/41} = \frac{.023}{.021} = 1.095 = NS$$

R_{165}: VOCATIONAL-TECHNICAL

F test of cultural literacy x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.025 - .010)/1}{(1 - .025)/41} = \frac{.015/1}{.975/41} = \frac{.015}{.024} = .625 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{166}: ART

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.025 - .016)/1}{(1 - .025)/41} = \frac{.009/1}{.975/41} = \frac{.009}{.024} = .375 = NS$$

R_{167}: BUSINESS

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.054 - .048)/1}{(1 - .054)/41} = \frac{.006/1}{.946/41} = \frac{.006}{.023} = .261 = NS$$

R_{168}: COMPUTER TECHNOLOGY

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.046 - .046)/1}{(1 - .046)/41} = \frac{.000/1}{.954/41} = \frac{.000}{.023} = .000 = NS$$

R_{169}: DRIVER EDUCATION

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.040 - .034)/1}{(1 - .040)/41} = \frac{.006/1}{.960/41} = \frac{.006}{.023} = .261 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{170}: ENGLISH

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.082 - .028)/1}{(1 - .082)/41} = \frac{.054/1}{.918/41} = \frac{.054}{.022} = 2.455 = NS$$

R_{171}: FOREIGN LANGUAGE

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.060 - .044)/1}{(1 - .060)/41} = \frac{.016/1}{.940/41} = \frac{.016}{.023} = .696 = NS$$

R_{172}: HEALTH

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.086 - .056)/1}{(1 - .086)/41} = \frac{.030/1}{.914/41} = \frac{.030}{.022} = 1.364 = NS$$

R_{173}: HOME ECONOMICS

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.123 - .123)/1}{(1 - .123)/41} = \frac{.000/1}{.877/41} = \frac{.000}{.021} = .000 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{174}: INDUSTRIAL TECHNOLOGY

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.079 - .078)/1}{(1 - .079)/41} = \frac{.001/1}{.921/41} = \frac{.001}{.022} = .045 = NS$$

R_{175}: MATHEMATICS

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.053 - .022)/1}{(1 - .053)/41} = \frac{.031/1}{.947/41} = \frac{.031}{.023} = 1.348 = NS$$

R_{176}: MUSIC

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.014 - .007)/1}{(1 - .014)/41} = \frac{.007/1}{.986/41} = \frac{.007}{.024} = .292 = NS$$

R_{177}: PHYSICAL EDUCATION

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.085 - .074)/1}{(1 - .085)/41} = \frac{.011/1}{.915/41} = \frac{.011}{.022} = .500 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{178}: SCIENCE

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.170 - .145)/1}{(1 - .170)/41} = \frac{.025/1}{.830/41} = \frac{.025}{.020} = 1.250 = NS$$

R_{179}: SOCIAL STUDIES

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.060 - .051)/1}{(1 - .060)/41} = \frac{.009/1}{.940/41} = \frac{.009}{.023} = .391 = NS$$

R_{180}: VOCATIONAL-TECHNICAL

F test of family structure x parental age interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1* - m_2* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.085 - .069)/1}{(1 - .085)/41} = \frac{.016/1}{.915/41} = \frac{.016}{.022} = .727 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{181}: ART

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.114 - .081)/1}{(1 - .114)/41} = \frac{.033/1}{.886/41} = \frac{.033}{.022} = 1.500 = NS$$

R_{182}: BUSINESS

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.087 - .039)/1}{(1 - .087)/41} = \frac{.048/1}{.913/41} = \frac{.048}{.022} = 2.182 = NS$$

R_{183}: COMPUTER TECHNOLOGY

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.021 - .020)/1}{(1 - .021)/41} = \frac{.001/1}{.979/41} = \frac{.001}{.024} = .042 = NS$$

R_{184}: DRIVER EDUCATION

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.025 - .016)/1}{(1 - .025)/41} = \frac{.009/1}{.975/41} = \frac{.009}{.024} = .375 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{185}: ENGLISH

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.148 - .051)/1}{(1 - .148)/41} = \frac{.097/1}{.852/41} = \frac{.097}{.021} = 4.619 = S$$

R_{186}: FOREIGN LANGUAGE

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.028 - .006)/1}{(1 - .028)/41} = \frac{.022/1}{.972/41} = \frac{.022}{.024} = .917 = NS$$

R_{187}: HEALTH

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.049 - .048)/1}{(1 - .049)/41} = \frac{.001/1}{.951/41} = \frac{.001}{.023} = .043 = NS$$

R_{188}: HOME ECONOMICS

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.009 - .008)/1}{(1 - .009)/41} = \frac{.001/1}{.991/41} = \frac{.001}{.024} = .042 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{189}: INDUSTRIAL TECHNOLOGY

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.032 - .027)/1}{(1 - .032)/41} = \frac{.005/1}{.968/41} = \frac{.005}{.024} = .208 = NS$$

R_{190}: MATHEMATICS

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.070 - .009)/1}{(1 - .070)/41} = \frac{.061/1}{.930/41} = \frac{.061}{.023} = 2.652 = NS$$

R_{191}: MUSIC

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.046 - .014)/1}{(1 - .046)/41} = \frac{.032/1}{.954/41} = \frac{.032}{.023} = 1.391 = NS$$

R_{192}: PHYSICAL EDUCATION

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.038 - .009)/1}{(1 - .038)/41} = \frac{.029/1}{.962/41} = \frac{.029}{.023} = 1.261 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{193}: SCIENCE

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.142 - .131)/1}{(1 - .142)/41} = \frac{.011/1}{.858/41} = \frac{.011}{.021} = .524 = NS$$

R_{194}: SOCIAL STUDIES

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.079 - .066)/1}{(1 - .079)/41} = \frac{.013/1}{.921/41} = \frac{.013}{.022} = .591 = NS$$

R_{195}: VOCATIONAL-TECHNICAL

F test of family structure x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.041 - .039)/1}{(1 - .041)/41} = \frac{.002/1}{.959/41} = \frac{.002}{.023} = .087 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{196}: ART

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.024 - .017)/1}{(1 - .024)/41} = \frac{.007/1}{.976/41} = \frac{.007}{.024} = .292 = NS$$

R_{197}: BUSINESS

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.169 - .148)/1}{(1 - .169)/41} = \frac{.021/1}{.831/41} = \frac{.021}{.020} = 1.050 = NS$$

R_{198}: COMPUTER TECHNOLOGY

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.073 - .061)/1}{(1 - .073)/41} = \frac{.012/1}{.927/41} = \frac{.012}{.023} = .522 = NS$$

R_{199}: DRIVER EDUCATION

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.037 - .021)/1}{(1 - .037)/41} = \frac{.016/1}{.963/41} = \frac{.016}{.023} = .696 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{200}: ENGLISH

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.298 - .234)/1}{(1 - .298)/41} = \frac{.064/1}{.702/41} = \frac{.064}{.017} = 3.765 = NS$$

R_{201}: FOREIGN LANGUAGE

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.070 - .067)/1}{(1 - .070)/41} = \frac{.003/1}{.930/41} = \frac{.003}{.023} = .130 = NS$$

R_{202}: HEALTH

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.227 - .216)/1}{(1 - .227)/41} = \frac{.011/1}{.773/41} = \frac{.011}{.019} = .579 = NS$$

R_{203}: HOME ECONOMICS

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.160 - .149)/1}{(1 - .160)/41} = \frac{.011/1}{.840/41} = \frac{.011}{.020} = .550 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{204}: INDUSTRIAL TECHNOLOGY

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.052 - .048)/1}{(1 - .052)/41} = \frac{.004/1}{.948/41} = \frac{.004}{.023} = .174 = NS$$

R_{205}: MATHEMATICS

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.013 - .005)/1}{(1 - .013)/41} = \frac{.008/1}{.987/41} = \frac{.008}{.024} = .333 = NS$$

R_{206}: MUSIC

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.042 - .042)/1}{(1 - .042)/41} = \frac{.000/1}{.958/41} = \frac{.000}{.023} = .000 = NS$$

R_{207}: PHYSICAL EDUCATION

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.023 - .022)/1}{(1 - .023)/41} = \frac{.001/1}{.977/41} = \frac{.001}{.024} = .042 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{208}: SCIENCE

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.159 - .137)/1}{(1 - .159)/41} = \frac{.022/1}{.841/41} = \frac{.022}{.021} = 1.048 = \text{NS}$$

R_{209}: SOCIAL STUDIES

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.109 - .109)/1}{(1 - .109)/41} = \frac{.000/1}{.891/41} = \frac{.000}{.022} = .000 = \text{NS}$$

R_{210}: VOCATIONAL-TECHNICAL

F test of family structure x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.024 - .015)/1}{(1 - .024)/41} = \frac{.009/1}{.976/41} = \frac{.009}{.024} = .375 = \text{NS}$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{211}: ART

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.039 - .037)/1}{(1 - .039)/41} = \frac{.002/1}{.961/41} = \frac{.002}{.023} = .087 = NS$$

R_{212}: BUSINESS

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.061 - .049)/1}{(1 - .061)/41} = \frac{.012/1}{.939/41} = \frac{.012}{.023} = .522 = NS$$

R_{213}: COMPUTER TECHNOLOGY

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.090 - .037)/1}{(1 - .090)/41} = \frac{.053/1}{.910/41} = \frac{.053}{.022} = 2.409 = NS$$

R_{214}: DRIVER EDUCATION

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.026 - .024)/1}{(1 - .026)/41} = \frac{.002/1}{.974/41} = \frac{.002}{.024} = .083 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{215}: ENGLISH
F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.022 - .017)/1}{(1 - .022)/41} = \frac{.005/1}{.978/41} = \frac{.005}{.024} = .208 = NS$$

R_{216}: FOREIGN LANGUAGE
F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.096 - .045)/1}{(1 - .096)/41} = \frac{.051/1}{.904/41} = \frac{.051}{.022} = 2.318 = NS$$

R_{217}: HEALTH
F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.035 - .035)/1}{(1 - .035)/41} = \frac{.000/1}{.965/41} = \frac{.000}{.024} = .000 = NS$$

R_{218}: HOME ECONOMICS
F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.143 - .108)/1}{(1 - .143)/41} = \frac{.035/1}{.857/41} = \frac{.035}{.021} = 1.667 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{219}: INDUSTRIAL TECHNOLOGY

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.057 - .047)/1}{(1 - .057)/41} = \frac{.010/1}{.943/41} = \frac{.010}{.023} = .435 = NS$$

R_{220}: MATHEMATICS

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.111 - .027)/1}{(1 - .111)/41} = \frac{.084/1}{.889/41} = \frac{.084}{.022} = 3.818 = NS$$

R_{221}: MUSIC

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.008 - .003)/1}{(1 - .008)/41} = \frac{.005/1}{.992/41} = \frac{.005}{.024} = .208 = NS$$

R_{222}: PHYSICAL EDUCATION

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1{}^* - m_2{}^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.113 - .073)/1}{(1 - .113)/41} = \frac{.040/1}{.887/41} = \frac{.040}{.022} = 1.818 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{223}: SCIENCE

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.091 - .028)/1}{(1 - .091)/41} = \frac{.063/1}{.909/41} = \frac{.063}{.022} = 2.864 = NS$$

R_{224}: SOCIAL STUDIES

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.061 - .061)/1}{(1 - .061)/41} = \frac{.000/1}{.939/41} = \frac{.000}{.023} = .000 = NS$$

R_{225}: VOCATIONAL-TECHNICAL

F test of parental age x parental educ. level interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.087 - .082)/1}{(1 - .087)/41} = \frac{.005/1}{.913/41} = \frac{.005}{.022} = .227 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{226}: ART

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.017 - .004)/1}{(1 - .017)/41} = \frac{.013/1}{.983/41} = \frac{.013}{.024} = .542 = NS$$

R_{227}: BUSINESS

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.189 - .185)/1}{(1 - .189)/41} = \frac{.004/1}{.811/41} = \frac{.004}{.020} = .200 = NS$$

R_{228}: COMPUTER TECHNOLOGY

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.122 - .089)/1}{(1 - .122)/41} = \frac{.033/1}{.878/41} = \frac{.033}{.021} = 1.571 = NS$$

R_{229}: DRIVER EDUCATION

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.021 - .021)/1}{(1 - .021)/41} = \frac{.000/1}{.979/41} = \frac{.000}{.024} = .000 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{230}: ENGLISH

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.233 - .196)/1}{(1 - .233)/41} = \frac{.037/1}{.767/41} = \frac{.037}{.019} = 1.947 = NS$$

R_{231}: FOREIGN LANGUAGE

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.146 - .113)/1}{(1 - .146)/41} = \frac{.033/1}{.854/41} = \frac{.033}{.021} = 1.571 = NS$$

R_{232}: HEALTH

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.209 - .198)/1}{(1 - .209)/41} = \frac{.011/1}{.791/41} = \frac{.011}{.019} = .579 = NS$$

R_{233}: HOME ECONOMICS

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.240 - .239)/1}{(1 - .240)/41} = \frac{.001/1}{.760/41} = \frac{.001}{.019} = .053 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{234}: INDUSTRIAL TECHNOLOGY

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.058 - .051)/1}{(1 - .058)/41} = \frac{.007/1}{.942/41} = \frac{.007}{.023} = .304 = NS$$

R_{235}: MATHEMATICS

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.136 - .021)/1}{(1 - .136)/41} = \frac{.115/1}{.864/41} = \frac{.115}{.021} = 5.476 = S$$

R_{236}: MUSIC

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.040 - .039)/1}{(1 - .040)/41} = \frac{.001/1}{.960/41} = \frac{.001}{.023} = .043 = NS$$

R_{237}: PHYSICAL EDUCATION

F test of parental age x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.101 - .082)/1}{(1 - .101)/41} = \frac{.019/1}{.899/41} = \frac{.019}{.022} = .864 = NS$$

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*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{238}: SCIENCE

F test of parental age x student gender interaction (full-versus-restricted model)

N = 45; $df_1 = m_1^* - m_2^* = 4 - 3 = 1$; $df_2 = N - m_1 = 45 - 4 = 41$; $a = .05$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.058 - .015)/1}{(1 - .058)/41} = \frac{.043/1}{.942/41} = \frac{.043}{.023} = 1.870 = NS$$

R_{239}: SOCIAL STUDIES

F test of parental age x student gender interaction (full-versus-restricted model)

N = 45; $df_1 = m_1^* - m_2^* = 4 - 3 = 1$; $df_2 = N - m_1 = 45 - 4 = 41$; $a = .05$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.079 - .068)/1}{(1 - .079)/41} = \frac{.011/1}{.921/41} = \frac{.011}{.022} = .500 = NS$$

R_{240}: VOCATIONAL-TECHNICAL

F test of parental age x student gender interaction (full-versus-restricted model)

