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ABSTRACT

A study examined the variables affecting individuals' decisions to discontinue attendance in or complete their adult basic education (ABE) program. The study sample consisted of 2,323 students enrolled in an ABE program through an urban community college in the Midwest over a 2-year period. Data were derived from student records and program reports regarding the following: student age, gender, math and scores on the reading portion of the Test of Adult Basic Education (TABE), last grade attended, level of first placement, and TABE testing information. The data were subjected to descriptive and inferential statistical analysis to identify those factors that place adult students at risk of dropping out of ABE programs. Sixty-seven percent of the students discontinued the program, 22 percent completed some program goal, and 9 percent continued in the program. A moderate positive relationship between math and reading TABE scores and level of first placement was discovered. Analysis of variance established significant differences among the three student groups for reading and math scores but not for age. The study findings were used to develop a prediction model that correctly identified completing students 70 percent of the time and continuing students 58 percent of the time. The model did not predict noncontinuing students successfully. (Contains 72 references.) (MN)

LEARNERS AT RISK: COMPLETION, PERSISTENCE AND NONCONTINUATION IN ADULT BASIC EDUCATION

by

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LEARNERS AT RISK: COMPLETION, PERSISTENCE AND NONCONTINUATION IN ADULT BASIC EDUCATION

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The purpose of this study was to examine the influence of age and academic factors on an individual's decision to discontinue attendance or to persist to goal accomplishment in ABE. The study sample was comprised of 2323 students enrolled in ABE through a mid-western, urban, community college over a two-year period. Data were derived from student records and program reports. In addition to age and gender, variables studied included math and reading TABE scores, last grade attended, level of first placement, and TABE testing information. Data on these variables were subjected to descriptive and inferential statistics to determine which factors put learners in ABE at risk.

Findings included: (1) over two-thirds of enrolled ABE students discontinued attendance, and the greatest number of students who left did so before completing 12 hours of instruction; (2) gender was fairly evenly distributed across student categories, although more females completed a GED and tended to "stop out" and re-enroll; (3) last grade attended had little impact on outcome of enrollment; (4) approximately 80 percent of the students took some kind of TABE test; (5) most students took level D TABE tests; (6) completing

students were the largest group of students taking another type of entry-level test; (7) most students were placed at level 1B (the middle level) of first placement; and (8) there was a moderate positive relationship between math and reading TABE scores and level of first placement.

Analysis of variance revealed significant differences among the three student groups on reading and math scores, but not for age. The discriminant analysis found one significant function, and reading scores were the strongest predictor in this function. The resultant prediction model correctly classified groups 43 percent of the time. Completing students were correctly identified 70 percent of the time and continuing students 58 percent of the time. The model was not successful in predicting noncontinuing students.

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L.R.J.

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CHAPTER I

INTRODUCTION

Adult illiteracy in the United States is a problem of enormous proportions and one with far-reaching implications. The ability to read, write, compute, and cope is basic to full participation in society. Yet, it has been suggested that 20 to 30 million adult Americans have not mastered basic literacy skills, and 50 to 60 million adults have serious literacy problems (Brizius & Foster, 1987; Hunter & Harman, 1979; Kozol, 1985; Reder, 1985; Sticht, 1988-89).

Economic consequences of illiteracy are substantial. Kozol (1985) estimated that the minimal annual loss to the nation as a result of illiteracy is $20 billion in direct industrial losses and tax expenditures. The costs of illiteracy to the nation are reflected not only in economic and social terms, but also in costs to the individual and to the families of individuals who cannot read or write and by implication cannot participate fully in society or in democratic decision making.

Many attempts have been made to reduce illiteracy in the United States, and programs sponsored by the Adult Education Act have been in the forefront. Since 1980, there has been a 48 percent increase in the number of adults enrolled in adult education. However, this proportion constitutes only four to six percent of the nearly 52 million adults considered the target population by the Office of Adult Education (Brizius & Foster, 1987; Reder, 1985;

Sticht, 1988-89). Of this number, between 10 and 60 percent do not continue long enough in ABE classes to reach a goal (Grede & Friedlander, 1981; Mezirow, Darkenwald, & Knox, 1975; Sainty, 1971).

In view of the small numbers enrolled in Adult Basic Education (ABE) classes and the high attrition rate associated with them, this study was undertaken with the goal of understanding factors which may influence an individual's decision to either discontinue attendance or to persist to goal accomplishment in ABE. The relationship of individual academic factors to outcomes of enrollment was the specific focus of this study.

Background and Significance of the Problem

The purpose and scope of the ABE program in the United States and in Nebraska is reviewed in this section, and noncontinuation as a major problem confronting ABE programs is addressed.

Adult Basic Education Programs

Adult Basic Education programs have been the primary delivery system for education reaching undereducated adults for the past 25 years. The passage of the Adult Education Act of 1966 and its subsequent amendments through 1988 has given stability to ABE programs and represents a major effort by the U.S. government to reduce adult illiteracy. For example, Chisman (1990) indicated that about three million people in the United States have been enrolled each of the past few years in ABE classes sponsored by the act.

ABE programs are geared to persons 16 years of age or older who are out of school and have not completed high school. Classes include courses from the first through eighth grade levels in reading, language, and arithmetic; in English as a second language (ESL); and in General Education Development (GED) courses that prepare students to pass the GED test and receive a high school equivalency diploma. The GED part of the program is also commonly known as Adult Secondary Education (ASE).

There is general agreement as to the nature of ABE learners, and it is generally acknowledged that a wide range of educational backgrounds and abilities characterizes students in ABE classes. Several authors identified ABE student profiles which support the generalization that the target population is at the low end of the soecioeocnomic scale, and although great diversity exists among the clientele, students are skewed toward the disadvantaged (Drennan, 1980; Gingras & Careaga, 1989; Grede & Friedlander, 1981; Hunter & Harman, 1979; Mark, 1985). In 1976, approximately 32 percent of ABE students were enrolled at a beginning level (grades 1-4), 35 percent at an intermediate level (grades 5-8), and 35 percent at the advanced level (grades 9-12) (Grede & Friedlander, 1981).

Adult Basic Education In Nebraska

According to the 1980 census, there were 242,616 persons age 25 or over without high school diplomas in Nebraska, and 137,561 of this number had less than an eighth-grade education. These figures

mean that approximately 15 percent of Nebraska's adult population over 25 had less than a high school education.

The high school "dropout rate" in Nebraska was about 13.5 percent in 1989. Although this rate was less than the national average, 4092 students between grades eleven and twelve dropped out of Nebraska high schools in the academic year 1988-89 (Nebraska Department of Education, Data Center, 1990). During this same time period, an adult high school or GED diploma was awarded to 1732 individuals in Nebraska. Thus, 2360 more individuals dropped out of school that year than received a high school equivalency diploma through Nebraska's ABE programs. Taken in conjunction with those who in past years have not received a high school diploma, these figures point out the need for adult learning opoprtunities in Nebraska.

The Problem of Noncontinuation in Adult Basic Education

While the number of people needing more education is continually increasing, the number being served is very low; of the number being served, only a small proportion actually complete a goal. Many ABE students have previously dropped out of school, and learning for many of these students has negative connotations. ABE classes may be a last attempt to join the mainstream of American life. It is reasonable to assume that the problems and difficulties that led to high school dropout may continue to be enduring factors to dropout in ABE programs.

The Problem of Noncontinuation in Nebraska

The noncontinuation problem is common in programs throughout the United States, and programs in Nebraska are no exception. The median reported attrition rate for Nebraska ABE programs for fiscal year 1989 was 44 percent (Nebraska Department of Education, 1989a). Approximately 9400 participants were enrolled in Nebraska ABE programs in 1989 (Nebraska Department of Education, Data Center, 1990), and an additional 4330 persons registered but did not complete twelve hours of instruction and as such were not counted as official enrollees on federal or state reports. Seven hundred thirty-four ABE participants completed at least twelve hours or more of instruction, but 704 completed less than twelve hours in the program surveyed for this study during 1989. The program site studied had a reported attrition rate for the same time period of 49 percent.