N = 45; $df_1 = m_1^* - m_2^* = 4 - 3 = 1$; $df_2 = N - m_1 = 45 - 4 = 41$; $a = .05$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.047 - .038)/1}{(1 - .047)/41} = \frac{.009/1}{.953/41} = \frac{.009}{.023} = .391 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{241}: ART

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.044 - .040)/1}{(1 - .044)/41} = \frac{.004/1}{.956/41} = \frac{.004}{.023} = .174 = \text{NS}$$

R_{242}: BUSINESS

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.234 - .168)/1}{(1 - .234)/41} = \frac{.066/1}{.766/41} = \frac{.066}{.019} = 3.474 = \text{NS}$$

R_{243}: COMPUTER TECHNOLOGY

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.052 - .051)/1}{(1 - .052)/41} = \frac{.001/1}{.948/41} = \frac{.001}{.023} = .043 = \text{NS}$$

R_{244}: DRIVER EDUCATION

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.041 - .015)/1}{(1 - .041)/41} = \frac{.026/1}{.959/41} = \frac{.026}{.023} = 1.130 = \text{NS}$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{245}: ENGLISH

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.203 - .190)/1}{(1 - .203)/41} = \frac{.013/1}{.797/41} = \frac{.013}{.019} = .684 = NS$$

R_{246}: FOREIGN LANGUAGE

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.082 - .070)/1}{(1 - .082)/41} = \frac{.012/1}{.918/41} = \frac{.012}{.022} = .545 = NS$$

R_{247}: HEALTH

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.214 - .199)/1}{(1 - .214)/41} = \frac{.015/1}{.786/41} = \frac{.015}{.019} = .789 = NS$$

R_{248}: HOME ECONOMICS

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.169 - .149)/1}{(1 - .169)/41} = \frac{.020/1}{.831/41} = \frac{.020}{.020} = 1.000 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{249}: INDUSTRIAL TECHNOLOGY

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.037 - .032)/1}{(1 - .037)/41} = \frac{.005/1}{.963/41} = \frac{.005}{.023} = .217 = NS$$

R_{250}: MATHEMATICS

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.066 - .009)/1}{(1 - .066)/41} = \frac{.057/1}{.934/41} = \frac{.057}{.023} = 2.478 = NS$$

R_{251}: MUSIC

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.051 - .047)/1}{(1 - .051)/41} = \frac{.004/1}{.949/41} = \frac{.004}{.023} = .174 = NS$$

R_{252}: PHYSICAL EDUCATION

F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.016 - .016)/1}{(1 - .016)/41} = \frac{.000/1}{.984/41} = \frac{.000}{.024} = .000 = NS$$

---

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

R_{253}: SCIENCE
F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.064 - .033)/1}{(1 - .064)/41} = \frac{.031/1}{.936/41} = \frac{.031}{.023} = 1.348 = NS$$

R_{254}: SOCIAL STUDIES
F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.132 - .131)/1}{(1 - .132)/41} = \frac{.001/1}{.868/41} = \frac{.001}{.021} = .048 = NS$$

R_{255}: VOCATIONAL-TECHNICAL
F test of parental educ. level x student gender interaction (full-versus-restricted model)

$N = \underline{45}$; $df_1 = m_1^* - m_2^* = 4 - 3 = \underline{1}$; $df_2 = N - m_1 = 45 - 4 = \underline{41}$; $a = \underline{.05}$

$$F = \frac{(R^2_f - R^2_r)/df_1}{(1 - R^2_f)/df_2} = \frac{(.050 - .038)/1}{(1 - .050)/41} = \frac{.012/1}{.950/41} = \frac{.012}{.023} = .522 = NS$$

*This value assumes the unit vector in all regression equations (K. A. McNeil et al., 1975).

APPENDIX 15

GENERAL HYPOTHESIS 4B GRAPH COORDINATES

R_{110} Graph Coordinates

<u>Two Parents</u>

$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917(u) - 44.887(two parents mean) - .087(cultural literacy mean)
$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917(1) - 44.887(1) - .087(75.289)
$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917 - 44.887 - 6.550
$English_{(cultural\ literacy\ of\ 75.289)}$ = 80.48

coordinates (75, 80)

$English_{(cultural\ literacy\ of\ 0)}$ = 131.917(u) - 44.887(two parents mean) - .087(cultural literacy mean)
$English_{(cultural\ literacy\ of\ 0)}$ = 131.917(1) - 44.887(1) - .087(0)
$English_{(cultural\ literacy\ of\ 0)}$ = 131.917 - 44.887 - 0
$English_{(cultural\ literacy\ of\ 0)}$ = 87.03

coordinates (0, 87)

<u>Single Parent</u>

$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917(u) - 44.887(single parent mean) - .924(cultural literacy mean)
$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917(1) - 44.887(0) - .924(75.289)
$English_{(cultural\ literacy\ of\ 75.289)}$ = 131.917 - 0 - 69.567
$English_{(cultural\ literacy\ of\ 75.289)}$ = 62.35

coordinates (75, 62)

$English_{(cultural\ literacy\ of\ 0)}$ = 131.917(u) - 44.887(single parent mean) - .924(cultural literacy mean)
$English_{(cultural\ literacy\ of\ 0)}$ = 131.917(1) - 44.887(0) - .924(0)
$English_{(cultural\ literacy\ of\ 0)}$ = 131.917 - 0 - 0
$English_{(cultural\ literacy\ of\ 0)}$ = 131.917

coordinates (0, 132)

R_{139} Graph Coordinates (three lines)

Cultural Literacy Low (raw score)

$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(u) + 68.348(cultural literacy low mean) - 12.737(parental educational level mean)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(1) + 68.348(1) - 12.737(3.967)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074 + 68.348 - 50.528
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 66.894

coordinates (4, 67)

$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074(u) + 68.348(cultural literacy low mean) - 12.737(parental educational level mean)
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074(1) + 68.348(1) - 12.737(0)
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074 + 68.348 - 0
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 117.422

coordinates (0, 117)

Cultural Literacy Medium (raw score)

$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(u) + 9.549(cultural literacy medium mean) - 2.357(parental educational level mean)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(1) + 9.549(1) - 2.357(3.967)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074 + 9.549 - 9.350
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.273

coordinates (4, 49)

$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074(u) + 9.549(cultural literacy medium mean) - 2.357(parental educational level mean)
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074(1) + 9.549(1) - 2.357(0)
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 49.074 + 9.549 - 0
$\text{Driver Education}_{(\text{parental educational level of } 0)}$ = 58.623

coordinates (0, 59)

Cultural Literacy High (raw score)

$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(u) + 68.348(cultural literacy low mean) + 9.549(cultural literacy medium mean) + 2.647(parental educational level mean)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074(1) + 68.348(0) + 9.549(0) + 2.647(3.967)
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 49.074 + 0 + 0 + 10.501
$\text{Driver Education}_{(\text{parental educational level of } 3.967)}$ = 59.575

coordinates (4, 60)

$$\text{Driver Education}_{(\text{parental educational level of } 0)} = 49.074(u) + 68.348(\text{cultural literacy low mean}) + 9.549(\text{cultural literacy medium mean}) + 2.647(\text{parental educational level mean})$$

$$\text{Driver Education}_{(\text{parental educational level of } 0)} = 49.074(1) + 68.348(0) + 9.549(0) + 2.647(0)$$

$$\text{Driver Education}_{(\text{parental educational level of } 0)} = 49.074 + 0 + 0 + 0$$

$$\text{Driver Education}_{(\text{parental educational level of } 0)} = 49.074$$

coordinates (0, 49)

R_{185} Graph Coordinates

Two Parents

$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722(u) - 26.550(two parents mean) - .907(parental educational level mean)
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722(1) - 26.550(1) - .907(3.967)
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722 - 26.550 - 3.598
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 80.574

coordinates (4, 81)

$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722(u) - 26.550(two parents mean) - .907(parental educational level mean)
$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722(1) - 26.550(1) - .907(0)
$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722 - 26.550 - 0
$English_{(parental\ educational\ level\ of\ 0)}$ = 84.172

coordinates (0, 84)

Single Parent

$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722(u) - 26.550(single parent mean) - 15.944(parental educational level mean)
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722(1) - 26.550(0) - 15.944(3.967)
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 110.722 - 0 - 63.250
$English_{(parental\ educational\ level\ of\ 3.967)}$ = 47.472

coordinates (4, 47)

$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722(u) - 26.550(single parent mean) - 15.944(parental educational level mean)
$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722(1) - 26.550(0) - 15.944(0)
$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722 - 0 - 0
$English_{(parental\ educational\ level\ of\ 0)}$ = 110.722

coordinates (0, 111)

R_{235} Graph Coordinates

Female Student

$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400(u) + 117.402(female student mean) - 19.250(parental age mean)
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400(1) + 117.402(1) - 19.250(3.122)
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400 + 117.402 - 60.099
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 71.703

coordinates (3, 72)

$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400(u) + 117.402(female student mean) - 19.250(parental age mean)
$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400(1) + 117.402(1) - 19.250(0)
$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400 + 117.402 - 0
$Mathematics_{(parental\ age\ of\ 0)}$ = 131.802

coordinates (0, 132)

Male Student

$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400(u) + 117.402(male student mean) + 18.600(parental age mean)
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400(1) + 117.402(0) + 18.600(3.122)
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 14.400 + 0 + 58.069
$Mathematics_{(parental\ age\ of\ 3.122)}$ = 72.469

coordinates (3, 72)

$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400(u) + 117.402(male student mean) + 18.600(parental age mean)
$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400(1) + 117.402(0) + 18.600(0)
$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400 + 0 + 0
$Mathematics_{(parental\ age\ of\ 0)}$ = 14.400

coordinates (0, 14)

APPENDIX 16

GENERAL HYPOTHESIS 5 EXPLORATORY FACTOR ANALYSIS OUTPUT FOR PARENTS

Factor Analysis Summary
Inclusion criteria: FA Parent from Data (Rev./Uniformity) 2 F copy

Number of Variables	15
Est. Number of Factors	7
Number of Factors	4
Number of Cases	215
Number Missing	0
Degrees of Freedom	119
Bartlett's Chi Square	1088.326
P-Value	<.0001

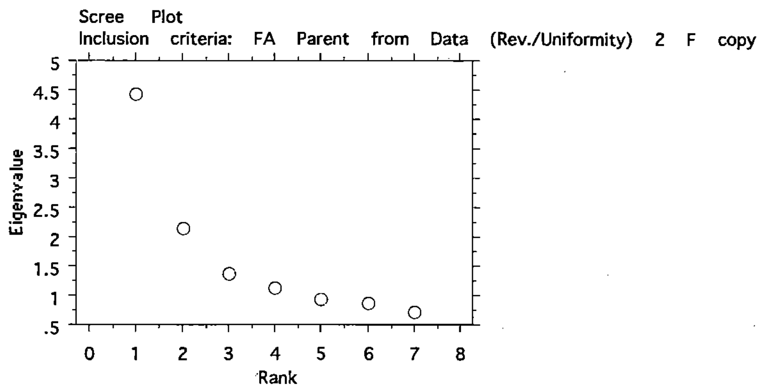
Factor Extraction Method: Principal Components
Extraction Rule: Roots greater than one
Transformation Method: Orthotran/Varimax

Eigenvalues
Inclusion criteria: FA Parent from Data (Rev./Uniformity) 2 F copy

	Magnitude	Variance Prop.
Value 1	4.430	.295
Value 2	2.167	.144
Value 3	1.364	.091
Value 4	1.116	.074
Value 5	.951	.063
Value 6	.876	.058
Value 7	.712	.047

Orthogonal Solution
Inclusion criteria: FA Parent from Data (Rev./Uniformity) 2 F copy

	Factor 1	Factor 2	Factor 3	Factor 4
Art	.163	.031	.168	.844
Business	.261	.177	.667	.104
Computer Technology	.010	.169	.716	.014
Driver Education	.750	-.018	.100	-.030
English	.236	.601	-.079	.201
Foreign Language	.064	.729	-.064	.270
Health	.830	.129	.157	.098
Home Economics	.752	-.089	.303	.167
Industrial Technology	.235	.111	.705	.147
Mathematics	-.040	.630	.268	-.183
Music	.085	.310	.136	.796
Physical Education	.579	.241	.173	.165
Science	-.165	.761	.210	.061
Social Studies	.194	.707	.228	.105
Vocational-Technical	.235	-.026	.716	.108


Scree Plot
Inclusion criteria: FA Parent from Data (Rev./Uniformity) 2 F copy
Eigenvalue
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 1 2 3 4 5 6 7 8
Rank

APPENDIX 17

GENERAL HYPOTHESIS 5 EXPLORATORY FACTOR ANALYSIS OUTPUT FOR TEACHERS

Factor Analysis Summary
Inclusion criteria: FA Teacher from Data (Rev./Uniformity) 2 copy 1

Number of Variables	15
Est. Number of Factors	7
Number of Factors	4
Number of Cases	80
Number Missing	0
Degrees of Freedom	119
Bartlett's Chi Square	737.075
P-Value	<.0001

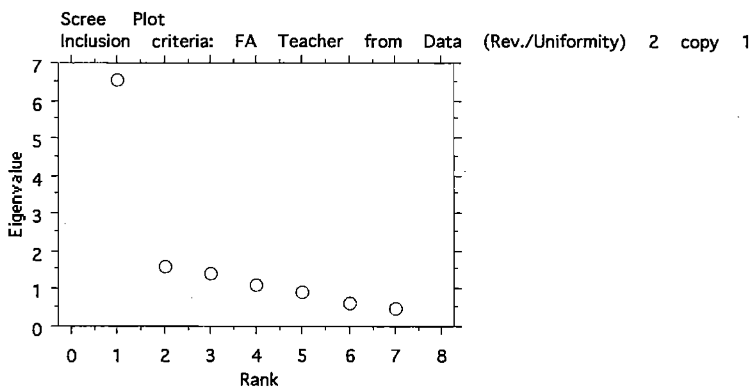
Factor Extraction Method: Principal Components
Extraction Rule: Roots greater than one
Transformation Method: Orthotran/Varimax

Eigenvalues
Inclusion criteria: FA Teacher from Data (Rev./Uniformity) 2 copy 1

	Magnitude	Variance Prop.
Value 1	6.560	.437
Value 2	1.598	.107
Value 3	1.419	.095
Value 4	1.126	.075
Value 5	.923	.062
Value 6	.654	.044
Value 7	.487	.032

Orthogonal Solution
Inclusion criteria: FA Teacher from Data (Rev./Uniformity) 2 copy 1