Significance of Noncontinuation in ABE

Numerous studies have addressed noncontinuation rates in ABE programs, and diverse variables have been investigated, including demographics, psychological characteristics, situational factors (e.g., child care, transportation), and, to a lesser extent, programmatic variables. Although these have shed some light on the problem of noncontinuation, a large amount of variance in ABE noncontinuation remains unexplained. Some recent studies have used large numbers of variables in stepwise discriminant analysis to determine those variables which are most likely to discriminate among groups. However, the role of entry-level academic abilities and age

as discriminating factors which may systematically influence decisions of noncontinuation has not been investigated. Using a small number of easily obtained variables may have greater utility for the practitioner in identifying "at risk" students, and there is reason to believe that entry-level grade equivalency scores on the TABE tests of math and reading in concert with age may be significant indicators of those students who persist or withdraw from ABE classes. Previous ABE studies have indicated a correlation between entry-level test scores and completion and noncontinuation, and ABE practitioners have suggested that entry-level scores are an indicator of "at risk" students as well as students likely to complete goals. Finally, studies have frequently linked younger ages with patterns of noncontinuation. Given these findings, it is reasonable to hypothesize that, used together, these three characteristics might identify those students at risk of noncontinuation in ABE.

Research Goal and Objectives

The goal of this study was to understand factors which may influence an individual's decision to discontinue attendance or to persist to goal accomplishment in ABE. Specifically, the objectives of the study were to (1) use descriptive analysis to identify similarities and differences among students who complete, continue, or withdraw from ABE courses; (2) perform inferential statistical analysis which might identify significant relationships among the three identified student groups; and (3) use discriminant analysis

as a tool for identifying factors which may predict students "at risk." Specific variables used in the study included age and sex as well as a group of academic variables including TABE reading and math grade equivalency scores, last grade attended, level of first placement in ABE, and level of TABE test taken at entry plus other related information about the outcomes of testing.

Definitions

For purposes of this study, the following terms are defined:

Adult Basic Education (ABE). Those educational programs sponsored under the Adult Education Act including both programs for those scoring below ninth grade levels (ABE) and those enrolled in classes in preparation for General Education Development (GED) tests (those scoring above ninth grade level), sometimes known as Adult Secondary Education (ASE).

Non-continuing student. An individual who has dropped out of an ABE program without either completing a GED or without accomplishing the goal which was set at entry or who has been absent from class for more than four successive class sessions. This term is used in lieu of the word dropout in this study. To further identify non-continuing students, the following categories were formed.

Short-term non-continuing student. A student who has attended ABE sessions for less than twelve hours.

Long-term non-continuing student. A student who has attended ABE sessions twelve hours or more but who has withdrawn within the study period. (Only those who attend twelve hours or more are counted as official participants by the Federal government and by the State Department of Education.)

Completing student. An individual who has either completed a GED or has completed another goal which was set at the time of entry. Other goals might include completion of citizenship classes or improvement of math or reading skills prior to enrollment in college.

Continuing student. An individual who was enrolled October 30, 1990 and had been enrolled during one or both of the study years.

Adult. An individual sixteen years of age or older (Nebraska Department of Education, 1989b).

Adult education. Services or instruction below the college level for adults:

> (a) who are not enrolled in secondary school;
>
> (b) who lack sufficient mastery of basic educational skills to enable them to function effectively in society or who do not have a certificate of graduation from a school providing secondary education and who have not achieved an equivalent level of education;
>
> (c) who are not currently required to be enrolled in school; and
>
> (d) whose lack of mastery of basic skills results in an inability to speak, read, or write or understand the English language which constitutes a substantial impairment of their abiltiy to get or retain employment commensurate with their real ability, and thus are in need of programs to help eliminate such inability and raise the level of education of such individuals with a view to making them less likely to become dependent on others. (Nebraska Department of Education, 1989b)

CHAPTER II

REVIEW OF THE LITERATURE

The problem of noncontinuation in educational programs is pervasive and worrisome to adult education administrators, instructors, and tutors. A large body of literature considers noncontinuation in high school, and much has been written on withdrawal from college and university courses. However, literature concerning noncontinuation in adult education programs is found less frequently, and much of this is research reported in ERIC documents rather than in professional journals.

Fingeret (1984) and Darkenwald (1986) have reviewed attrition/persistence articles and found that few of the studies were based on research using representative sample sizes and sophisticated statistical analysis. Other researchers acknowledged the need for additional research in the field, and many emphasized the need for specific research which would identify factors that influence an individual's decision to drop out (Boshier, 1973; Darkenwald, 1981; Garrison, 1985; Jackson-Mayer, Howie, & Lanvermeier, 1987). The high incidence of attrition in ABE programs is a widespread and well-documented phenomenon and is often compared and constrasted with participation and recruitment in discussions of attracting and keeping adults in ABE classes. Although participation and recruitment literature provides insight into the ABE student, the literature is not reviewed in this study.

This review of the literature has been organized to examine literature pertinent to adult basic education programs in general, and then to look specifically at attrition/persistence literature in ABE. The attrition/persistence literature has been categorized according to types of reasons given for noncontinuation and includes situational, institutional, psychosocial, socioeconomic, and academic variables. A short review of methodologies commonly employed in ABE noncontinuation literature has also been included.

Problems of Definition

Awareness of the different ways in which ABE terms are used is vital to understanding the literature in ABE. Terms such as adult, "dropout," ABE, literacy, and illiteracy are often defined in different ways. For exmaple, a noncontinuing student is variously defined as "dropout," non-participant, enrolled dropout, and registered dropout. It is vital to know just what is meant by each of those terms if one is to accurately interpret the research. Some literature uses ABE to refer to all programs sponsored under the Adult Education Act, and other literature refers to ABE as only that aspect of the program dealing with students with entry-level scores below grade eight. Definitions of literacy/illiteracy levels have not been established, and adult education means something different than does adult basic education. No attempt will be made in this review to explain all definitions used in articles. Suffice it to say it is important to understand the terminology being used by the researcher

when generalizing study results. Definitions of terms used in this study are defined in the previous chapter and are based on policies and procedures used in the program studied.

Adult Basic Education Programs

Numerous ABE programs have been evaluated, and the literature is replete with statistics, models, and suggestions. However, the reasons for noncontinuation in ABE still remain an unsolved mystery in most respects. Much has been learned from the literature, but much still remains to be done if the key to identifying "students at risk" is discovered and the solution to keeping them in ABE for longer periods of time is uncovered.

Sticht (1988-89) concluded from a review of several studies that most ABE students will not attend literacy programs for long periods of time. Since many of the students need longer times to develop needed skills, adult literacy educators are faced with a dilemma of how to best serve the needs of these "at risk" learners. A short period of time in class from time of enrollment to leaving is consistent with findings by Boraks (1979), Mezirow, Darkenwald, and Knox (1975), Weisel (1980), and Wheaton (1976), in which dropout rates between 10 percent and 60 percent were reported within the first few weeks of class.

As indicated previously, noncontinuation in ABE is a problem throughout the United States. To illustrate this fact, a selected

list of states in which ABE noncontinuation has been studied is summarized in Table 1.

TABLE 1

ABE Noncontinuation Studies by State

State	Author of Study	Year
Arizona	Rio Salado Community College	1985
Illinois	Ratcliff	1983
Florida	Jackson-Mayer, Howie, and Lanvermeier	1987
Kansas	Long	1981
Kentucky	Cramer	1982
	Jefferson County Board of Education	1981
Minnesota	Bosma	1988
North Carolina	Clark	1986
	Arruza and Daniel	1987
Ohio	Weisel	1980
Pennsylvania	Erie City School District	1987
Tennessee	Etowah City Schools	1986
Virginia	Wheaton	176
Wyoming	Whitson	1987

Recurring themes in each of these studies included a profound concern for identifying "at risk" students for discontinuing and/or finding ways of increasing the number of students who successfully

complete the goals set for themselves at enrollment in ABE.