	Factor 1	Factor 2	Factor 3	Factor 4
Art	.747	.060	.070	.058
Business	.287	.134	.825	.274
Computer Technology	.005	.186	.878	.226
Driver Education	.580	-.229	.428	.257
English	.460	.448	.524	-.144
Foreign Language	.529	.446	.285	-.123
Health	.664	.307	.247	.088
Home Economics	.673	.029	.391	.301
Industrial Technology	.195	.226	.267	.808
Mathematics	.066	.869	.038	.172
Music	.829	.160	-.060	.341
Physical Education	.684	.313	.069	.196
Science	.148	.827	.134	.237
Social Studies	.396	.548	.301	.184
Vocational-Technical	.243	.199	.177	.812


Scree Plot
Inclusion criteria: FA Teacher from Data (Rev./Uniformity) 2 copy 1
Eigenvalue
Rank
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7 8

APPENDIX 18

GENERAL HYPOTHESIS 5C EXPLORATORY FACTOR ANALYSIS OUTPUT FOR ALL STUDENTS

Factor Analysis Summary
Inclusion criteria: Student from Data (Dissertation)

Number of Variables	15
Est. Number of Factors	7
Number of Factors	5
Number of Cases	78
Number Missing	1
Degrees of Freedom	119
Bartlett's Chi Square	437.312
P-Value	<.0001

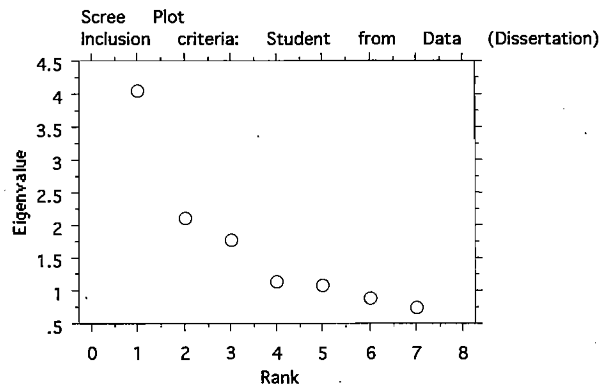
Factor Extraction Method: Principal Components
Extraction Rule: Roots greater than one
Transformation Method: Orthotran/Varimax

Eigenvalues
Inclusion criteria: Student from Data (Dissertation)

	Magnitude	Variance Prop.
Value 1	4.045	.270
Value 2	2.104	.140
Value 3	1.774	.118
Value 4	1.151	.077
Value 5	1.071	.071
Value 6	.876	.058
Value 7	.753	.050

Orthogonal Solution
Inclusion criteria: Student from Data (Dissertation)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Art	-.100	.206	.817	.049	-.111
Business	.333	.414	-.149	.077	.536
Computer Technology	-.123	.088	.066	-.067	.887
Driver Education	.819	-.111	-.033	-.008	.103
English	.457	.238	-.081	.307	.244
Foreign Language	-.059	.563	.097	.141	.411
Health	.628	.437	-.166	.147	-.103
Home Economics	.752	.039	-.028	.167	-.246
Industrial Technology	.199	-.006	.254	.830	.029
Mathematics	.202	.316	-.088	.665	.441
Music	.002	-.067	.881	.093	.118
Physical Education	.497	.035	.198	.428	.154
Science	-.103	.640	.078	.448	.167
Social Studies	.200	.914	.094	-.045	.038
Vocational-Technical	.093	.104	-.039	.757	-.202


Scree Plot
Inclusion criteria: Student from Data (Dissertation)
Eigenvalue
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 1 2 3 4 5 6 7 8
Rank

APPENDIX 19

GENERAL HYPOTHESIS 5D EXPLORATORY FACTOR ANALYSIS OUTPUT

FOR CULTURALLY LITERATE STUDENTS

Factor Analysis Summary
Inclusion criteria: FA Cult. Lit. Student from Data (Rev./Uniformity) 2 FA

Number of Variables	15
Est. Number of Factors	7
Number of Factors	5
Number of Cases	51
Number Missing	0
Degrees of Freedom	119
Bartlett's Chi Square	381.021
P-Value	<.0001

Factor Extraction Method: Principal Components
Extraction Rule: Roots greater than one
Transformation Method: Orthotran/Varimax

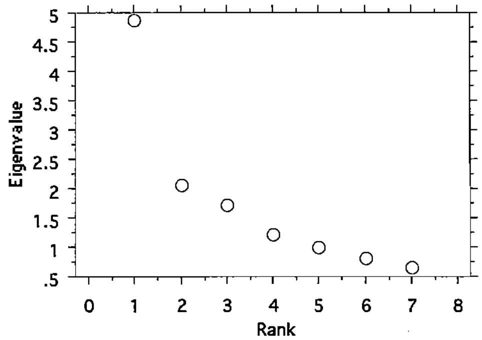
Eigenvalues
Inclusion criteria: FA Cult. Lit. Student from Data (Rev./Uniformity) 2 FA

	Magnitude	Variance Prop.
Value 1	4.871	.325
Value 2	2.066	.138
Value 3	1.734	.116
Value 4	1.209	.081
Value 5	1.004	.067
Value 6	.810	.054
Value 7	.670	.045

Orthogonal Solution
Inclusion criteria: FA Cult. Lit. Student from Data (Rev./Uniformity) 2 FA

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Art	-.123	.862	-.167	.065	-.009
Business	.740	-.177	.329	.110	.226
Computer Technology	.857	.084	-.183	-.039	-.017
Driver Education	.108	.023	.802	-.132	.012
English	.005	.211	.365	.167	.633
Foreign Language	.184	-.035	-.145	.236	.759
Health	.120	-.173	.595	.057	.485
Home Economics	-.165	-.069	.762	.287	.135
Industrial Technology	.325	.283	.213	.752	.182
Mathematics	.538	.146	.178	.370	.521
Music	.108	.874	.098	.083	-.017
Physical Education	.218	.375	.498	.166	.342
Science	.584	.026	.070	.223	.483
Social Studies	.115	-.102	.310	-.074	.835
Vocational-Technical	-.011	.010	-.015	.911	.122

Scree Plot
Inclusion criteria: FA Cult. Lit. Student from Data (Rev./Uniformity) 2 FA



APPENDIX 20

GENERAL HYPOTHESIS 5E EXPLORATORY FACTOR ANALYSIS OUTPUT FOR A SINGLE GROUP CONSISTING OF PARENTS, TEACHERS, AND ALL STUDENTS

Factor Analysis Summary
Inclusion criteria: HG5C from HG5C Data. (06/26/07 8.30 PM)

Number of Variables	15
Est. Number of Factors	7
Number of Factors	5
Number of Cases	373
Number Missing	0
Degrees of Freedom	119
Bartlett's Chi Square	1952.803
P-Value	<.0001

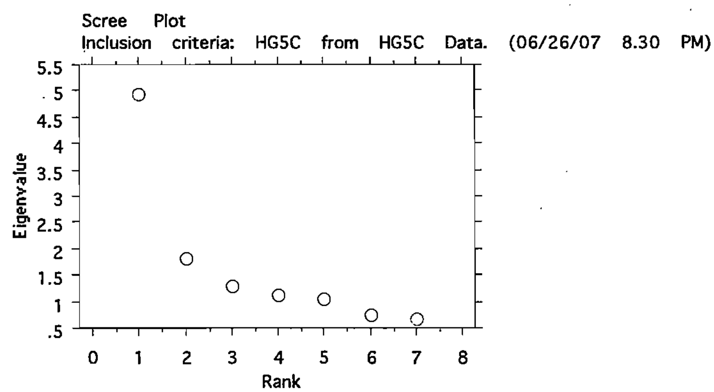
Factor Extraction Method: Principal Components
Extraction Rule: Roots greater than one
Transformation Method: Orthotran/Varimax

Eigenvalues
Inclusion criteria: HG5C from HG5C Data. (06/26/07 8.30 PM)

	Magnitude	Variance Prop.
Value 1	4.929	.329
Value 2	1.803	.120
Value 3	1.307	.087
Value 4	1.141	.076
Value 5	1.049	.070
Value 6	.726	.048
Value 7	.665	.044

Orthogonal Solution
Inclusion criteria: HG5C from HG5C Data. (06/26/07 8.30 PM)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Art	.138	.061	.853	.084	.079
Business	.336	.217	.071	.204	.739
Computer Technology	-.004	.161	.049	.109	.891
Driver Education	.752	-.008	.022	.053	.143
English	.355	.625	.053	-.076	.084
Foreign Language	.056	.690	.314	-.122	.159
Health	.775	.229	.073	.128	.074
Home Economics	.775	-.001	.170	.248	.070
Industrial Technology	.227	.163	.208	.774	.167
Mathematics	.002	.681	-.138	.449	.068
Music	.112	.227	.818	.172	.019
Physical Education	.527	.336	.199	.317	-.059
Science	-.138	.748	.109	.333	.089
Social Studies	.230	.703	.139	.070	.169
Vocational-Technical	.264	.034	.096	.788	.143


Scree Plot
Inclusion criteria: HG5C from HG5C Data. (06/26/07 8.30 PM)
Eigenvalue
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 1 2 3 4 5 6 7 8
Rank

APPENDIX 21

GENERAL HYPOTHESIS 5E CONFIRMATORY FACTOR ANALYSIS OUTPUT FOR A SINGLE GROUP CONSISTING OF PARENTS, TEACHERS, AND ALL STUDENTS

Single Group 373

DATE: 11/14/2010
TIME: 15:46

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Single Group CFA\Single Group 373.ls8:

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DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
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LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
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! Single Group 373 CFA

Number of Input Variables 9

Single Group 373

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 373

! Single Group 373 CFA

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	768.24					
HEALTH	240.07	432.38				
HOMEECON	352.28	295.38	611.24			
PHYSEDUC	241.40	305.66	284.90	770.97		
ENGLISH	120.59	109.93	98.27	136.55	311.59	
FORLANG	69.39	114.11	80.90	186.48	177.05	727.17
MATHEMAT	43.41	83.86	61.09	199.80	127.59	185.28
SCIENCE	8.11	62.08	33.62	165.52	115.40	262.21
SOCIALST	87.20	171.65	114.32	172.48	168.17	253.49

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	428.58		
SCIENCE	251.76	471.38	
SOCIALST	159.90	234.25	436.53

! Single Group 373 CFA

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0

FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

! Single Group 373 CFA

Number of Iterations = 10

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	1.07 (0.11) 9.74	- -
HOMEECON	1.14 (0.12) 9.41	- -
PHYSEDUC	1.14	- -

```
        (0.13)
         8.83
 ENGLISH     --     1.00
 FORLANG     --     1.64
                  (0.19)
                   8.55
 MATHEMAT    --     1.27
                  (0.15)
                   8.63
 SCIENCE     --     1.53
                  (0.16)
                   9.32
 SOCIALST    --     1.52
                  (0.16)
                   9.46

    PHI

      PRACTICA  ACADEMIC
      --------  --------
 PRACTICA   243.59
           (45.84)
             5.31
 ACADEMIC    69.97    100.50
           (13.53)   (18.79)
             5.17      5.35

    THETA-DELTA

      DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
      --------  -------- --------  --------  -------- --------
       524.65    155.54   295.34    456.04    211.08   457.39
      (43.45)   (20.75)  (30.07)   (40.49)   (17.61)  (39.49)
        12.07      7.50     9.82     11.26     11.99    11.58

    THETA-DELTA

      MATHEMAT   SCIENCE  SOCIALST
      --------  -------- --------
       265.25    236.21   204.56
      (23.09)   (23.33)  (21.22)
        11.49     10.12     9.64
```

Squared Multiple Correlations for X - Variables

Single Group 373

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.32	0.64	0.52	0.41	0.32	0.37

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.38	0.50	0.53

Goodness of Fit Statistics

Degrees of Freedom = 26
Minimum Fit Function Chi-Square = 143.11 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 152.27 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 126.27
90 Percent Confidence Interval for NCP = (91.13 ; 168.91)

Minimum Fit Function Value = 0.38
Population Discrepancy Function Value (F0) = 0.34
90 Percent Confidence Interval for F0 = (0.24 ; 0.45)
Root Mean Square Error of Approximation (RMSEA) = 0.11
90 Percent Confidence Interval for RMSEA = (0.097 ; 0.13)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 0.51
90 Percent Confidence Interval for ECVI = (0.42 ; 0.63)
ECVI for Saturated Model = 0.24
ECVI for Independence Model = 4.16

Chi-Square for Independence Model with 36 Degrees of Freedom = 1527.70
Independence AIC = 1545.70
Model AIC = 190.27
Saturated AIC = 90.00
Independence CAIC = 1590.00
Model CAIC = 283.78
Saturated CAIC = 311.47

Normed Fit Index (NFI) = 0.91
Non-Normed Fit Index (NNFI) = 0.89
Parsimony Normed Fit Index (PNFI) = 0.65
Comparative Fit Index (CFI) = 0.92

Single Group 373

Incremental Fit Index (IFI) = 0.92
Relative Fit Index (RFI) = 0.87

Critical N (CN) = 119.64

Root Mean Square Residual (RMR) = 40.15
Standardized RMR = 0.074
Goodness of Fit Index (GFI) = 0.92
Adjusted Goodness of Fit Index (AGFI) = 0.86
Parsimony Goodness of Fit Index (PGFI) = 0.53

! Single Group 373 CFA

Modification Indices and Expected Change

Modification Indices for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	4.78
HEALTH	- -	1.07
HOMEECON	- -	10.33
PHYSEDUC	- -	18.08
ENGLISH	9.52	- -
FORLANG	0.56	- -
MATHEMAT	0.15	- -
SCIENCE	20.46	- -
SOCIALST	9.03	- -

Expected Change for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	-0.37
HEALTH	- -	0.12
HOMEECON	- -	-0.46
PHYSEDUC	- -	0.69
ENGLISH	0.21	- -
FORLANG	-0.08	- -
MATHEMAT	-0.03	- -
SCIENCE	-0.36	- -
SOCIALST	0.23	- -

Single Group 373

No Non-Zero Modification Indices for PHI

Modification Indices for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	5.20	- -				
HOMEECON	26.31	- -	- -			
PHYSEDUC	3.01	2.35	6.54	- -		
ENGLISH	7.69	0.38	0.46	0.08	- -	
FORLANG	0.07	0.18	0.39	0.45	0.86	- -
MATHEMAT	1.20	2.33	1.27	15.41	- -	2.93
SCIENCE	5.03	7.25	3.33	6.43	19.85	0.73
SOCIALST	0.81	21.16	0.16	2.79	4.03	0.10

Modification Indices for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	37.21	- -	
SOCIALST	18.16	0.01	- -