Completion and Noncontinuation in ABE

In an attempt to understand the multiplicity of reasons students stop coming to class, research dealing with the outcomes of participation in ABE has been organized for purposes of this review into five different categories: psychosocial, situational, institutional, socioeocnomic, and academic. Categories similar to these have been used in other persistence/noncontinuation literature.

Psychosocial

One approach to studying attrition and persistence in ABE is to focus on specific psychosocial attributes of students, including characteristics such as goals, motivation, personality, social participation, expectations, life style, life change, intelligence, commitment, and learning style. Much of the more recent literature focuses in this domain. Kerka (1988) suggested that ". . . educationally disadvantaged adults are more likely to lack self-confidence and self-esteem, have negative attitudes toward education and need mastery of basic skills such as literacy before attaining job skills that could improve their economic circumstances" (pp. 170-171).

Goal-setting. Several studies have focused on goal-setting as a factor in the psychosocial arena. Anderson and Darkenwald (1979) found satisfaction with learning activity to be a powerful predictor of persistence in adult education. Using this finding and Knowles'

theory of adult learning, Garrison (1985) sought to determine if goal clarity and course relevancy would ". . . provide greater discrimination between persisters and dropouts than other psychosocial variables . . . " (p. 28). He found some seeming incongruities in this study. For example, ". . . dropouts thought their courses were more relevant and that they had clearer goals than persisters . . ." (p. 36). Bosma (1988) found that having a goal of getting a GED positively correlated with persistence, a finding similar to that of Diekoff and Diekhoff (1984). Bosma also reported that those students who continued more often had goals to improve English or math than those who withdrew. The North Carolina Commission of Indian Affairs used identification of personal, educational, and career goals as a means to increase retention rates and found that goal setting along with convenient class locations and the use of Indian instructors and aides did increase the retention rates and success of those participating in the program in obtaining employment and furthering education (Brewington, 1985).

Motivation. Several studies examined motivation, one of the variables in the psychosocial arena. Motivation lessons intended to increase self-esteem and enhance decision-making ability were found to be helpful in reducing attrition in an ABE class of students with substance abuse problems (Erie City School District, 1987). Motivation as one of the groups of variables within the adult learner's psychosocial environment related to coping with change was identified by Garrison (1988) as one of the factors possibly related to dropout phenomena in ABE. Balmuth (1988) reported a study by Gold in which

it was found that extrinsic motivation tends to stabilize students in a program and thus reduce absenteeism. Incentive pay at a penal institution was the extrinsic motivation.

Finally, a four-phase motivation plan was part of a teacher training packet developed by Arruza and Daniel (1987) as part of a counseling plan to retain students in ABE.

Personality. Aspects of a student's personality were the basis of several inquiries into attrition/persistence in ABE. Wilson (1980) attempted to predict dropouts and persisters by using Cough's Adjective Check List (ACL) and found that dropouts checked a higher number of unfavorable adjectives and persisters scored higher on self-control, endurance, and deference adjectives. It was concluded that it was possible to use self-concept as described by personally endorsed adjectives to differentiate students at risk of early withdrawal. Yet another finding was that dropouts scored significantly lower than persisters on "social adjustment" and "total adjustment" scores when the California Test of Personality was used in a learning laboratory situation (Killian, 1969).

Resistance. In a promising line of research, Quigley (1990) proposed that resistance to schooling may better illuminate the phenomena of nonparticipation and dropout in adult literacy and basic education programs. According to Quigley, "resisters" perceive ABE as the reproduction of a culture which they are attempting to avoid. Thus, Quigley viewed noncontinuation not as a deficit reactive

decision, but rather a very proactive choice on the part of some ABE students.

Other psychosocial variables. Several studies have focused on a variety of other psychosocial characteristics. For example, Jones, Schulman, and Stubblefield (1978) examined interaction patterns perceived to be present in family work and church environments and concluded that social support measures from the sources might prove better predictors of ABE persistance than either sociodemographic and/or personality variables.

Garry (1975) found a significant relationship between the amount of life change and the frequency of dropout behavior. Yet another study described a method of life-style classification of adult high school noncompleting students in which it was suggested that targeting one or two categories of students with similar learning needs and barriers may be a way of improving retention (Martin, 1987). Sainty (1971) found dropouts to be less intelligent than persisters and to have lower ABE entry-level scores and to have completed fewer grades in school.

Yet another study found that when students were asked to demonstrate a higher level of commitment before being assigned a tutor there was less attrition (Diekhoff & Diekhoff, 1984), and Martin (1988) explored the possibility that identification of students with lower commitment to academic success and subsequent attention to their needs would increase their likelihood of persisting. Donnarumma, Cox, and Beder (1980) concluded that a student's style of learning

and individual cognitive functioning using field independence/field dependence were predictive in persistence/attrition in ABE.

Boshier (1973) authored an important study in which a comprehensive theory of noncontinuation was proposed using the concept of congruence. He examined the idea that internal psychological and external enviornmental variables interact in ways which may influence participation and dropout.

Summary. Psychosocial variables have proved to be a fertile area for investigation of noncontinuation and persistence in ABE programs. The studies have contributed to the knowledge of factors which may have an influence on a student's decision to continue or withdraw. Findings in this area tend to focus more on the individual than on external things over which the student may have little control. The resistance model of nonparticipation proposed by Quigley may have great promise as a guide for further research in this domain. An overview of studies mentioning psychosocial factors as an influence in persistence and noncontinuation in ABE is provided in Table 2.

Situational

Non-school related reasons are most often given for ABE attrition, and these are probably the reasons for noncontinuation over which ABE program administrators and instructors have the least control. Situational variables include transportation, health, child care, employment, and family problems. Many studies have provided insights into this area. Early work by Mezirow et al. (1975) and

TABLE 2

Studies Related to Psychosocial Factors in Persistence and Noncontinuation

Variable	Author	Year
Goals	Bosma	1988
	Brewington	1985
	Garrison	1985
	Diekhoff and Diekhoff	1984
Motivation	Balmuth	1988
	Garrison	1988
	Arruza and Daniel	1987
	Erie City School District	1987
Personality	Wilson	1980
	Killian	1969
Resistance	Quigley	1990
Others		
Social support	Jones, Schulman, and Stubblefield	1978
Life change	Garry	1975
Life style	Martin	1987
Intelligence	Sainty	1971
Commitment	Martin	1988
	Diekhoff and Diekhoff	1984
Congruence	Boshier	1984
Learning style	Donnarumma, Cox, and Beder	1980

Moss and Richardson (1967) listed class and work schedules and moving as contributors to attrition.

Subsequent research has identified transportation, time constraints, health, employment, and family problems as continuing reasons for leaving ABE programs (Darkenwald, 1986; Rachal, Jackson, & Leonard, 1987; Wheaton, 1976). Cramer (1982) found that those who dropped out more often experienced conflicts with job and time of class.

Sticht (1988-89) reported a study in which class scheduling conflicts, problems with day care, transportation and location, health and family problems, and lack of interest were the major reasons given for leaving class before completion of a goal.

Meyer (1974) concluded that patterns of attendance were irregular at the Dr. Martin L. King, Jr. Education Center because the lives of students were irregular. She felt that even though the dropout rate was high in the program, the statistic was deceptive because of the number of students who re-entered when they could.

Jackson-Mayer et al. (1987) reported that non-school related factors were the major problems contributing to attrition. Cramer (1982) found that 61 percent of ABE completers gave no situational reasons as interfering with attendance, whereas only 19.6 percent of the dropouts gave no situational reasons for attendance problems.

Clark (1986) believed that there is a tendency to minimize the significance of situational variables and simply view them as beyond the control of ABE. This seems to be reflected in the belief

that the high dropout rate stems from failure of students rather than failure of the instructor of service.

Summary. Much of the traditional thinking concerning reasons for noncontinuation in ABE is found in literature on situational variables. Situational factors contributing to noncontinuation are widely acknowledged in the literature, but a caution expressed in some of the literature is that situational reasons may often be given for dropout because they are more socially acceptable. All the things that impact a student's life are important, and situational reasons for dropout will undoubtedly continue as important factors in noncontinuation. However, the literature would seem to indicate that thse reasons cannot be isolated as being the answer to the noncontinuation dilemma. Studies related to situational factors in persistence and noncontinuation are summarized in Table 3.

Institutional

Institutional variables are those over which ABE administrators and instructors have most control, and this is the area which seems to be most deficient in theory-based research, particularly in the area of program context. Little research examining relationships between instructional strategies or learning modes and actual learning outcomes has been done, and it is, perhaps, this area more than any other that may be significant in addressing problems of noncontinuation. Much of the literature dealing with institutional factors consists of "how-to" manuals and general suggestions for

TABLE 3

Studies Related to Situational Factors in Persistence and Noncontinuation

Variable	Author	Year
Class and work schedules and moving	Mezirow, Darkenwald, and Knox	1975
	Moss and Richardson	1967
Health, employment, transportation, time, and family problems	Rachal, Jackson, and Leonard	1987
	Darkenwald	1986
	Cramer	1982
	Wheaton	1976
Day care, location, health, and transportation	Sticht	1988-89
Irregular life style	Meyer	1974

program improvement based on the feelings or instincts of the practitioner or observer.

The research on institutional variables focused on instructors; class sites, size, and schedules; support services; classroom environment; and teaching-learning climate

Instructors. The need for more professional training of ABE intructors is mentioned in several articles (Cranney, 1983;

Darkenwald, 1981; Foster, 1988; Verner & Davis, 1964; Wheaton, 1976). Cranney (1983) pointed out that in 1982 only four U.S. universities offered a degree program specifically in adult reading. He also suggested that remuneration for ABE instructors was a problem and that many teachers of adults are held in low esteem by colleagues and as such often feel out of the mainstream of academic education.

Brewington (1985) implemented a strategy to increase retention in an Indian ABE program with the use of Indian instructors and aides and reported success in reducing attrition rates using this strategy along with others geared to keeping Indian students in class longer.

Skills needed to work with adult learners and the importance of instructor attitude were part of the teacher training program developed by Arruza and Daniel (1987).

Another aspect concerning instructors is the impact high attrition rates in ABE have on them. For example, Ratcliff (1983) addressed the idea that teachers may need support from other instructors so as not to take high student withdrawal rates personally. In an ethnographic study of ABE teachers, Dirkx and Spurgin (1990) reported that all six teachers included in the study indicated that students who did not return were their single greatest source of frustration as teachers. Concomitant with these findings is the suggestion that ABE staffs that meet more often for staff meetings and for staff development activities show an increase in hours their students participate (Weisel, 1980).

Class size, schedules, and site. Boshier (1973) found that a class sized less than nine had fewer dropouts than classes greater than nine. Wheaton (1976) found that many students felt classes were crowded and that smaller classes would improve retention. Darkenwald (1981), however, found that findings for class size were mixed. He also found that the number of class sessions was directly related to dropout rates and that dropout rates were lower in courses meeting for fewer than 20 sessions. Frequency of class was also a factor, with classes meeting once or twice per week having a higher persistence rate according to Darkenwald. Weisel (1980) found that students attending classes in the afternoon participated in more classes. Brewington (1985) selected off-campus sites for classes because Indian ABE students were uncomfortable on college campuses and unlikely to attend there.

Support services. Support services were seen as an important factor in retaining adult students, and Jackson et al. (1987) found that networking with community human service agencies could help retention. Counseling on an individual basis (Arruza & Daniel, 1987); Jackson et al., 1987; Wheaton, 1976), one-to-one interactions (Reder, 1985), and individual pre-enrollment counseling as well as continuous one-on-one follow-up (Indians and adult basic education: A handbook, 1987) have been seen as vital to retaining students.

Classroom environment. Dropout as a function of discrepancies between expectations and actual experiences of the classroom social

environment as measured by the Classroom Environment Scale resulted in the finding that only one (affiliation) of the nine CES subscales was significantly associated with dropout (Darkenwald & Gavin, 1987).

Institutional strategies. Other institutional strategies for reducing attrition included sending a newsletter, thus creating a sense of identity (Rio Salado Community College, 1985); creating a "buddies system" (Darling, 1983); creating an informal atmosphere and allowing smoking (Weisel, 1980); and using people who have successfully completed the program to tell their stories (Wheaton, 1976). Grede and Friedlander (1981) felt that the lack of a means for grouping students by achievement levels may have been a factor in persistence/attrition. Limiting the time it takes for the intake procedure was yet another suggestion for increasing retention (Weisel, 1980).

Summary. Although the literature on institutional variables is quite extensive, very little of it is based on tested and evaluated procedures. Since institutional variables are the ones that educators have most control over, it is perhaps this area more than any other in which research efforts should be directed. A summary of studies related to institutional factors in noncontinuation and persistence is provided in Table 4.

Socioeconomic

Socioeconomic or demographic variables contributing to persistence and attrition have been scrutinized in various studies and

TABLE 4

Studies Related to Institutional Factors in Persistence and Noncontinuation

Variable	Author	Year
Instructors	Foster	1988
	Arruza and Daniel	1987
	Brewington	1985
	Cranney	1983
	Ratcliff	1983
	Dakenwald	1981
	Weisel	1980
	Wheaton	1976
	Verner and Davis	1964
Class size, schedules, and sites	Brewington	1985
	Darkenwald	1981
	Weisel	1980
	Wheaton	1976
	Boshier	1973
Support services	Arruza and Daniel	1987
	Indian ABE Handbook	1987
	Jackson-Mayer, Howie, and Lanvermeier	1987
	Reder	1985
	Wheaton	1976
Classroom environment	Dakenwald and Gavin	1987
Other		
Newsletter	Rio Salado Community College	1985
"Buddie system"	Darling	1981
Informal atmosphere	Weisel	1980
Success stories	Wheaton	1976
Grouping	Grede and Friedlander	1981
Intake time at entry	Weisel	1980

are useful in providing a profile of the population being studied. In addition, results of these investigations indicate relationships between certain characteristics and noncontinuation or persistence, although no one variable stands out as being able to identify a student "at risk." Variables studied in this category included employment, marital status, socioeconomic status, ethnicity, family members, and age.

Employment, marital status, income, ethnicity, and family. Employment was correlated with withdrawal and persistence in studies by Anderson and Darkenwald (1979), Bosma (1988), Diekhoff and Diekhoff (1984), and Meyer (1974). Other findings included: unmarried students are more likely to drop out than married students (Boshier, 1973); completing students had higher incomes than dropouts (Cramer, 1982); low socioeconomic status in combination with being young and black had a pronounced negative effect on persistence (Anderson & Darkenwald, 1979); and dropouts had other illiterate family members (Diekhoff & Diekhoff, 1984). Verner and Davis (1964) concluded from their review of literature that age, education, marital status, occupation, income, and rate of social participation seemed to be related to persistence.

Age. Age was frequently cited as a significant indicator of students likely to continue or withdraw. For purposes of this study, age was of particular interest since it was one of the variables chosen to test. Among the findings concerning age are the following: (1) there was a relationship between youth and attrition (Anderson &

Darkenwald, 1979; Boshier, 1973; Bosma, 1988; Diekhoff & Diekhoff, 1984; Smith, 1985; Weisel, 1980); (2) there was a positive correlation between persistence and age (Anderson & Darkenwald, 1979; Cramer, 1982; Sainty, 1971); and (3) older adults spent more hours in the ABE program than younger students (Weisel, 1980). However, Shipp and McKenzie (1981) found that more afffluent, better educated, and younger individuals were more often at the learner end of an education continuum. Smith (1985) found that 13 percent of the youngest registrants never came back after the first night and another 16 percent dropped out after just a few weeks.