Expected Change for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	-58.11	- -				
HOMEECON	146.34	- -	- -			
PHYSEDUC	-54.50	43.06	-77.62	- -		
ENGLISH	52.79	7.57	10.38	-5.27	- -	
FORLANG	-7.75	-7.77	-14.36	18.28	18.09	- -
MATHEMAT	-23.76	-21.34	-19.69	81.40	- -	-38.75
SCIENCE	-48.07	-37.41	-31.57	52.03	-69.39	20.39
SOCIALST	-18.31	60.64	-6.66	-32.50	30.24	7.16

Expected Change for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	112.38	- -	

SOCIALST -76.24 2.10 - -

Maximum Modification Index is 37.21 for Element (8, 7) of THETA-DELTA

Time used: 0.070 Seconds

APPENDIX 22

GENERAL HYPOTHESIS 5E CONFIRMATORY FACTOR ANALYSIS OUTPUT FOR PARENTS

Parents 215

DATE: 11/13/2010
TIME: 14:29

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents CFA\Parents 215.ls8:

```
! Parents 215 CFA
DA NI=9 NO=215 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents
CFA\Parents 215.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU MI IT=2000 AD=OFF
```

! Parents 215 CFA

Number of Input Variables 9

Parents 215
Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 215

! Parents 215 CFA

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	765.43					
HEALTH	265.72	430.31				
HOMEECON	331.87	310.95	571.73			
PHYSEDUC	176.01	288.88	234.73	659.96		
ENGLISH	88.80	68.81	29.44	65.43	294.97	
FORLANG	41.36	80.42	19.81	134.69	184.11	722.77
MATHEMAT	-23.35	23.02	28.32	98.24	53.13	138.72
SCIENCE	-15.46	11.73	-34.76	74.28	99.01	259.25
SOCIALST	52.52	136.35	74.70	138.59	168.60	240.37

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	339.03		
SCIENCE	180.69	423.30	
SOCIALST	125.63	200.39	428.10

! Parents 215 CFA

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0

Parents 215

```
FORLANG     0    4
MATHEMAT     0    5
SCIENCE    0    6
SOCIALST    0    7

   PHI

      PRACTICA  ACADEMIC
      --------  --------
PRACTICA     8
ACADEMIC     9     10

   THETA-DELTA

      DRIVERED  HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
      --------  --------  --------  --------  --------  --------
        11       12       13       14       15       16

   THETA-DELTA

      MATHEMAT  SCIENCE  SOCIALST
      --------  --------  --------
        17       18       19


! Parents 215 CFA

Number of Iterations = 11

LISREL Estimates (Maximum Likelihood)

   LAMBDA-X

      PRACTICA  ACADEMIC
      --------  --------
DRIVERED    1.00     - -
 HEALTH    1.21     - -
       (0.16)
        7.50
HOMEECON    1.13     - -
       (0.16)
        7.27
PHYSEDUC    1.00     - -
```

```
        (0.15)
         6.46
 ENGLISH     --    1.00
 FORLANG     --    1.81
             (0.28)
              6.36
MATHEMAT     --    0.95
             (0.18)
              5.38
 SCIENCE     --    1.45
             (0.22)
              6.51
SOCIALST     --    1.60
             (0.24)
              6.77
```

PHI

```
         PRACTICA  ACADEMIC
         --------  --------
PRACTICA   229.38
          (57.64)
            3.98
ACADEMIC    38.97    89.96
          (13.94)  (23.35)
            2.80     3.85
```

THETA-DELTA

```
 DRIVERED   HEALTH HOMEECON PHYSEDUC  ENGLISH  FORLANG
 -------- -------- -------- -------- -------- --------
  536.05    95.51   277.47   430.40   205.01   427.69
 (56.73)  (27.72)  (36.10)  (46.81)  (22.75)  (52.03)
   9.45     3.45     7.69     9.19     9.01     8.22
```

THETA-DELTA

```
 MATHEMAT  SCIENCE SOCIALST
 -------- -------- --------
  257.23   234.61   196.76
 (27.41)  (29.88)  (29.29)
   9.39     7.85     6.72
```

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.30	0.78	0.51	0.35	0.30	0.41

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.24	0.45	0.54

Goodness of Fit Statistics

Degrees of Freedom = 26
Minimum Fit Function Chi-Square = 83.45 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 86.99 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 60.99
90 Percent Confidence Interval for NCP = (36.40 ; 93.17)

Minimum Fit Function Value = 0.39
Population Discrepancy Function Value (F0) = 0.28
90 Percent Confidence Interval for F0 = (0.17 ; 0.44)
Root Mean Square Error of Approximation (RMSEA) = 0.10
90 Percent Confidence Interval for RMSEA = (0.081 ; 0.13)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00017

Expected Cross-Validation Index (ECVI) = 0.58
90 Percent Confidence Interval for ECVI = (0.47 ; 0.73)
ECVI for Saturated Model = 0.42
ECVI for Independence Model = 3.42

Chi-Square for Independence Model with 36 Degrees of Freedom = 713.78
Independence AIC = 731.78
Model AIC = 124.99
Saturated AIC = 90.00
Independence CAIC = 771.12
Model CAIC = 208.03
Saturated CAIC = 286.68

Normed Fit Index (NFI) = 0.88
Non-Normed Fit Index (NNFI) = 0.88
Parsimony Normed Fit Index (PNFI) = 0.64
Comparative Fit Index (CFI) = 0.92

Parents 215

Incremental Fit Index (IFI) = 0.92
Relative Fit Index (RFI) = 0.84

Critical N (CN) = 118.05

Root Mean Square Residual (RMR) = 38.08
Standardized RMR = 0.076
Goodness of Fit Index (GFI) = 0.92
Adjusted Goodness of Fit Index (AGFI) = 0.86
Parsimony Goodness of Fit Index (PGFI) = 0.53

! Parents 215 CFA

Modification Indices and Expected Change

Modification Indices for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	--	1.10
HEALTH	--	0.95
HOMEECON	--	5.72
PHYSEDUC	--	6.51
ENGLISH	1.14	--
FORLANG	0.20	--
MATHEMAT	0.59	--
SCIENCE	12.28	--
SOCIALST	10.48	--

Expected Change for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	--	-0.22
HEALTH	--	0.14
HOMEECON	--	-0.39
PHYSEDUC	--	0.48
ENGLISH	0.09	--
FORLANG	-0.05	--
MATHEMAT	-0.07	--
SCIENCE	-0.32	--
SOCIALST	0.29	--

Parents 215

No Non-Zero Modification Indices for PHI

Modification Indices for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	3.13	- -				
HOMEECON	14.06	1.29	- -			
PHYSEDUC	3.55	5.15	2.50	- -		
ENGLISH	5.68	0.27	0.51	0.53	- -	
FORLANG	- -	0.03	0.76	0.75	1.82	- -
MATHEMAT	2.58	2.92	1.03	4.75	5.77	0.82
SCIENCE	0.30	2.60	2.65	1.20	7.84	2.66
SOCIALST	1.50	9.19	0.04	- -	7.29	3.49

Modification Indices for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	18.40	- -	
SOCIALST	1.22	1.22	- -

Expected Change for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	-65.66	- -				
HOMEECON	135.58	-54.41	- -			
PHYSEDUC	-71.56	84.87	-55.35	- -		
ENGLISH	58.83	7.70	-13.46	-16.26	- -	
FORLANG	- -	-3.67	-24.41	28.86	35.27	- -
MATHEMAT	-43.72	-27.88	21.02	53.67	-43.58	-25.36
SCIENCE	-15.24	-26.91	-34.33	27.39	-56.36	53.56
SOCIALST	-32.79	49.21	-4.29	- -	56.44	-65.64

Expected Change for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	91.92	- -	

Parents 215

SOCIALST -24.24 -30.67 - -

Maximum Modification Index is 18.40 for Element (8, 7) of THETA-DELTA

Time used: 0.060 Seconds

APPENDIX 23

GENERAL HYPOTHESIS 5E CONFIRMATORY FACTOR ANALYSIS OUTPUT FOR TEACHERS

Teachers 80

DATE: 11/14/2010
TIME: 16:25

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

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Website: www.ssicentral.com

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers CFA\Teachers 80.ls8:

```
! Teachers 80 CFA
DA NI=9 NO=80 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers
CFA\Teachers 80.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU MI IT=2000 AD=OFF
```

! Teachers 80 CFA

Number of Input Variables 9

Teachers 80

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 80

! Teachers 80 CFA

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	711.61					
HEALTH	119.63	223.13				
HOMEECON	317.55	189.29	510.75			
PHYSEDUC	245.78	195.19	258.66	466.57		
ENGLISH	118.02	119.83	141.54	144.41	181.39	
FORLANG	188.19	128.82	231.96	178.67	137.92	506.18
MATHEMAT	16.15	64.46	30.55	104.89	74.49	136.18
SCIENCE	16.65	79.59	111.67	137.34	93.73	176.09
SOCIALST	129.74	123.82	171.48	161.32	115.50	139.70

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	214.96		
SCIENCE	162.76	266.88	
SOCIALST	111.40	134.80	251.34

! Teachers 80 CFA

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0

FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

! Teachers 80 CFA

Number of Iterations = 14

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	0.83	- -
	(0.20)	
	4.28	
HOMEECON	1.20	- -
	(0.29)	
	4.19	
PHYSEDUC	1.21	- -

(0.28)
4.29
ENGLISH -- 1.00
FORLANG -- 1.48
(0.30)
5.00
MATHEMAT -- 0.99
(0.19)
5.10
SCIENCE -- 1.22
(0.22)
5.59
SOCIALST -- 1.24
(0.21)
5.84

PHI

	PRACTICA	ACADEMIC
PRACTICA	189.26	
	(83.44)	
	2.27	
ACADEMIC	100.29	91.14
	(31.22)	(27.04)
	3.21	3.37

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
522.35	91.31	236.66	188.07	90.25	306.39
(89.20)	(20.19)	(48.52)	(42.01)	(17.62)	(55.32)
5.86	4.52	4.88	4.48	5.12	5.54

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
126.42	132.05	110.51
(23.06)	(25.85)	(22.96)
5.48	5.11	4.81

Squared Multiple Correlations for X - Variables

Teachers 80

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.27	0.59	0.54	0.60	0.50	0.39

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.41	0.51	0.56

Goodness of Fit Statistics

Degrees of Freedom = 26
Minimum Fit Function Chi-Square = 66.93 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 67.74 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 41.74
90 Percent Confidence Interval for NCP = (21.14 ; 70.01)

Minimum Fit Function Value = 0.85
Population Discrepancy Function Value (F0) = 0.53
90 Percent Confidence Interval for F0 = (0.27 ; 0.89)
Root Mean Square Error of Approximation (RMSEA) = 0.14
90 Percent Confidence Interval for RMSEA = (0.10 ; 0.18)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00039

Expected Cross-Validation Index (ECVI) = 1.34
90 Percent Confidence Interval for ECVI = (1.08 ; 1.70)
ECVI for Saturated Model = 1.14
ECVI for Independence Model = 6.97

Chi-Square for Independence Model with 36 Degrees of Freedom = 532.44
Independence AIC = 550.44
Model AIC = 105.74
Saturated AIC = 90.00
Independence CAIC = 580.88
Model CAIC = 169.99
Saturated CAIC = 242.19

Normed Fit Index (NFI) = 0.87
Non-Normed Fit Index (NNFI) = 0.89
Parsimony Normed Fit Index (PNFI) = 0.63
Comparative Fit Index (CFI) = 0.92

Teachers 80

Incremental Fit Index (IFI) = 0.92
Relative Fit Index (RFI) = 0.83

Critical N (CN) = 54.88

Root Mean Square Residual (RMR) = 33.53
Standardized RMR = 0.092
Goodness of Fit Index (GFI) = 0.84
Adjusted Goodness of Fit Index (AGFI) = 0.72
Parsimony Goodness of Fit Index (PGFI) = 0.49

! Teachers 80 CFA

Modification Indices and Expected Change

Modification Indices for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	1.89
HEALTH	- -	1.20
HOMEECON	- -	0.35
PHYSEDUC	- -	0.14
ENGLISH	8.54	- -
FORLANG	0.84	- -
MATHEMAT	10.70	- -
SCIENCE	6.55	- -
SOCIALST	2.72	- -

Expected Change for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	-0.83
HEALTH	- -	0.36
HOMEECON	- -	-0.29
PHYSEDUC	- -	0.17
ENGLISH	0.57	- -
FORLANG	0.31	- -
MATHEMAT	-0.71	- -
SCIENCE	-0.61	- -
SOCIALST	0.38	- -

No Non-Zero Modification Indices for PHI

Modification Indices for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	3.98	- -				
HOMEECON	7.64	0.01	- -			
PHYSEDUC	0.35	0.20	1.54	- -		
ENGLISH	0.53	4.96	0.09	0.00	- -	
FORLANG	1.55	0.39	3.19	0.59	0.04	- -
MATHEMAT	2.74	0.03	11.54	0.76	2.56	0.03
SCIENCE	6.91	1.48	0.31	0.41	3.51	0.43
SOCIALST	0.35	0.57	0.92	0.13	0.08	3.12

Modification Indices for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	21.41	- -	
SOCIALST	0.00	0.10	- -

Expected Change for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	-62.66	- -				
HOMEECON	133.17	-2.16	- -			
PHYSEDUC	26.81	12.19	-49.19	- -		
ENGLISH	19.97	28.71	5.94	0.32	- -	
FORLANG	61.04	-14.29	63.72	-25.32	4.60	- -
MATHEMAT	-52.32	-2.68	-78.21	18.53	-24.13	4.42
SCIENCE	-87.49	-19.03	-13.45	14.49	-30.88	18.53
SOCIALST	18.36	11.06	21.94	-7.60	4.47	-47.61

Expected Change for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	84.55	- -	

SOCIALST -0.45 -6.09 - -

Maximum Modification Index is 21.41 for Element (8, 7) of THETA-DELTA

Time used: 0.040 Seconds

APPENDIX 24

GENERAL HYPOTHESIS 5E CONFIRMATORY FACTOR ANALYSIS OUTPUT FOR ALL STUDENTS

All Students 78

DATE: 11/14/2010
TIME: 16:56

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

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Website: www.ssicentral.com

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\All Students CFA\All Students 78.ls8:

```
! All Students 78 CFA
DA NI=9 NO=78 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\All Students
CFA\All Students 78.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU MI IT=2000 AD=OFF
```

! All Students 78 CFA

Number of Input Variables 9

All Students 78

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 78

! All Students 78 CFA

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	788.36					
HEALTH	229.55	573.17				
HOMEECON	374.16	265.95	723.81			
PHYSEDUC	264.36	290.35	249.03	1008.18		
ENGLISH	158.08	161.30	183.12	194.50	449.81	
FORLANG	-38.74	98.53	-10.93	160.08	151.21	876.76
MATHEMAT	172.35	195.73	92.40	383.95	316.25	300.05
SCIENCE	-35.59	86.75	29.63	211.96	98.07	274.85
SOCIALST	69.79	248.27	82.09	106.57	162.76	342.17