Summary. An often-cited conclusion in the study of demographic or socioeconomic variables is that most of these variables have little impact on persistence or attrition (Anderson & Darkenwald, 1979; Bosma, 1988; Cramer, 1982; Rachal, Jackson, & Leonard, 1987; Verner & Davis, 1964). This finding is consistent with the theory that there are no simple answers to identifying "at risk" students. It is vital, however, that educators are able to profile those students with whom they work, thus enabling them to better understand and respond to clientele in ABE classes. The literature related to socioeconomic factors in noncontinuation and persistence is summarized in Table 5.

Academic

Of major concern for purposes of this study were those research articles addressing the variables of academic preparation as predictors of attrition/persistence, since these were factors

TABLE 5

Studies Related to Socioeconomic Factors in Persistence and Noncontinuation

Variable	Author	Year
Employment	Bosma	1988
	Diekhoff and Diekhoff	1984
	Anderson and Darkenwald	1979
	Meyer	1974
Marital status	Boshier	1973
Income	Cramer	1982
	Anderson and Darkenwald	1979
Ethnicity	Anderson and Darkenwald	1979
Family	Diekhoff and Diekhoff	1984
Age	Bosma	1988
	Smith	1985
	Diekhoff and Diekhoff	1984
	Cramer	1982
	Shipp and McKenzie	1981
	Weisel	1980
	Anderson and Darkenwald	1979
	Boshier	1973
	Sainty	1971

included in this investigation. Variables examined in this area included academic ability, entry-level grade equivalency scores, and TABE tests.

Academic ability. Academically, those who discontinue tend to have a history of low achievement, lack of success in previous educational experiences, lower ABE entry-level test scores, and fewer grades completed (Sainty, 1971). A similar finding was that the amount of formal schooling more than any other factor positively influences persistence in ABE programs (Cross, 1981).

Kronick and Hargis (1990) identified academic ability and age as two of several variables important in identification of characteristics which differentiate dropouts from graduates. Findings by Martin (1988) included the following: completers were more likely to have higher levels of education and to spend more time reading and doing homework. Students with lower reading, spelling, and math scores spent more time in ABE (Weisel, 1980). Shipp and McKenzie (1981) found that less affluent, less educated, older individuals in low status occupations were more often at the lower end of an education continuum.

Entry-level grade equivalency scores. Smith (1985) linked entry-level placement scores with age and found that despite academic advantage over older students, the young adults (ages 17-21) did not do as well at passing the GED tests. She also found that at the lowest level of reading placement scores, fewer of the young group

persisted to their GED compared with older adults at the same level.

Research has shown that higher reading and math grade equivalents are predictive of persistence (Bosma, 1988), although Clemons (1983) found that non-finishers in a child-care program had slightly higher reading and language scores than finishers. Math scores typically about two years lower than reading scores were reported by both Bosma (1988) and Smith (1985).

A large difference was reported in the Jefferson County Adult Reading Project (Jefferson County Board of Education, 1981) in number of years of school completed and reported median reading level. The authors found that although the median years completed in school was 8.6, the median reading level of the group of respondents was 2.0.

TABE tests. The TABE (Test of Adult Basic Education) is one of the more widely used evaluation tools in ABE. It has been adopted for use in ABE throughout the state of Nebraska. The purpose of the norm-referenced TABE is to measure reading, writing, and mathematics achievement, and Forms 5 and 6 (the forms given in the study group) focus ". . . on basic skills that are required to function in society" (CTB/McGraw Hill, 1987, p. 1). To take the entire TABE battery takes about 4.5 hours (Sticht, 1990).

Researchers have indicated that testing may have some use in screening students and signaling "at risk" students (Bosma, 1988; Long, 1981; Martin, 1988; Smith, 1985; Weisel, 1980). However, there

may be some problems associated with the tests themselves and with the process surrounding the taking of the tests. For example, Sticht (1990) reviewed testing and assessment in ABE and asserted that even though test items in the TABE were adult in content they seemed to have ". . . distinctly middle class and academic orientation" (p. 19).

The TABE examiner's manual (CTB/McGraw-Hill, 1987) emphasizes the importance of creating a testing atmosphere that is orderly and relaxed. Further, the manual underscores the need to avoid possible frustration and embarrassment by alerting students that they are not expected to answer all items correctly.

No studies specifically addressed the impact that the TABE tests may have on a student's decision to withdraw or to continue in an ABE class, nor is much attention given to math scores in the literature and the way in which they may affect a student's perception of his or her ability to succeed. Many adults express "math anxiety," and for ABE students math scores are typically significantly lower than reading scores (Baldwin, 1990; Smith, 1985). It is reasonable to expect that scores on entry-level placement evaluations may affect the adult students' perception of their abilities to succeed in ABE.

Summary. Studies isolating academic factors relating to attrition and persistence were not found, although there were several studies which linked academic achievement with completion of goals and higher success rates in ABE. A largely unexplored domain in this area is the impact of testing early in the experience of the ABE student

and the anxieties and fears that the adult student may bring with him or her to class, especially during the first few sessions. Literature found relating to academic factors in noncontinuation and persistence is found in Table 6.

Methodology

A wide variety of statistical techniques have been employed in the study of noncontinuation and persistence in ABE. Both descriptive and inferential statistics have been utilized to identify "at risk" students. Early studies were quite dependent on descriptive statistics, but more recent research has used more sophisticated statistics to develop more meaningful information about "at risk" students. Sample sizes vary widely, and a large number of data collection tools and analytic techniques have been employed.

Chi squares (Boshier, 1973; Bosma, 1988; Cramer, 1982; Martin, 1987) and crosstabulations with chi-squares (Donnarumma et al., 1980) have been used in the interpretation of data to determine significant differences. Analysis of variance tests have been used to determine the degree of difference in variables (Darkenwald & Gavin, 1987; Jefferson County Board of Education, 1981; Weisel, 1980). Other statistical techniques used in the literature included F-ratio tests (Garrison, 1987), point-biserial correlation statistics (Clemons, 1983), factor analysis (Garrison, 1988), t-tests (Jefferson County Board of Education, 1981), and multivariate analysis of covariance (Wilson, 1980).

TABLE 6

Studies Related to Academic Factors in Persistence and Noncontinuation

Variable	Author	Year
Academic ability	Kronick and Hargis	1990
	Martin	1988
	Cross	1981
	Shipp and McKenzie	1981
	Weisel	1980
	Sainty	1971
Entry-level grade equivalencies	Bosma	1988
	Smith	1985
	Clemons	1983
	Jefferson County Board of Education	1981
TABE tests	Baldwin	1990
	Sticht	1990
	Bosma	1988
	Martin	1988
	CTB/McGraw-Hill	1987
	Smith	1985
	Long	1981
	Weisel	1980

Two of the more promising statistical methods in developing models which might predict "at risk" students are multiple regression and discriminant analysis. The major difference in these two methods is that discriminant analysis predicts group membership, while multiple regression predicts a continuous variable.

Multiple regression has been used in several studies as a means of identifying salient variables in the study of noncontinuation of ABE (Anderson & Darkenwald, 1979; Boshier, 1973; Darkenwald & Gavin, 1987; Diekhoff & Diekhoff, 1984; Donnarumma et al., 1980; Jones et al., 1978; Sainty, 1971; Weisel, 1980). Discriminant analysis is frequently used to develop prediction models and to identify variables which contribute significantly to the models (Bosma, 1988; Garrison, 1985; Martin, 1988; Rachal et al., 1987; Rolfe & Wilson, 1979; Shiff & McKenzie, 1981).

The objective of discriminant analysis is to classify individual cases into one or more mutually exclusive and exhaustive categories on the basis of a set of independent variables (Morrison, 1974). The researcher then is able to study the differences between two or more groups with respect to several variables simultaneously and has the means to assign or classify any case into the group it most closely resembles (Klecka, 1980).

Summary

The literature is replete with research and program reviews which address the issue of noncontinuation in ABE. Both theoretical as well as descriptive studies are found. However, no one set of

variables has been identified which will predict persistence or withdrawal from ABE in a way that could be readily used by practitioners.

Garrison (1988) indicated that it was not particularly practical or rational to indiscriminantly include large numbers of variables in prediction equations, nor is it of much practical value to depend on complicated measures of personality analysis of psychological profiling. Thus, while much has been learned from prior research, much still remains to be explained in addressing the issue of noncontinuation in ABE.

Boshier's (1973) congruence model and Quigley's (1990) theory of resistance are promising examples of theoretical approaches to the study of noncontinuation. In addition, Quigley's work (personal communication, April, 1991) represents the potential contribution that well designed, qualitative research makes to this area.

CHAPTER III

METHODS

The chapter on methods includes a description of the research design, including study sample, data collection, sources of information, and identification of outcomes of enrollment. Also included is a section on statistical methods used for analysis.

Research Design

This study made use of a post hoc analysis to help understand the factors which may influence an individual's decision to either stay or withdraw from ABE classes. Descriptive analysis including frequency counts and percentages was used to identify similarities and differences among completing, continuing, and noncontinuing students. A variety of inferential methods were used to identify significant relationships and variances among the three identified student groups, using age and the academic variables of entry-level math and reading grade equivalency scores, last grade attended, level of first placement, entry-level TABE test given, and other information about the TABE testing procedure. Inferential statistical methods employed in this study included crosstabulations with chi-squares, Pearson correlation coefficients, ANOVA, and discriminant analysis.

Study Sample

This inquiry was part of a larger project examining retention/

attrition in ABE at a midwestern, urban, ABE community program administered through a community college.

The sample was comprised of 2323 students (all students except declared ESL students) enrolled in ABE classes during fiscal years 1988-89 and 1989-90. Year-end program reports were used to obtain information on goal completion. Students completed their GED or completed other goals and were classified accordingly.

Noncontinuing students were classified on the basis of hours spent in class as reflected on year-end program reports. Those students who left ABE before completing 12 hours in the program and who had not completed a goal were classified as short-term noncontinuing students. Students who discontinued attendance before reaching a goal, but had attended classes 12 or more hours were counted as long-term noncontinuing students.

The ABE program studied consisted of classes held at multiple sites (e.g., community centers, churches, elementary and junior high schools, and businesses) throughout the city. Most of these classes met twice per week in the evening for two hours. In addition, classes were held at a downtown site and at the community college. At these two sites, classes were held in the morning, the afternoon, and at the college, in the evening. Classes were either two or two and one-half hours in length. Day classes met either four or five days per week.

Enrollment was open in this program, and students could begin or stop work in a class at any time during the term. With the exception of classes at the college and those at the training center,

classes stopped for the summer and started up again in the fall. There was no tuition charge for ABE courses and all books and materials were furnished to the student.

Data Collection

Data were collected on 54 variables, from which the variables represented in this study were selected. The variables of interest to this study were age, entry-level math and reading TABE scores, level of first placement in ABE, last grade attended, sex, and information about the form of TABE test taken, whether or not the TABE tests were taken, if they were completed, or if another test was given.

Sources of Information

Cumulative scholarship records maintained on each student provided information on entry-level TABE grade equivalency scores in math and reading, the form of TABE test taken, and other information about testing outcomes. Fiscal year-end reports from each of the study years were used to ascertain number of hours spent in ABE, completion of goals, and entry-level placement. ESL students were separated from ABE students and were eliminated from the study sample.

The TABE was administered to most students at entry. The TABE is one of the tests used by ABE programs for evaluation and placement. Four overlapping levels of tests are available: (1) Level E (easy), grades 2.6-4.9; (2) Level M (medium), grades 4.6-6.9; (3) Level D (difficult), grades 6.6-8.9; and (4) level A (advanced), grades 8.6-12.9. According to the program's volunteer coordinator

(personal communication, March, 1991), Level D and Level M TABE tests were given to entering students in all programs in Nebraska who, after initial teacher evaluation, indicated some reading proficiency. Students with little or no reading ability are currently given T-NAT tests rather than Level E TABE tests, although during the study period a few TABE Level E tests were still given. Scale scores as well as reading grade equivalencies were assigned after the tests were evaluated. The grade equivalency scores were then used to determine the level of study at which a student would begin. Students typically were given one or more of the TABE tests during the first class attended and subsequent classes were devoted to finishing the battery of tests. Advanced level tests were not used in the study group and the easy tests were phased out in the second year of the study period.

Identification of Outcomes of Enrollment

The two-year study period was viewed in totality. Attendance hours for each student were calculated over a two-year period. This was done to accommodate the open enrollment policy of the ABE program being studied. On the basis of hours spent in the program and whether or not students had completed either a GED or other goal, they were classified as short-term noncompletion students, long-term noncompletion students, and completing students. A student could enroll at any time in one year and be counted as a short-term or long-term noncontinuing student. The student could have, however, re-enrolled in the next fiscal year and continued, dropped, or completed in that year. These students formed a special category of noncontinuing students

in which a two-year combination of hours was the basis of classification. Yearly reports from the two study years were compared to identify students who were enrolled in both study years in order to determine those who completed goals in the next year. The reports were also compared for total number of hours spent in class over the two-year period so students could be identified as short- or long-term noncontinuing students.

Continuing students were identified by comparing attendance/enrollment records at the end of October, 1990, with student lists from each of the study years. Students who had been counted as non-continuing students in one or both of those years and who subsequently re-enrolled after June, 1990, were then counted as continuing students. The October date was used for expediency, and the implication of this arbitrary date is that the criteria used for developing a "true" non-continuing student for 1989-90 was somewhat less stringent than that for fiscal year 1988-89 since an entire year was not used to identify continuing students. The level of error, however, was thought to be minimal because of the large study sample.

Analysis

The study sample was analyzed by looking at broad, general classifications of students as well as at more specific groups within these classifications. Initially, comparisons were made among completing students, continuing students, and those students who discontinued. The completers were then separated into students who had completed

their GED and those who had completed some other goal such as improvement of reading or math or preparing for college entrance. Students who discontinued were divided into those who had completed less than 12 hours before leaving a program (short-term noncontinuing students) and those who had completed 12 or more hours before leaving (long-erm noncontinuing students). There was also a special category of students who had enrolled in both years and had completed various combinations of hours within the years but who had discontinued classes in both of the years. It was felt that it was important to identify characteristics of students in each sub-category to see if obvious differences existed across groups. The Statistical Package for Social Sciences-X (SPSSX) generated the descriptive data for each of these categories using frequency distributions, percentages, and means on selected variables.

Several different inferential statistics were used to describe possible relationships between variables and to build a prediction model for noncontinuation. Crosstabulation examined relationships between variables, and chi-squares determined differences in the cross-tabulations. A Pearson correlation examined possible correlations between academic variables. ANOVA (one-way test of variance) determined variances for the discriminant analysis, and a full model discriminant analysis determined those variables which might predict completion, continuation, or noncontinuation.

Initially, the discriminant analysis was run using the seven more specific categories of students. However, because of the large

number of gruops, the model had difficulty predicting group membership. It was then decided to use the three broader categories of students to see if better results could be obtained. It was felt that this procedure was justified since the real issue was whether or not it would be possible to predict those who would persist and those who would withdraw, not necessarily whether they would be long-term or short-term noncontinuing students or GED or other completing students.

The ability of the independent variables to discriminate among completion, continuation, and noncontinuation was tested using the Statistical Package for the Social Sciences-X discriminant analysis program. A full model discriminant analysis was used rather than stepwise discriminant analysis since a small, pre-determined set of variables was hypothesized as being useful to the prediction model.

All statistics were generated using the SPSS-X statistical software package.

CHAPTER IV

RESULTS

This chapter describes the results of each of the statistical methods employed. Three sections are reported: descriptive statistics, inferential statistics (crosstabulations with chi-squares and the Pearson correlation for academic variables), and discriminant analysis.

Descriptive Analysis

After a student enrolls in an ABE class, several outcomes can be identified. The student can complete a goal, can withdraw from the program, or can continue. Within those outcomes there are variations which have been described in the methods section. The results of enrollment at the program site studied are reported in this section.