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	789.96		
SCIENCE	412.09	670.57	
SOCIALST	214.14	325.27	581.46

! All Students 78 CFA

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0

FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

! All Students 78 CFA

Number of Iterations = 16

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	0.97	- -
	(0.26)	
	3.72	
HOMEECON	1.03	- -
	(0.28)	
	3.64	
PHYSEDUC	1.09	- -

(0.32)
3.42
ENGLISH -- 1.00
FORLANG -- 1.29
(0.38)
3.42
MATHEMAT -- 1.83
(0.43)
4.27
SCIENCE -- 1.45
(0.36)
4.02
SOCIALST -- 1.22
(0.32)
3.78

PHI

```
         PRACTICA  ACADEMIC
         --------  --------
PRACTICA   268.21
          (114.48)
             2.34
ACADEMIC    95.51    140.62
           (40.16)   (59.23)
             2.38      2.37
```

THETA-DELTA

```
 DRIVERED  HEALTH   HOMEECON  PHYSEDUC  ENGLISH   FORLANG
 --------  -------- --------  --------  --------  --------
  520.15    319.69   439.85    690.24    309.19    642.09
 (104.97)  (74.84)  (95.00)   (135.54)  (56.74)   (114.63)
    4.96     4.27     4.63      5.09      5.45      5.60
```

THETA-DELTA

```
 MATHEMAT  SCIENCE  SOCIALST
 --------  -------- --------
  320.29    374.67   373.11
 (85.45)   (77.06)  (70.79)
    3.75     4.86     5.27
```

Squared Multiple Correlations for X - Variables

All Students 78

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.34	0.44	0.39	0.32	0.31	0.27

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.59	0.44	0.36

Goodness of Fit Statistics

Degrees of Freedom = 26
Minimum Fit Function Chi-Square = 75.37 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 67.38 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 41.38
90 Percent Confidence Interval for NCP = (20.86 ; 69.58)

Minimum Fit Function Value = 0.98
Population Discrepancy Function Value (F0) = 0.54
90 Percent Confidence Interval for F0 = (0.27 ; 0.90)
Root Mean Square Error of Approximation (RMSEA) = 0.14
90 Percent Confidence Interval for RMSEA = (0.10 ; 0.19)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00040

Expected Cross-Validation Index (ECVI) = 1.37
90 Percent Confidence Interval for ECVI = (1.10 ; 1.73)
ECVI for Saturated Model = 1.17
ECVI for Independence Model = 3.80

Chi-Square for Independence Model with 36 Degrees of Freedom = 274.56
Independence AIC = 292.56
Model AIC = 105.38
Saturated AIC = 90.00
Independence CAIC = 322.77
Model CAIC = 169.16
Saturated CAIC = 241.05

Normed Fit Index (NFI) = 0.73
Non-Normed Fit Index (NNFI) = 0.71
Parsimony Normed Fit Index (PNFI) = 0.52
Comparative Fit Index (CFI) = 0.79

All Students 78

Incremental Fit Index (IFI) = 0.80
Relative Fit Index (RFI) = 0.62

Critical N (CN) = 47.63

Root Mean Square Residual (RMR) = 74.61
Standardized RMR = 0.11
Goodness of Fit Index (GFI) = 0.84
Adjusted Goodness of Fit Index (AGFI) = 0.72
Parsimony Goodness of Fit Index (PGFI) = 0.48

! All Students 78 CFA

Modification Indices and Expected Change

Modification Indices for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	2.12
HEALTH	- -	1.56
HOMEECON	- -	3.35
PHYSEDUC	- -	4.36
ENGLISH	5.43	- -
FORLANG	2.45	- -
MATHEMAT	0.57	- -
SCIENCE	4.82	- -
SOCIALST	0.43	- -

Expected Change for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	-0.52
HEALTH	- -	0.39
HOMEECON	- -	-0.64
PHYSEDUC	- -	0.85
ENGLISH	0.45	- -
FORLANG	-0.43	- -
MATHEMAT	0.19	- -
SCIENCE	-0.50	- -
SOCIALST	0.14	- -

All Students 78

No Non-Zero Modification Indices for PHI

Modification Indices for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	1.23	- -				
HOMEECON	7.53	0.01	- -			
PHYSEDUC	0.31	0.04	1.45	- -		
ENGLISH	1.08	0.03	3.29	0.03	- -	
FORLANG	1.85	0.01	0.92	0.07	0.48	- -
MATHEMAT	0.98	0.40	2.03	5.41	6.91	0.88
SCIENCE	4.32	0.71	0.32	0.84	12.59	0.07
SOCIALST	0.41	9.67	0.16	3.30	0.07	6.60

Modification Indices for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	3.67	- -	
SOCIALST	17.88	5.98	- -

Expected Change for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	-85.29	- -				
HOMEECON	227.96	-7.72	- -			
PHYSEDUC	-51.83	16.29	-110.95	- -		
ENGLISH	54.17	7.36	88.75	-10.08	- -	
FORLANG	-100.89	4.51	-66.72	22.15	-40.60	- -
MATHEMAT	60.42	-31.89	-82.23	162.08	149.94	-73.29
SCIENCE	-124.35	-41.73	-31.63	62.45	-178.78	17.92
SOCIALST	-36.96	148.37	-22.11	-120.04	-12.39	169.56

Expected Change for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	145.67	- -	

All Students 78

SOCIALST -281.15 141.07 - -

Maximum Modification Index is 17.88 for Element (9, 7) of THETA-DELTA

Time used: 0.050 Seconds

APPENDIX 25

GENERAL HYPOTHESIS 5E CONFIRMATORY FACTOR ANALYSIS

OUTPUT FOR CULTURALLY LITERATE STUDENTS

Cult Lit Students 51

DATE: 11/14/2010
TIME: 17:24

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit Students CFA\Cult Lit Students 51.ls8:

```
! Cult Lit Students 51 CFA
DA NI=9 NO=51 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit
Students CFA\Cult Lit Students 51.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU MI IT=2000 AD=OFF
```

! Cult Lit Students 51 CFA

Number of Input Variables 9

Cult Lit Students 51

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 51

! Cult Lit Students 51 CFA

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	793.29					
HEALTH	241.60	573.82				
HOMEECON	353.73	292.58	769.53			
PHYSEDUC	256.02	357.21	329.90	1053.88		
ENGLISH	209.30	193.38	244.48	238.54	508.56	
FORLANG	-13.32	197.58	101.27	310.02	248.96	842.77
MATHEMAT	174.20	226.73	154.40	480.88	367.08	423.20
SCIENCE	63.79	164.97	115.37	258.34	176.74	312.14
SOCIALST	192.60	376.52	177.71	280.53	291.70	333.61

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	877.60		
SCIENCE	511.53	678.58	
SOCIALST	329.76	310.92	585.54

! Cult Lit Students 51 CFA

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0

FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

! Cult Lit Students 51 CFA

Number of Iterations = 15

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	1.26 (0.42) 2.99	- -
HOMEECON	1.16 (0.43) 2.73	- -
PHYSEDUC	1.50	- -

```
    (0.53)
     2.86
ENGLISH    - -   1.00
FORLANG    - -   1.17
         (0.32)
          3.66
MATHEMAT   - -   1.56
         (0.35)
          4.49
SCIENCE    - -   1.18
         (0.29)
          4.02
SOCIALST   - -   1.18
         (0.28)
          4.26

  PHI

     PRACTICA  ACADEMIC
     --------  --------
PRACTICA   197.80
     (119.17)
       1.66
ACADEMIC   147.24   223.61
      (63.69)  (91.10)
       2.31     2.45

  THETA-DELTA

     DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
     --------  --------  --------  --------  --------  --------
      595.49   261.49   501.45   606.89   284.95   535.14
     (131.90)  (81.32)  (119.13)  (155.73)  (66.70)  (119.72)
       4.51     3.22     4.21     3.90     4.27     4.47

  THETA-DELTA

     MATHEMAT  SCIENCE  SOCIALST
     --------  --------  --------
      336.24   368.13   275.48
      (96.20)  (87.31)  (69.79)
       3.50     4.22     3.95
```

Squared Multiple Correlations for X - Variables

Cult Lit Students 51

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.25	0.54	0.35	0.42	0.44	0.37

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.62	0.46	0.53

Goodness of Fit Statistics

Degrees of Freedom = 26
Minimum Fit Function Chi-Square = 49.23 (P = 0.0039)
Normal Theory Weighted Least Squares Chi-Square = 45.75 (P = 0.0097)
Estimated Non-centrality Parameter (NCP) = 19.75
90 Percent Confidence Interval for NCP = (4.73 ; 42.61)

Minimum Fit Function Value = 0.98
Population Discrepancy Function Value (F0) = 0.40
90 Percent Confidence Interval for F0 = (0.095 ; 0.85)
Root Mean Square Error of Approximation (RMSEA) = 0.12
90 Percent Confidence Interval for RMSEA = (0.060 ; 0.18)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.033

Expected Cross-Validation Index (ECVI) = 1.68
90 Percent Confidence Interval for ECVI = (1.37 ; 2.13)
ECVI for Saturated Model = 1.80
ECVI for Independence Model = 5.69

Chi-Square for Independence Model with 36 Degrees of Freedom = 266.66
Independence AIC = 284.66
Model AIC = 83.75
Saturated AIC = 90.00
Independence CAIC = 311.04
Model CAIC = 139.45
Saturated CAIC = 221.93

Normed Fit Index (NFI) = 0.82
Non-Normed Fit Index (NNFI) = 0.86
Parsimony Normed Fit Index (PNFI) = 0.59
Comparative Fit Index (CFI) = 0.90

Cult Lit Students 51

Incremental Fit Index (IFI) = 0.90
Relative Fit Index (RFI) = 0.74

Critical N (CN) = 47.35

Root Mean Square Residual (RMR) = 64.62
Standardized RMR = 0.088
Goodness of Fit Index (GFI) = 0.83
Adjusted Goodness of Fit Index (AGFI) = 0.71
Parsimony Goodness of Fit Index (PGFI) = 0.48

! Cult Lit Students 51 CFA

Modification Indices and Expected Change

Modification Indices for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	0.85
HEALTH	- -	0.35
HOMEECON	- -	1.72
PHYSEDUC	- -	1.78
ENGLISH	0.91	- -
FORLANG	0.94	- -
MATHEMAT	0.78	- -
SCIENCE	2.36	- -
SOCIALST	5.16	- -

Expected Change for LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	- -	-0.44
HEALTH	- -	0.27
HOMEECON	- -	-0.62
PHYSEDUC	- -	0.76
ENGLISH	0.35	- -
FORLANG	-0.47	- -
MATHEMAT	-0.41	- -
SCIENCE	-0.65	- -
SOCIALST	0.87	- -

No Non-Zero Modification Indices for PHI

Modification Indices for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	0.03	- -				
HOMEECON	3.61	0.01	- -			
PHYSEDUC	0.37	0.29	0.08	- -		
ENGLISH	1.81	0.32	3.22	0.45	- -	
FORLANG	3.55	- -	0.42	0.49	0.08	- -
MATHEMAT	0.01	3.47	1.35	5.09	0.41	0.12
SCIENCE	0.89	0.63	0.18	0.01	5.56	0.00
SOCIALST	0.08	14.46	0.44	1.77	0.89	0.33

Modification Indices for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	9.22	- -	
SOCIALST	9.07	- -	- -

Expected Change for THETA-DELTA

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	- -					
HEALTH	-14.56	- -				
HOMEECON	174.70	8.51	- -			
PHYSEDUC	-65.52	-55.80	-30.46	- -		
ENGLISH	87.33	-27.57	109.96	-46.78	- -	
FORLANG	-164.31	- -	-53.20	65.40	-18.69	- -
MATHEMAT	-8.99	-109.52	-84.40	186.59	40.88	28.54
SCIENCE	-69.82	-44.63	-29.75	6.10	-134.56	4.46
SOCIALST	18.15	190.42	-41.31	-94.20	49.41	39.14

Expected Change for THETA-DELTA

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	- -		
SCIENCE	224.59	- -	

SOCIALST -210.08 -- --

Maximum Modification Index is 14.46 for Element (9, 2) of THETA-DELTA

Time used: 0.050 Seconds

APPENDIX 26

GENERAL HYPOTHESIS 5E INVARIANCE TEST OUTPUT FOR PARENTS AND TEACHERS

Baseline Model

DATE: 11/29/2010
TIME: 14:56

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

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Website: www.ssicentral.com

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents and Teachers Invariance Test\Baseline Model.ls8:

```
! Parents and Teachers Invariance Baseline Model
DA NG=2 NI=9 NO=215 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents
CFA\Parents 215.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Parents and Teachers Invariance Baseline Model

Number of Input Variables 9

```
                    Baseline Model
        Number of Y - Variables   0
        Number of X - Variables   9
        Number of ETA - Variables 0
        Number of KSI - Variables 2
        Number of Observations  215
        Number of Groups          2
DA NI=9 NO=80 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers
CFA\Teachers 80.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS

DA NI=9 NO=80 MA=CM

        Number of Input Variables 9
        Number of Y - Variables   0
        Number of X - Variables   9
        Number of ETA - Variables 0
        Number of KSI - Variables 2
        Number of Observations   80
        Number of Groups          2

! Parents and Teachers Invariance Baseline Model

    Covariance Matrix

       DRIVERED   HEALTH  HOMEECON  PHYSEDUC   ENGLISH   FORLANG
       --------  --------  --------  --------  --------  --------
DRIVERED   765.43
 HEALTH    265.72   430.31
HOMEECON   331.87   310.95   571.73
PHYSEDUC   176.01   288.88   234.73   659.96
 ENGLISH    88.80    68.81    29.44    65.43   294.97
 FORLANG    41.36    80.42    19.81   134.69   184.11   722.77
MATHEMAT   -23.35    23.02    28.32    98.24    53.13   138.72
 SCIENCE   -15.46    11.73   -34.76    74.28    99.01   259.25
```

Baseline Model

SOCIALST	52.52	136.35	74.70	138.59	168.60	240.37

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	339.03		
SCIENCE	180.69	423.30	
SOCIALST	125.63	200.39	428.10

DA NI=9 NO=80 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	711.61					
HEALTH	119.63	223.13				
HOMEECON	317.55	189.29	510.75			
PHYSEDUC	245.78	195.19	258.66	466.57		
ENGLISH	118.02	119.83	141.54	144.41	181.39	
FORLANG	188.19	128.82	231.96	178.67	137.92	506.18
MATHEMAT	16.15	64.46	30.55	104.89	74.49	136.18
SCIENCE	16.65	79.59	111.67	137.34	93.73	176.09
SOCIALST	129.74	123.82	171.48	161.32	115.50	139.70

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	214.96		
SCIENCE	162.76	266.88	
SOCIALST	111.40	134.80	251.34

! Parents and Teachers Invariance Baseline Model

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0

Baseline Model

HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=80 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	20	0
HOMEECON	21	0
PHYSEDUC	22	0
ENGLISH	0	0
FORLANG	0	23
MATHEMAT	0	24

SCIENCE	0	25
SOCIALST	0	26

PHI

	PRACTICA	ACADEMIC
PRACTICA	27	
ACADEMIC	28	29

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
30	31	32	33	34	35

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
36	37	38

! Parents and Teachers Invariance Baseline Model

Number of Iterations = 24

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	1.21 (0.16) 7.50	- -
HOMEECON	1.13 (0.16) 7.27	- -
PHYSEDUC	1.00 (0.15) 6.46	- -

Baseline Model