Outcomes of Enrollment

It was found that 22 percent of the students in the sample completed a goal, 9 percent continued in the program, and 67 percent discontinued during the period. Missing data accounted for the other 2 percent (see Table 7).

A further breakdown of the general groups revealed 17 percent of the students completed the GED, 5 percent completed other goals, 9 percent continued in the program, 36 percent left the program before completing 12 hours, 28 percent left after completing 12 hours

TABLE 7

Frequency Distribution of Outcomes of Enrollment
General Categories

Student Category	Frequency	Percent
Completing students	500	21.5
Continuing students	215	9.3
Noncontinuing students	1557	67.0
Missing data	51	2.2
Total	2323	100.0

or more, 3 percent were enrolled both years with various combinations of less than or greater than 12 classroom hours over the two-year period, and 2 percent comprised missing data (see Table 8). Short-term noncontinuing students comprised the largest part of the study sample.

Gender

Students in each of the outcome of enrollment groups were fairly evenly distributed across gender (49.6 percent male and 50.4 percent female), with the exception of the completion category in which 46.5 percent were male and 53.5 percent were female. The percentages of males and females for each student category with the exception of the completing group were remarkably similar to the percentages of the entire sample (see Table 9). If one looks at the

TABLE 8

Frequency Distribution of Outcomes of Enrollment Specific Categories

Student Categories	Frequency	Percent
Completions		
GED	392	16.9
Other	108	4.6
Continuing	215	9.3
Noncontinuing		
Short-term	841	36.2
Long-term	644	27.7
Two-year short- and long-term	72	3.1
Missing data	51	2.2
Total	2323	100.0

TABLE 9

Gender Frequency Distribution, General Categories

Student Category	Frequency	Percent
All students		
Male	1162	49.6
Female	1171	50.4
Completing students		
Male	227	46.5
Female	261	53.5
Continuing students		
Male	111	51.6
Female	104	48.4
Noncontinuing students		
Male	783	50.3
Female	775	49.7

GED completions, the percentage of females completing a GED is even greater than if one only looks at the completing category as a whole. It also appears that females were frequently "stopped out" and re-enrolled multiple times as reflected by the larger number of females in the two-year, short-long-term noncontinuing category (see Table 10).

Last Grade Attended

The mean last grade attended for each student category was similar, although it was found that no completing students were part of the 0-4 group and other completing students had attended a mean of 12 grades. Overwhelmingly, the highest percentage of students in the 11-12 group were the students who completed other goals. This was not unexpected since most students had completed high school and had returned to ABE to brush-up on math or reading or take tests preparatory to entering college (see Table 11). An interesting finding is that noncontinuing students had attended eleventh and twelfth grade more often than had GED completing or continuing students.

Age

A wide age range was found (16-76) in the study sample. However, 66 percent of the students were 29 or younger. Only 4.5 percent of the students were over the age of 50, and the largest grouping of students was 21-29 (37%). Twenty-nine percent of the students were 20 or younger. The mean age was 27, the median was 25,

TABLE 10

Gender Frequency Distribution, Specific Categories

Student Category	Frequency	Percent
Completing students		
GED		
Male	180	45.9
Female	212	54.1
Other		
Male	55	50.9
Female	53	49.1
Noncontinuing students		
Short-term		
Male	428	50.9
Female	413	49.1
Long-term		
Male	321	49.8
Female	324	50.2
Two-year, long-short-term		
Male	34	47.2
Female	38	52.8

TABLE 11

Last Grade Attended

Student Category	Last Grade Attended (Mean)	Percent				
		0-4	5-8	9-10	11-12	Missing
Completing						
GED	10.1	0.0	8.0	46.0	42.6	3.6
Other	12.0	0.0	1.0	16.7	80.2	2.1
Continuing	9.9	2.3	15.4	39.5	40.9	1.9
Noncontinuing						
Short-term	10.3	0.6	7.9	30.3	49.9	2.1
Long-term	9 9	1.4	13.1	41.4	41.9	2.3
All	10.2	1.1	10.5	40.3	46.2	2.4

and the standard deviation was 9.9 (see Table 12).

TABLE 12

Age Frequency Distribution, Total Sample

Age	Frequency	Percent	Cumulative Percent
16-20	663	28.7	28.7
21-29	851	36.8	65.5
30-39	505	21.8	87.3
40-49	189	8.2	95.5
50 and over	104	4.5	100.0
Missing cases	11	-	-
Total	2323	100.0	100.0

Median = 25
Mean = 27
Range = 16 to 76
Standard deviation = 9.9

Summary

Of those students who enrolled in ABE, over two-thirds discontinued attendance. Of those who discontinued, the greatest number of students left before completing 12 hours of class instruction. Gender was fairly evenly distributed across all student categories, although more females than males completed a GED, and more females tended to "stop out" and re-enroll. Last grade attended seemed to have little impact on outcome of enrollment, although it

was somewhat surprising that noncontinuing students had more often attended eleventh or twelfth grade than other student categories. Sixty-six percent of all students were younger than 30. Only 4.5 percent of the studetns were 50 or older, and the greatest proportion of students was in the 21-29 age group.

Inferential Statistics Analysis

Included in this section are the results of the crosstabulations with chi-squares for academic variables and a Pearson correlation comparing the correlation between math and reading scores with level of first placement in ABE classes.

Testing Information

A total of 1854 students (out of the 2323 total sample) took some kind of TABE test. The largest of this group was the noncontinuing students (66.6%), followed by completing students (28.5%) and continuing students (9.9%). Level D tests are considered difficult, level M tests are medium, and level E tests are easy. Completing students took level D tests 98.2 percent of the time, followed by noncontinuing students (86.5%) and continuing students (80.4%). The level M tests were taken more often by continuing students (17.4%), followed by noncontinuing students (12.5%) and completing students (1.8%). No completing students tooks the level E test and most of those who did take the level E test were continuing students. A chi-square indicated statistical significance within the table (see Table 13).

TABLE 13

Crosstabulation of Level of TABE Taken
with Student Category*

Level	Percent		
	Noncontinuing	Completing	Continuing
Level D	86.5	98.2	80.4
Level M	12.5	1.8	17.4
Level E	1.1	0.0	2.2

*Only column reported
Chi-square = 58.20
$p < .001$

A total of 405 students did not take one of the TABE tests and as a result were categorized into the following categories: those who took some other test at entry (T-NAT, Pre-GED, etc.); those who had taken a TABE during a previous enrollment; those who had started a TABE and had not completed it; and finally those for whom no testing information was recorded. The largest number of these students were noncontinuing (322) followed by completing (52) and continuing (31).

Completing students made up the largest group taking another type of test (71.2%) followed by noncontinuing (27.6%) and continuing (22.6%). Fewer completing students had taken a TABE in a previous enrollment. No completing students failed to complete the TABE tests, and fewer completing students had no testing information

recorded. The largest percentage of no tests recorded was found in the continuing student category. A chi-square indicated significance within the table (see Table 14).

TABLE 14

Crosstabulation of TABE Testing Information with Student Category*

	Percent		
	Noncontinuing	Completing	Continuing
Another test taken	27.6	71.2	22.6
TABE taken in previous enrollment	11.8	5.8	12.9
TABE not completed	5.3	0.0	3.2
No test information recorded	55.3	23.1	61.3

*Only column reported

Chi-square = 40.98; degrees of freedom = 6

$p < .001$

Level of First Placement

A total of 2268 students were placed at some beginning level of study (there were 55 missing observations). Level 1A represented the lowest level of placement; level 1B was the middle level; and II was the highest level.

The largest number of students were placed at the middle level. More continuing students (32.7%) and fewer completing students (1.6%) were placed at level 1A; conversely, more completing

students (23.0%) and fewer continuing students (3.3%) were placed at level II. A chi-square indicated significance within the table (see Table 15).