```
ENGLISH    --   1.00
FORLANG    --   1.81
          (0.28)
           6.36
MATHEMAT    --   0.95
          (0.18)
           5.38
SCIENCE    --   1.45
          (0.22)
           6.51
SOCIALST   --   1.60
          (0.24)
           6.77

   PHI

    PRACTICA  ACADEMIC
    --------  --------
PRACTICA  229.38
        (57.64)
          3.98
ACADEMIC   38.97    89.96
        (13.94)  (23.35)
          2.80     3.85

   THETA-DELTA

    DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH   FORLANG
    --------  --------  --------  --------  --------  --------
     536.05    95.51   277.47   430.40   205.01   427.69
    (56.73)  (27.72)  (36.10)  (46.81)  (22.75)  (52.03)
      9.45     3.45     7.69     9.19     9.01     8.22

   THETA-DELTA

    MATHEMAT  SCIENCE  SOCIALST
    --------  --------  --------
     257.23   234.61   196.76
    (27.41)  (29.88)  (29.29)
      9.39     7.85     6.72

   Squared Multiple Correlations for X - Variables

    DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH   FORLANG
```

Baseline Model

0.30	0.78	0.51	0.35	0.30	0.41

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.24	0.45	0.54

Group Goodness of Fit Statistics

Contribution to Chi-Square = 83.45
Percentage Contribution to Chi-Square = 55.49

Root Mean Square Residual (RMR) = 38.08
Standardized RMR = 0.076
Goodness of Fit Index (GFI) = 0.92

DA NI=9 NO=80 MA=CM

Number of Iterations = 24

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	0.83 (0.20) 4.28	- -
HOMEECON	1.20 (0.29) 4.19	- -
PHYSEDUC	1.21 (0.28) 4.29	- -
ENGLISH	- -	1.00
FORLANG	- -	1.48 (0.30) 5.00

Baseline Model

MATHEMAT	--	0.99
	(0.19)	
	5.10	
SCIENCE	--	1.22
	(0.22)	
	5.59	
SOCIALST	--	1.24
	(0.21)	
	5.84	

PHI

	PRACTICA	ACADEMIC
PRACTICA	189.26	
	(83.44)	
	2.27	
ACADEMIC	100.29	91.14
	(31.22)	(27.04)
	3.21	3.37

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
522.34	91.31	236.66	188.07	90.25	306.39
(89.20)	(20.19)	(48.52)	(42.01)	(17.62)	(55.32)
5.86	4.52	4.88	4.48	5.12	5.54

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
126.43	132.05	110.51
(23.06)	(25.85)	(22.96)
5.48	5.11	4.81

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.27	0.59	0.54	0.60	0.50	0.39

Squared Multiple Correlations for X - Variables

Baseline Model

MATHEMAT	SCIENCE	SOCIALST
0.41	0.51	0.56

Global Goodness of Fit Statistics

Degrees of Freedom = 52
Minimum Fit Function Chi-Square = 150.37 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 154.72 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 102.72
90 Percent Confidence Interval for NCP = (69.15 ; 143.93)

Minimum Fit Function Value = 0.51
Population Discrepancy Function Value (F0) = 0.35
90 Percent Confidence Interval for F0 = (0.24 ; 0.49)
Root Mean Square Error of Approximation (RMSEA) = 0.12
90 Percent Confidence Interval for RMSEA = (0.095 ; 0.14)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 0.79
90 Percent Confidence Interval for ECVI = (0.67 ; 0.93)
ECVI for Saturated Model = 0.31
ECVI for Independence Model = 4.31

Chi-Square for Independence Model with 72 Degrees of Freedom = 1246.22
Independence AIC = 1282.22
Model AIC = 230.72
Saturated AIC = 180.00
Independence CAIC = 1366.59
Model CAIC = 408.83
Saturated CAIC = 601.83

Normed Fit Index (NFI) = 0.88
Non-Normed Fit Index (NNFI) = 0.88
Parsimony Normed Fit Index (PNFI) = 0.64
Comparative Fit Index (CFI) = 0.92
Incremental Fit Index (IFI) = 0.92
Relative Fit Index (RFI) = 0.83

Critical N (CN) = 154.18

Baseline Model

Group Goodness of Fit Statistics

Contribution to Chi-Square = 66.93
Percentage Contribution to Chi-Square = 44.51

Root Mean Square Residual (RMR) = 33.53
Standardized RMR = 0.092
Goodness of Fit Index (GFI) = 0.84

Time used: 0.070 Seconds

Constrained Model

DATE: 11/29/2010
TIME: 15:36

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents and Teachers Invariance Test\Constrained Model.ls8:

```
! Parents and Teachers Invariance Constrained Model
DA NG=2 NI=9 NO=215 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents
CFA\Parents 215.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Parents and Teachers Invariance Constrained Model

Number of Input Variables 9

Constrained Model

```
            Number of Y - Variables  0
            Number of X - Variables  9
            Number of ETA - Variables 0
            Number of KSI - Variables 2
            Number of Observations  215
            Number of Groups         2
DA NI=9 NO=80 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers
CFA\Teachers 80.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
EQ LX(1,2,1) LX(2,1)
EQ LX(1,3,1) LX(3,1)
EQ LX(1,4,1) LX(4,1)
EQ LX(1,6,2) LX(6,2)
EQ LX(1,7,2) LX(7,2)
EQ LX(1,8,2) LX(8,2)
EQ LX(1,9,2) LX(9,2)
PD
OU NS

DA NI=9 NO=80 MA=CM

            Number of Input Variables 9
            Number of Y - Variables  0
            Number of X - Variables  9
            Number of ETA - Variables 0
            Number of KSI - Variables 2
            Number of Observations  80
            Number of Groups         2

! Parents and Teachers Invariance Constrained Model

    Covariance Matrix

      DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
      --------  -------- --------  --------  -------- --------
DRIVERED    765.43
```

Constrained Model

HEALTH	265.72	430.31				
HOMEECON	331.87	310.95	571.73			
PHYSEDUC	176.01	288.88	234.73	659.96		
ENGLISH	88.80	68.81	29.44	65.43	294.97	
FORLANG	41.36	80.42	19.81	134.69	184.11	722.77
MATHEMAT	-23.35	23.02	28.32	98.24	53.13	138.72
SCIENCE	-15.46	11.73	-34.76	74.28	99.01	259.25
SOCIALST	52.52	136.35	74.70	138.59	168.60	240.37

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	339.03		
SCIENCE	180.69	423.30	
SOCIALST	125.63	200.39	428.10

DA NI=9 NO=80 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	711.61					
HEALTH	119.63	223.13				
HOMEECON	317.55	189.29	510.75			
PHYSEDUC	245.78	195.19	258.66	466.57		
ENGLISH	118.02	119.83	141.54	144.41	181.39	
FORLANG	188.19	128.82	231.96	178.67	137.92	506.18
MATHEMAT	16.15	64.46	30.55	104.89	74.49	136.18
SCIENCE	16.65	79.59	111.67	137.34	93.73	176.09
SOCIALST	129.74	123.82	171.48	161.32	115.50	139.70

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	214.96		
SCIENCE	162.76	266.88	
SOCIALST	111.40	134.80	251.34

! Parents and Teachers Invariance Constrained Model

Constrained Model

Parameter Specifications

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=80 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

Constrained Model

	PRACTICA	ACADEMIC
PRACTICA	20	
ACADEMIC	21	22

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
23	24	25	26	27	28

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
29	30	31

! Parents and Teachers Invariance Constrained Model

Number of Iterations = 22

LISREL Estimates (Maximum Likelihood)

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	246.45 (55.22) 4.46	
ACADEMIC	41.72 (14.85) 2.81	101.94 (21.12) 4.83

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
521.57 (56.02)	124.44 (23.78)	256.86 (35.34)	424.30 (47.68)	203.22 (22.74)	428.30 (50.87)

Constrained Model

9.31	5.23	7.27	8.90	8.94	8.42

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
253.93	233.82	204.11
(27.31)	(28.96)	(27.77)
9.30	8.07	7.35

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.32	0.70	0.56	0.40	0.33	0.40

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.27	0.44	0.51

Group Goodness of Fit Statistics

Contribution to Chi-Square = 87.43
Percentage Contribution to Chi-Square = 53.83

Root Mean Square Residual (RMR) = 40.62
Standardized RMR = 0.080
Goodness of Fit Index (GFI) = 0.91

DA NI=9 NO=80 MA=CM

Number of Iterations = 22

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -

Constrained Model

```
HEALTH     1.07     - -
        (0.12)
         8.70
HOMEECON    1.16     - -
        (0.14)
         8.38
PHYSEDUC    1.07     - -
        (0.14)
         7.80
ENGLISH      - -    1.00
FORLANG      - -    1.68
              (0.20)
               8.19
MATHEMAT      - -    0.96
              (0.13)
               7.36
SCIENCE      - -    1.35
              (0.16)
               8.59
SOCIALST      - -    1.45
              (0.16)
               8.98

   PHI

     PRACTICA  ACADEMIC
     --------  --------
PRACTICA  158.21
        (44.47)
         3.56
ACADEMIC   85.13    76.46
        (20.99)  (19.20)
         4.06     3.98

   THETA-DELTA

     DRIVERED   HEALTH  HOMEECON  PHYSEDUC   ENGLISH   FORLANG
     --------  --------  --------  --------  --------  --------
      546.06    77.09    255.14    221.93     92.39    307.35
     (91.33)  (21.39)   (47.50)   (41.23)   (17.06)   (55.24)
       5.98     3.60      5.37      5.38      5.42      5.56

   THETA-DELTA
```

Constrained Model

MATHEMAT	SCIENCE	SOCIALST
130.19	134.43	106.07
(22.77)	(25.85)	(22.64)
5.72	5.20	4.69

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.22	0.70	0.45	0.45	0.45	0.41

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.35	0.51	0.60

Global Goodness of Fit Statistics

Degrees of Freedom = 59
Minimum Fit Function Chi-Square = 162.42 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 166.51 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 107.51
90 Percent Confidence Interval for NCP = (72.77 ; 149.91)

Minimum Fit Function Value = 0.55
Population Discrepancy Function Value (F0) = 0.37
90 Percent Confidence Interval for F0 = (0.25 ; 0.51)
Root Mean Square Error of Approximation (RMSEA) = 0.11
90 Percent Confidence Interval for RMSEA = (0.092 ; 0.13)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 0.78
90 Percent Confidence Interval for ECVI = (0.66 ; 0.92)
ECVI for Saturated Model = 0.31
ECVI for Independence Model = 4.31

Chi-Square for Independence Model with 72 Degrees of Freedom = 1246.22
Independence AIC = 1282.22
Model AIC = 228.51
Saturated AIC = 180.00
Independence CAIC = 1366.59

Constrained Model

Model CAIC = 373.81
Saturated CAIC = 601.83

Normed Fit Index (NFI) = 0.87
Non-Normed Fit Index (NNFI) = 0.89
Parsimony Normed Fit Index (PNFI) = 0.71
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Relative Fit Index (RFI) = 0.84

Critical N (CN) = 158.25

Group Goodness of Fit Statistics

Contribution to Chi-Square = 74.98
Percentage Contribution to Chi-Square = 46.17

Root Mean Square Residual (RMR) = 43.05
Standardized RMR = 0.11
Goodness of Fit Index (GFI) = 0.83

Time used: 0.070 Seconds

APPENDIX 27

GENERAL HYPOTHESIS 5E INVARIANCE TEST OUTPUT FOR PARENTS AND

CULTURALLY LITERATE STUDENTS

Baseline

DATE: 12/ 4/2010
TIME: 15:46

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents and Cult Lit Students Invariance Test\Baseline.ls8:

```
! Parents and Culturally Literate Students Invariance Baseline Model
DA NG=2 NI=9 NO=215 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents
CFA\Parents 215.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Parents and Culturally Literate Students Invariance Baseline Model

Number of Input Variables 9

Baseline

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 215
Number of Groups 2

```
DA NI=9 NO=51 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit
Students CFA\Cult Lit Students 51.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS

DA NI=9 NO=51 MA=CM
```

Number of Input Variables 9
Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 51
Number of Groups 2

! Parents and Culturally Literate Students Invariance Baseline Model

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	765.43					
HEALTH	265.72	430.31				
HOMEECON	331.87	310.95	571.73			
PHYSEDUC	176.01	288.88	234.73	659.96		
ENGLISH	88.80	68.81	29.44	65.43	294.97	
FORLANG	41.36	80.42	19.81	134.69	184.11	722.77
MATHEMAT	-23.35	23.02	28.32	98.24	53.13	138.72
SCIENCE	-15.46	11.73	-34.76	74.28	99.01	259.25

Baseline

SOCIALST	52.52	136.35	74.70	138.59	168.60	240.37

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	339.03		
SCIENCE	180.69	423.30	
SOCIALST	125.63	200.39	428.10

DA NI=9 NO=51 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	793.29					
HEALTH	241.60	573.82				
HOMEECON	353.73	292.58	769.53			
PHYSEDUC	256.02	357.21	329.90	1053.88		
ENGLISH	209.30	193.38	244.48	238.54	508.56	
FORLANG	-13.32	197.58	101.27	310.02	248.96	842.77
MATHEMAT	174.20	226.73	154.40	480.88	367.08	423.20
SCIENCE	63.79	164.97	115.37	258.34	176.74	312.14
SOCIALST	192.60	376.52	177.71	280.53	291.70	333.61

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	877.60		
SCIENCE	511.53	678.58	
SOCIALST	329.76	310.92	585.54

! Parents and Culturally Literate Students Invariance Baseline Model

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0

Baseline

HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=51 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	20	0
HOMEECON	21	0
PHYSEDUC	22	0
ENGLISH	0	0
FORLANG	0	23
MATHEMAT	0	24

```
 SCIENCE      0     25
SOCIALST      0     26

    PHI

      PRACTICA  ACADEMIC
      --------  --------
PRACTICA      27
ACADEMIC      28      29

    THETA-DELTA

      DRIVERED   HEALTH  HOMEECON  PHYSEDUC   ENGLISH   FORLANG
      --------  --------  --------  --------  --------  --------
        30        31        32        33        34        35

    THETA-DELTA

      MATHEMAT   SCIENCE  SOCIALST
      --------  --------  --------
        36        37        38
```

! Parents and Culturally Literate Students Invariance Baseline Model

Number of Iterations = 29

LISREL Estimates (Maximum Likelihood)

```
    LAMBDA-X

      PRACTICA  ACADEMIC
      --------  --------
DRIVERED    1.00       - -
 HEALTH     1.21       - -
          (0.16)
           7.50
HOMEECON    1.13       - -
          (0.16)
           7.27
PHYSEDUC    1.00       - -
          (0.15)
           6.46
```

Baseline

```
ENGLISH      --    1.00
FORLANG      --    1.81
               (0.28)
                6.36
MATHEMAT     --    0.95
               (0.18)
                5.38
SCIENCE      --    1.45
               (0.22)
                6.51
SOCIALST     --    1.60
               (0.24)
                6.77

   PHI

      PRACTICA  ACADEMIC
      --------  --------
PRACTICA   229.38
      (57.64)
        3.98
ACADEMIC    38.97    89.96
      (13.94)  (23.35)
        2.80     3.85

   THETA-DELTA

      DRIVERED   HEALTH  HOMEECON  PHYSEDUC   ENGLISH   FORLANG
      --------  --------  --------  --------  --------  --------
       536.05    95.51    277.47    430.40    205.01    427.69
      (56.73)  (27.72)   (36.10)   (46.81)   (22.75)   (52.03)
        9.45     3.45      7.69      9.19      9.01      8.22

   THETA-DELTA

      MATHEMAT   SCIENCE  SOCIALST
      --------  --------  --------
       257.23    234.61    196.76
      (27.41)   (29.88)   (29.29)
        9.39      7.85      6.72

   Squared Multiple Correlations for X - Variables

      DRIVERED   HEALTH  HOMEECON  PHYSEDUC   ENGLISH   FORLANG
```

				Baseline	
--------	--------	--------	--------	--------	--------
0.30	0.78	0.51	0.35	0.30	0.41

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.24	0.45	0.54

Group Goodness of Fit Statistics

Contribution to Chi-Square = 83.45
Percentage Contribution to Chi-Square = 62.89

Root Mean Square Residual (RMR) = 38.08
Standardized RMR = 0.076
Goodness of Fit Index (GFI) = 0.92

DA NI=9 NO=51 MA=CM

Number of Iterations = 29

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	1.26 (0.42) 2.99	- -
HOMEECON	1.16 (0.43) 2.73	- -
PHYSEDUC	1.50 (0.53) 2.86	- -
ENGLISH	- -	1.00
FORLANG	- -	1.17 (0.32) 3.66

MATHEMAT	- -	1.56
		(0.35)
		4.49
SCIENCE	- -	1.18
		(0.29)
		4.02
SOCIALST	- -	1.18
		(0.28)
		4.26

PHI

	PRACTICA	ACADEMIC
PRACTICA	197.79	
	(119.17)	
	1.66	
ACADEMIC	147.23	223.62
	(63.69)	(91.10)
	2.31	2.45

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
595.49	261.50	501.43	606.88	284.95	535.14
(131.90)	(81.32)	(119.13)	(155.72)	(66.70)	(119.72)
4.51	3.22	4.21	3.90	4.27	4.47

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
336.23	368.13	275.50
(96.20)	(87.31)	(69.79)
3.50	4.22	3.95

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.25	0.54	0.35	0.42	0.44	0.37

Squared Multiple Correlations for X - Variables

Baseline

MATHEMAT	SCIENCE	SOCIALST
0.62	0.46	0.53

Global Goodness of Fit Statistics

Degrees of Freedom = 52
Minimum Fit Function Chi-Square = 132.68 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 132.74 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 80.74
90 Percent Confidence Interval for NCP = (50.52 ; 118.63)

Minimum Fit Function Value = 0.50
Population Discrepancy Function Value (F0) = 0.31
90 Percent Confidence Interval for F0 = (0.19 ; 0.45)
Root Mean Square Error of Approximation (RMSEA) = 0.11
90 Percent Confidence Interval for RMSEA = (0.086 ; 0.13)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 0.79
90 Percent Confidence Interval for ECVI = (0.68 ; 0.93)
ECVI for Saturated Model = 0.34
ECVI for Independence Model = 3.78

Chi-Square for Independence Model with 72 Degrees of Freedom = 980.44
Independence AIC = 1016.44
Model AIC = 208.74
Saturated AIC = 180.00
Independence CAIC = 1098.94
Model CAIC = 382.91
Saturated CAIC = 592.51

Normed Fit Index (NFI) = 0.86
Non-Normed Fit Index (NNFI) = 0.88
Parsimony Normed Fit Index (PNFI) = 0.62
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Relative Fit Index (RFI) = 0.81

Critical N (CN) = 157.43

Baseline

Group Goodness of Fit Statistics

Contribution to Chi-Square = 49.23
Percentage Contribution to Chi-Square = 37.11

Root Mean Square Residual (RMR) = 64.61
Standardized RMR = 0.088
Goodness of Fit Index (GFI) = 0.83

Time used: 0.080 Seconds

Constrained

DATE: 12/ 5/2010
TIME: 16:29

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Constrained.ls8:

```
! Parents and Culturally Literate Students Invariance Constrained Model
DA NG=2 NI=9 NO=215 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Parents
CFA\Parents 215.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Parents and Culturally Literate Students Invariance Constrained Model

Number of Input Variables 9

```
                              Constrained
              Number of Y - Variables  0
              Number of X - Variables  9
              Number of ETA - Variables 0
              Number of KSI - Variables 2
              Number of Observations  215
              Number of Groups        2
DA NI=9 NO=51 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit
Students CFA\Cult Lit Students 51.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
EQ LX(1,2,1) LX(2,1)
EQ LX(1,3,1) LX(3,1)
EQ LX(1,4,1) LX(4,1)
EQ LX(1,6,2) LX(6,2)
EQ LX(1,7,2) LX(7,2)
EQ LX(1,8,2) LX(8,2)
EQ LX(1,9,2) LX(9,2)
PD
OU NS

DA NI=9 NO=51 MA=CM

              Number of Input Variables 9
              Number of Y - Variables  0
              Number of X - Variables  9
              Number of ETA - Variables 0
              Number of KSI - Variables 2
              Number of Observations  51
              Number of Groups        2

! Parents and Culturally Literate Students Invariance Constrained Model

    Covariance Matrix

       DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
       --------  --------  --------  --------  --------  --------
DRIVERED   765.43
```

Constrained

HEALTH	265.72	430.31					
HOMEECON	331.87	310.95	571.73				
PHYSEDUC	176.01	288.88	234.73	659.96			
ENGLISH	88.80	68.81	29.44	65.43	294.97		
FORLANG	41.36	80.42	19.81	134.69	184.11	722.77	
MATHEMAT	-23.35	23.02	28.32	98.24	53.13	138.72	
SCIENCE	-15.46	11.73	-34.76	74.28	99.01	259.25	
SOCIALST	52.52	136.35	74.70	138.59	168.60	240.37	

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	339.03		
SCIENCE	180.69	423.30	
SOCIALST	125.63	200.39	428.10

DA NI=9 NO=51 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	793.29					
HEALTH	241.60	573.82				
HOMEECON	353.73	292.58	769.53			
PHYSEDUC	256.02	357.21	329.90	1053.88		
ENGLISH	209.30	193.38	244.48	238.54	508.56	
FORLANG	-13.32	197.58	101.27	310.02	248.96	842.77
MATHEMAT	174.20	226.73	154.40	480.88	367.08	423.20
SCIENCE	63.79	164.97	115.37	258.34	176.74	312.14
SOCIALST	192.60	376.52	177.71	280.53	291.70	333.61

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	877.60		
SCIENCE	511.53	678.58	
SOCIALST	329.76	310.92	585.54

! Parents and Culturally Literate Students Invariance Constrained Model

Constrained

Parameter Specifications

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=51 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

Constrained

	PRACTICA	ACADEMIC
PRACTICA	20	
ACADEMIC	21	22

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
23	24	25	26	27	28

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
29	30	31

! Parents and Culturally Literate Students Invariance Constrained Model

Number of Iterations = 28

LISREL Estimates (Maximum Likelihood)

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	219.21 (52.46) 4.18	
ACADEMIC	39.82 (13.82) 2.88	96.12 (22.01) 4.37

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
539.54 (56.60)	93.73 (26.83)	280.58 (35.53)	427.38 (46.80)	204.59 (22.78)	442.27 (50.94)

					Constrained
9.53	3.49	7.90	9.13	8.98	8.68

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
252.32	235.54	196.63
(27.68)	(29.19)	(28.31)
9.12	8.07	6.95

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.29	0.78	0.51	0.36	0.32	0.36

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.30	0.43	0.54

Group Goodness of Fit Statistics

Contribution to Chi-Square = 85.27
Percentage Contribution to Chi-Square = 59.19

Root Mean Square Residual (RMR) = 39.09
Standardized RMR = 0.079
Goodness of Fit Index (GFI) = 0.92

DA NI=9 NO=51 MA=CM

Number of Iterations = 28

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -

Constrained

HEALTH	1.24 (0.15) 8.06	- -
HOMEECON	1.14 (0.15) 7.72	- -
PHYSEDUC	1.06 (0.15) 7.02	- -
ENGLISH	- -	1.00
FORLANG	- -	1.62 (0.22) 7.24
MATHEMAT	- -	1.05 (0.16) 6.57
SCIENCE	- -	1.37 (0.18) 7.50
SOCIALST	- -	1.54 (0.19) 8.00

PHI

	PRACTICA	ACADEMIC
PRACTICA	232.40 (78.20) 2.97	
ACADEMIC	143.28 (45.77) 3.13	168.74 (52.97) 3.19

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
592.30	219.52	499.11	701.70	303.39	535.59
(129.96)	(71.76)	(115.81)	(152.99)	(67.12)	(125.46)
4.56	3.06	4.31	4.59	4.52	4.27

THETA-DELTA

Constrained

MATHEMAT	SCIENCE	SOCIALST
521.79	409.54	198.07
(111.07)	(94.69)	(61.91)
4.70	4.32	3.20

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.28	0.62	0.38	0.27	0.36	0.45

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.26	0.44	0.67

Global Goodness of Fit Statistics

Degrees of Freedom = 59
Minimum Fit Function Chi-Square = 144.06 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 140.57 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 81.57
90 Percent Confidence Interval for NCP = (50.69 ; 120.16)

Minimum Fit Function Value = 0.55
Population Discrepancy Function Value (F0) = 0.31
90 Percent Confidence Interval for F0 = (0.19 ; 0.46)
Root Mean Square Error of Approximation (RMSEA) = 0.10
90 Percent Confidence Interval for RMSEA = (0.081 ; 0.12)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00011

Expected Cross-Validation Index (ECVI) = 0.77
90 Percent Confidence Interval for ECVI = (0.65 ; 0.91)
ECVI for Saturated Model = 0.34
ECVI for Independence Model = 3.78

Chi-Square for Independence Model with 72 Degrees of Freedom = 980.44
Independence AIC = 1016.44
Model AIC = 202.57
Saturated AIC = 180.00
Independence CAIC = 1098.94

Constrained

Model CAIC = 344.66
Saturated CAIC = 592.51

Normed Fit Index (NFI) = 0.85
Non-Normed Fit Index (NNFI) = 0.89
Parsimony Normed Fit Index (PNFI) = 0.70
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Relative Fit Index (RFI) = 0.82

Critical N (CN) = 160.74

Group Goodness of Fit Statistics

Contribution to Chi-Square = 58.79
Percentage Contribution to Chi-Square = 40.81

Root Mean Square Residual (RMR) = 106.43
Standardized RMR = 0.14
Goodness of Fit Index (GFI) = 0.81

Time used: 0.080 Seconds

APPENDIX 28

GENERAL HYPOTHESIS 5E INVARIANCE TEST OUTPUT FOR TEACHERS AND CULTURALLY LITERATE STUDENTS

Base

DATE: 12/11/2010
TIME: 15:51

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

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! Teachers and Culturally Literate Students Invariance Baseline Model
DA NG=2 NI=9 NO=80 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers
CFA\Teachers 80.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Teachers and Culturally Literate Students Invariance Baseline Model

Number of Input Variables 9

Base

Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 80
Number of Groups 2

```
DA NI=9 NO=51 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit
Students CFA\Cult Lit Students 51.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS

DA NI=9 NO=51 MA=CM
```

Number of Input Variables 9
Number of Y - Variables 0
Number of X - Variables 9
Number of ETA - Variables 0
Number of KSI - Variables 2
Number of Observations 51
Number of Groups 2

! Teachers and Culturally Literate Students Invariance Baseline Model

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	711.61					
HEALTH	119.63	223.13				
HOMEECON	317.55	189.29	510.75			
PHYSEDUC	245.78	195.19	258.66	466.57		
ENGLISH	118.02	119.83	141.54	144.41	181.39	
FORLANG	188.19	128.82	231.96	178.67	137.92	506.18
MATHEMAT	16.15	64.46	30.55	104.89	74.49	136.18
SCIENCE	16.65	79.59	111.67	137.34	93.73	176.09

Base

SOCIALST	129.74	123.82	171.48	161.32	115.50	139.70

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	214.96		
SCIENCE	162.76	266.88	
SOCIALST	111.40	134.80	251.34

DA NI=9 NO=51 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
DRIVERED	793.29					
HEALTH	241.60	573.82				
HOMEECON	353.73	292.58	769.53			
PHYSEDUC	256.02	357.21	329.90	1053.88		
ENGLISH	209.30	193.38	244.48	238.54	508.56	
FORLANG	-13.32	197.58	101.27	310.02	248.96	842.77
MATHEMAT	174.20	226.73	154.40	480.88	367.08	423.20
SCIENCE	63.79	164.97	115.37	258.34	176.74	312.14
SOCIALST	192.60	376.52	177.71	280.53	291.70	333.61

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
MATHEMAT	877.60		
SCIENCE	511.53	678.58	
SOCIALST	329.76	310.92	585.54

! Teachers and Culturally Literate Students Invariance Baseline Model

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0

Base

HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=51 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	20	0
HOMEECON	21	0
PHYSEDUC	22	0
ENGLISH	0	0
FORLANG	0	23
MATHEMAT	0	24

Base

SCIENCE	0	25
SOCIALST	0	26

PHI

	PRACTICA	ACADEMIC
PRACTICA	27	
ACADEMIC	28	29

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
30	31	32	33	34	35

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
36	37	38

! Teachers and Culturally Literate Students Invariance Baseline Model

Number of Iterations = 16

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	0.83	- -
	(0.20)	
	4.28	
HOMEECON	1.20	- -
	(0.29)	
	4.19	
PHYSEDUC	1.21	- -
	(0.28)	
	4.29	

Base

ENGLISH	--	1.00
FORLANG	--	1.48
	(0.30)	
	5.00	
MATHEMAT	--	0.99
	(0.19)	
	5.10	
SCIENCE	--	1.22
	(0.22)	
	5.59	
SOCIALST	--	1.24
	(0.21)	
	5.84	

PHI

	PRACTICA	ACADEMIC
PRACTICA	189.27	
	(83.44)	
	2.27	
ACADEMIC	100.29	91.14
	(31.22)	(27.04)
	3.21	3.37

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
522.35	91.31	236.66	188.07	90.25	306.39
(89.20)	(20.19)	(48.52)	(42.01)	(17.62)	(55.32)
5.86	4.52	4.88	4.48	5.12	5.54

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
126.42	132.05	110.51
(23.06)	(25.85)	(22.96)
5.48	5.11	4.81

Squared Multiple Correlations for X - Variables

DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG

Base

0.27	0.59	0.54	0.60	0.50	0.39

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.41	0.51	0.56

Group Goodness of Fit Statistics

Contribution to Chi-Square = 66.93
Percentage Contribution to Chi-Square = 57.62

Root Mean Square Residual (RMR) = 33.53
Standardized RMR = 0.092
Goodness of Fit Index (GFI) = 0.84

DA NI=9 NO=51 MA=CM

Number of Iterations = 16

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -
HEALTH	1.26 (0.42) 2.99	- -
HOMEECON	1.16 (0.43) 2.73	- -
PHYSEDUC	1.50 (0.53) 2.86	- -
ENGLISH	- -	1.00
FORLANG	- -	1.17 (0.32) 3.66

Base

MATHEMAT -- 1.56
(0.35)
4.49
SCIENCE -- 1.18
(0.29)
4.02
SOCIALST -- 1.18
(0.28)
4.26

PHI

	PRACTICA	ACADEMIC
PRACTICA	197.80 (119.17) 1.66	
ACADEMIC	147.23 (63.69) 2.31	223.61 (91.10) 2.45

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
595.49	261.49	501.45	606.89	284.95	535.14
(131.90)	(81.32)	(119.13)	(155.73)	(66.70)	(119.72)
4.51	3.22	4.21	3.90	4.27	4.47

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
336.24	368.13	275.49
(96.20)	(87.31)	(69.79)
3.50	4.22	3.95

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.25	0.54	0.35	0.42	0.44	0.37

Squared Multiple Correlations for X - Variables

Base

MATHEMAT	SCIENCE	SOCIALST
0.62	0.46	0.53

Global Goodness of Fit Statistics

Degrees of Freedom = 52
Minimum Fit Function Chi-Square = 116.16 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 113.49 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 61.49
90 Percent Confidence Interval for NCP = (34.51 ; 96.20)

Minimum Fit Function Value = 0.90
Population Discrepancy Function Value (F0) = 0.48
90 Percent Confidence Interval for F0 = (0.27 ; 0.75)
Root Mean Square Error of Approximation (RMSEA) = 0.14
90 Percent Confidence Interval for RMSEA = (0.10 ; 0.17)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00011

Expected Cross-Validation Index (ECVI) = 1.47
90 Percent Confidence Interval for ECVI = (1.26 ; 1.74)
ECVI for Saturated Model = 0.70
ECVI for Independence Model = 6.33

Chi-Square for Independence Model with 72 Degrees of Freedom = 799.09
Independence AIC = 835.09
Model AIC = 189.49
Saturated AIC = 180.00
Independence CAIC = 904.85
Model CAIC = 336.74
Saturated CAIC = 528.77

Normed Fit Index (NFI) = 0.85
Non-Normed Fit Index (NNFI) = 0.88
Parsimony Normed Fit Index (PNFI) = 0.62
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Relative Fit Index (RFI) = 0.80

Critical N (CN) = 88.31

Base

Group Goodness of Fit Statistics

Contribution to Chi-Square = 49.23
Percentage Contribution to Chi-Square = 42.38

Root Mean Square Residual (RMR) = 64.62
Standardized RMR = 0.088
Goodness of Fit Index (GFI) = 0.83

Time used: 0.090 Seconds

Constrain

DATE: 12/12/2010
TIME: 16:11

L I S R E L 8.80

BY

Karl G. J"reskog & Dag S"rbom

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The following lines were read from file C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Constrain.ls8:

```
! Teachers and Culturally Literate Students Invariance Constrained Model
DA NG=2 NI=9 NO=80 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Teachers
CFA\Teachers 80.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
PD
OU NS
```

! Teachers and Culturally Literate Students Invariance Constrained Model

Number of Input Variables 9

```
                                        Constrain
                 Number of Y - Variables   0
                 Number of X - Variables   9
                 Number of ETA - Variables 0
                 Number of KSI - Variables 2
                 Number of Observations   80
                 Number of Groups          2
DA NI=9 NO=51 MA=CM
LA
DRIVERED HEALTH HOMEECON PHYSEDUC ENGLISH FORLANG MATHEMAT
SCIENCE SOCIALST
RA='C:\Documents and Settings\Dr. John T. Moyer\My Documents\CFA Data\Cult Lit
Students CFA\Cult Lit Students 51.psf'
MO NX=9 NK=2 LX=FU,FI PH=SY,FR
LK
PRACTICA ACADEMIC
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2) LX(9,2)
VA 1.0 LX(1,1) LX(5,2)
EQ LX(1,2,1) LX(2,1)
EQ LX(1,3,1) LX(3,1)
EQ LX(1,4,1) LX(4,1)
EQ LX(1,6,2) LX(6,2)
EQ LX(1,7,2) LX(7,2)
EQ LX(1,8,2) LX(8,2)
EQ LX(1,9,2) LX(9,2)
PD
OU NS

DA NI=9 NO=51 MA=CM

                 Number of Input Variables 9
                 Number of Y - Variables   0
                 Number of X - Variables   9
                 Number of ETA - Variables 0
                 Number of KSI - Variables 2
                 Number of Observations   51
                 Number of Groups          2

! Teachers and Culturally Literate Students Invariance Constrained Model

     Covariance Matrix

       DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
       --------  --------  --------  --------  --------  --------
DRIVERED    711.61
```

Constrain

HEALTH	119.63	223.13				
HOMEECON	317.55	189.29	510.75			
PHYSEDUC	245.78	195.19	258.66	466.57		
ENGLISH	118.02	119.83	141.54	144.41	181.39	
FORLANG	188.19	128.82	231.96	178.67	137.92	506.18
MATHEMAT	16.15	64.46	30.55	104.89	74.49	136.18
SCIENCE	16.65	79.59	111.67	137.34	93.73	176.09
SOCIALST	129.74	123.82	171.48	161.32	115.50	139.70

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
	--------	--------	--------
MATHEMAT	214.96		
SCIENCE	162.76	266.88	
SOCIALST	111.40	134.80	251.34

DA NI=9 NO=51 MA=CM

Covariance Matrix

	DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
	--------	--------	--------	--------	--------	--------
DRIVERED	793.29					
HEALTH	241.60	573.82				
HOMEECON	353.73	292.58	769.53			
PHYSEDUC	256.02	357.21	329.90	1053.88		
ENGLISH	209.30	193.38	244.48	238.54	508.56	
FORLANG	-13.32	197.58	101.27	310.02	248.96	842.77
MATHEMAT	174.20	226.73	154.40	480.88	367.08	423.20
SCIENCE	63.79	164.97	115.37	258.34	176.74	312.14
SOCIALST	192.60	376.52	177.71	280.53	291.70	333.61

Covariance Matrix

	MATHEMAT	SCIENCE	SOCIALST
	--------	--------	--------
MATHEMAT	877.60		
SCIENCE	511.53	678.58	
SOCIALST	329.76	310.92	585.54

! Teachers and Culturally Literate Students Invariance Constrained Model

Parameter Specifications

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	8	
ACADEMIC	9	10

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
11	12	13	14	15	16

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
17	18	19

DA NI=9 NO=51 MA=CM

Parameter Specifications

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	0	0
HEALTH	1	0
HOMEECON	2	0
PHYSEDUC	3	0
ENGLISH	0	0
FORLANG	0	4
MATHEMAT	0	5
SCIENCE	0	6
SOCIALST	0	7

PHI

Constrain

	PRACTICA	ACADEMIC
PRACTICA	20	
ACADEMIC	21	22

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
23	24	25	26	27	28

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
29	30	31

! Teachers and Culturally Literate Students Invariance Constrained Model

Number of Iterations = 22

LISREL Estimates (Maximum Likelihood)

LAMBDA-X EQUALS LAMBDA-X IN THE FOLLOWING GROUP

PHI

	PRACTICA	ACADEMIC
PRACTICA	160.90 (62.36) 2.58	
ACADEMIC	89.84 (25.84) 3.48	88.58 (23.81) 3.72

THETA-DELTA

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
534.71 (89.86)	86.59 (20.33)	250.08 (48.37)	185.52 (41.49)	92.22 (17.63)	317.73 (55.15)

Constrain

5.95	4.26	5.17	4.47	5.23	5.76

THETA-DELTA

MATHEMAT	SCIENCE	SOCIALST
121.02	128.72	111.05
(23.27)	(24.84)	(22.51)
5.20	5.18	4.93

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.23	0.63	0.49	0.60	0.49	0.33

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.50	0.50	0.55

Group Goodness of Fit Statistics

Contribution to Chi-Square = 69.25
Percentage Contribution to Chi-Square = 56.06

Root Mean Square Residual (RMR) = 39.87
Standardized RMR = 0.10
Goodness of Fit Index (GFI) = 0.83

DA NI=9 NO=51 MA=CM

Number of Iterations = 22

LISREL Estimates (Maximum Likelihood)

LAMBDA-X

	PRACTICA	ACADEMIC
DRIVERED	1.00	- -

Constrain

```
 HEALTH     0.95     - -
       (0.19)
        5.13
HOMEECON     1.22     - -
       (0.25)
        4.95
PHYSEDUC    1.32     - -
       (0.26)
        5.09
 ENGLISH     - -     1.00
 FORLANG     - -     1.33
              (0.22)
               6.05
MATHEMAT     - -     1.16
              (0.17)
               6.70
 SCIENCE     - -     1.21
              (0.18)
               6.82
SOCIALST     - -     1.24
              (0.17)
               7.24

   PHI

     PRACTICA  ACADEMIC
     --------  --------
PRACTICA   247.48
     (101.22)
        2.44
ACADEMIC   165.66    228.57
      (57.65)   (71.22)
        2.87      3.21

   THETA-DELTA

     DRIVERED   HEALTH  HOMEECON  PHYSEDUC  ENGLISH  FORLANG
     --------  --------  --------  --------  --------  --------
      572.90    293.58    465.17    623.49    282.84    525.23
     (129.38)   (73.25)  (117.32)  (151.66)   (66.05)  (121.97)
        4.43      4.01      3.96      4.11      4.28      4.31

   THETA-DELTA
```

Constrain

MATHEMAT	SCIENCE	SOCIALST
429.16	387.60	243.69
(98.24)	(91.53)	(66.05)
4.37	4.23	3.69

Squared Multiple Correlations for X - Variables

DRIVERED	HEALTH	HOMEECON	PHYSEDUC	ENGLISH	FORLANG
0.30	0.43	0.44	0.41	0.45	0.43

Squared Multiple Correlations for X - Variables

MATHEMAT	SCIENCE	SOCIALST
0.42	0.46	0.59

Global Goodness of Fit Statistics

Degrees of Freedom = 59
Minimum Fit Function Chi-Square = 123.52 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 118.73 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 59.73
90 Percent Confidence Interval for NCP = (32.47 ; 94.76)

Minimum Fit Function Value = 0.96
Population Discrepancy Function Value (F0) = 0.46
90 Percent Confidence Interval for F0 = (0.25 ; 0.73)
Root Mean Square Error of Approximation (RMSEA) = 0.13
90 Percent Confidence Interval for RMSEA = (0.092 ; 0.16)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00036

Expected Cross-Validation Index (ECVI) = 1.40
90 Percent Confidence Interval for ECVI = (1.19 ; 1.67)
ECVI for Saturated Model = 0.70
ECVI for Independence Model = 6.33

Chi-Square for Independence Model with 72 Degrees of Freedom = 799.09
Independence AIC = 835.09
Model AIC = 180.73
Saturated AIC = 180.00
Independence CAIC = 904.85

Constrain

Model CAIC = 300.86
Saturated CAIC = 528.77

Normed Fit Index (NFI) = 0.85
Non-Normed Fit Index (NNFI) = 0.89
Parsimony Normed Fit Index (PNFI) = 0.69
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Relative Fit Index (RFI) = 0.81

Critical N (CN) = 92.03

Group Goodness of Fit Statistics

Contribution to Chi-Square = 54.28
Percentage Contribution to Chi-Square = 43.94

Root Mean Square Residual (RMR) = 87.45
Standardized RMR = 0.12
Goodness of Fit Index (GFI) = 0.82

Time used: 0.070 Seconds

APPENDIX 29

THE UNIVERSITY OF AKRON INSTITUTIONAL REVIEW BOARD FOR THE

PROTECTION OF HUMAN SUBJECTS LETTER OF APPROVAL

The University of Akron
Office of Research Services and Sponsored Programs
Akron, OH 44325-2102
216-972-7666 216-972-6281 Fax

April 26, 1994

Mr. John Moyer
2712 Willowood Drive
Erie, PA 16506-5108

Dear Mr. Moyer:

You requested review by the University of Akron's Institutional Review Board for protection of Human Subjects (IRB) of your research project entitled "Lifelong Adaptability: A Cultural Literacy Perspective."

The IRB Chairperson conducted the research review and made the following determinations:

___ project required expedited review ___
_X_ project required convened meeting held on 4/13/94

IRB review concluded that your research was:

1. _X_ approved without qualifications

2. ___ disapproved

If recommendations were made from a convened meeting, then a copy of the minutes is attached. If your research fell under expedited or exempt review, then no minutes are attached. If your project was disapproved, then attached are reasons included in the minutes, and you are invited to respond in person or in writing. Thank you for your cooperation in this matter. RETAIN THIS LETTER FOR YOUR FILES IF THIS RESEARCH IS BEING DONE FOR MASTERS THESIS OR DOCTORAL DISSERTATION.

Sincerely,

Linda M. Subich
Chair, IRB

cc/ Faculty advisor (if student) Dr. Larry Bradley
Department Head Dr. Robert Eley

Form 6/93