TABLE 15

Crosstabulation of Level of First Placement with Student Category*

Level	Percent		
	Noncontinuing	Completing	Continuing
Level 1A	15.4	1.6	32.7
Level 1B	77.4	75.4	64.0
Level II	7.1	23.0	3.3

*Only column reported

Chi-square = 219.22; degrees of freedom = 4

$p < .001$

Pearson correlation coefficients. A Pearson correlation was computed for both math and reading TABE tests and level of first placement. A significant relationship between both math and reading TABE scores and level of first placement was found at a moderate positive level: math ($r = .45$, $n = 1641$, $p < .001$) and reading ($r = .53$, $n = 1648$, $p < .001$). Higher math and reading scores were related to higher placement scores, and as math and reading scores went down, placement levels also went down. However, when r was interpreted in terms of variance ($r^2 = .20$ and $r^2 = .28$) it was obvious that less than 30 percent of the variance of math or reading was

associated with the variance of first placement.

Summary

Crosstabulations with chi-squares yielded the following information. Approximately 80 percent of all students in the sample took some kind of TABE test. Level D TABE tests were the most common test taken, and level M tests were most often taken by continuing students. Most level E tests were taken by continuing students.

Completing students made up the largest group taking another type of entry-level test, and fewer completing students had taken the TABE in previous enrollments. The largest percentage of students taking no test consisted of continuing students.

Most students were placed at level 1B (the middle level). More continuing students and fewer completing students were placed at level 1A. Conversely, more completing students and fewer continuing students were placed at level II.

Chi-squares indicated significance within all crosstabulation tables. A Pearson correlation coefficient found moderate positive relationships between math and reading TABE scores and level of first placement; however, when r was interpreted in terms of variance, less than 30 percent of the variance of math or reading was found to be associated with the variance of first placement.

Discriminant Analysis

In this study, it was thought that the variables of entry-level TABE math and reading scores and age might be good

predictors of completion or withdrawal in ABE classes. Using discriminant analysis, it was possible to determine the predictive strength of the three variables and to determine which of those variables were the strongest predictors within the function. Finally, it was possible to test the adequacy of the resulting discriminant functions by re-classifying the original set of cases to determine the proportion of correct classifications.

Cases Processed

The discriminant analysis processed 2323 unweighted cases of which 1004 were excluded from the test on the basis of missing data (see Table 16). The resultant cases were then classified,

TABLE 16

Cases Processed for Discriminant Analysis

	Number	Number
Unweighted cases processed		2323
Results of process		
Missing or out of range codes	73	
Had at least one missing discriminating variable	870	
Had both	61	
Total excluded from analysis	1004	
Total unweighted cases used in analysis		1319

790 as noncontinuing, 370 as completing, and 159 as continuing (see Table 17). Missing data occurred for a variety of reasons. Most commonly at least one of the TABE test scores was missing, and in some instances no TABE tests were taken. The reliability and stability of the discriminant function remained high in spite of the missing data because of the high N and the fact that there were only three predictors.

TABLE 17

Number of Weighted Cases by Group

Group	Frequency	Percent
Completing students	370	28.0
Continuing students	159	12.1
Noncontinuing students	790	59.9
Total	1319	100.0

Group Means and Standard Deviations

Group means were determined for each of the discriminating variables and are reported in Table 18. In all instances, the mean grade equivalency test scores in reading were higher than the mean math grade equivalency scores. The lowest mean group scores were in the continuing student group, and the highest group scores in both math and reading were in the completing student group. Age was very consistent across all groups, and the mean age for the entire sample

was very close to those for each group. Students who completed were slightly younger and those who continued were slightly older than the other groups.

TABLE 18

Group Means of TABE Scores and Age

Group	Mean		Age
	Math	Reading	
Completing students	9.4	10.9	26.8
Continuing students	7.3	8.6	27.3
Noncontinuing students	8.2	9.5	27.0
Total group of students	8.4	9.8	27.0

Standard deviations are provided for each of the variables, and once again it is obvious that those who completed showed the least amount of deviation from the means (see Table 19).

ANOVA

Statistical tests for measuring the success with which the discriminating variables actually discriminated when combined into the discriminant functions were necessary for analysis. Variables were then identified which contributed most to differentiation of the function.

A one way analysis of variance (ANOVA) was conducted for each of the three variables to determine the extent to which the three

TABLE 19

Standard Deviations of Test Scores and Age

Group	Math	Reading	Age
Completing students	1.64	1.18	1.02
Continuing students	2.14	2.31	1.07
Noncontinuing students	2.54	2.24	0.96

groups were different. A Wilks' Lambda statistic was used as an intermediate statistic to measure significance, and the F statistic was used to measure distance between groups and to see if the groups were statistically different. The larger the F the greater the significance. There were no significant differences ($p > .05$) among the groups based on age, but there were significant differences ($p < .05$) among the three groups based on math and reading scores (see Table 20).

Results of the Discriminant Function

The three variables used in the analysis resulted in one significant function that discriminated on the basis of TABE test math and TABE test reading and age. Of all the variance accounted for by the discriminant functions, the first discriminant function accounted for 99.97 percent. A second, non-significant discriminant function accounted for .03 percent of the variance. Correlation of the discriminant function was determined using cannonical correlation

which resulted in a score of .35 percent.

TABLE 20

ANOVA Summary Table

Variable	Wilks' Lambda	F	Significance of F
Math	.9209	56.55	.0000*
Reading	.8813	88.61	.0000*
Age	.9997	.1781	.8369

*p < .05

Unstandardized scores were used for the discriminant function. In this case, the reading score contributed most strongly although it could not be compared to math or age at this point. Once the discriminant function was determined, the unstandardized scores were standardized by multiplying the unstandardized scores by the standard deviation of each mean. The data were then interpreted by first looking at the structure matrix.

The structure matrix shows the unique correlation of each predictor to the discriminant function. The matrix score for reading of .98 indicated a very strong correlation, as did the math score at .78. The standardized coefficients were then examined. These scores explained how salient each variable was in the function. When these scores were analyzed, reading (.82) stood out clearly as the variable contributing most strongly to the function, and math (.26)

lost much of the strength it seemed to have in the structure matrix. Throughout all the steps in the discriminant function, age was not a significanct variable, although it did meet the minimum tolerance level of .00100, the level of variance necessary to remain in the model. The coefficients of the various steps in the discriminant anaysis are presented in Table 21.

TABLE 21

Discriminant Analysis Coefficients Table

Variable	UCDFC*	SCDFC**	Structure Matrix
Math	.0113	.2569	.9802
Reading	.0408	.8181	.7830
Age	.0076	.0753	-.0406

*Unstandardized canonical discriminant function coefficients

**Standardized canonical discriminant function coefficients

Classification

Based on the discriminant function, 43 percent of the cases were correctly classified as to students who completed, who continued, and who did not continue, as compared to 33 percent by chance. Completing students were identified correctly 70 percent of the time and continuing students 58 percent of the time. The model, however, was not successful in predicting noncontinuing students and scattered these students fairly evenly throughout each of the model categories (see Table 22).

TABLE 22

Discriminant Analysis Classification Results

Actual Group	No. of Cases	Predicted Group Membership 1 No.	1 %	2 No.	2 %	3 No.	3 %
Noncontinuing students (1)	790	212	26.8	296	37.5	282	35.7
Completing students (2)	370	92	24.9	258	69.7	20	5.4
Continuing students (3)	159	36	22.6	31	19.5	92	57.9
Ungrouped cases	73	19	26.0	27	37.0	27	37.0

Prior probability for each group	.3333
Percentage of "grouped" cases correctly classified	.4261

Summary

Significant differences among the three groups on both reading and math scores were identified; however, no significant difference among the three groups was found for age. One significant function emerged from the analysis, accounting for nearly 100 percent of the observed variance. Reading scores were the strongest predictor in this function.

The resultant prediction model correctly classified groups 43 percent of the time as compared with 33 percent by chance. Completing students were identified correctly 70 percent of the time and continuing students 58 percent of the time. The model was not successful in predicting noncontinuing students, and it was found that throughout the analysis noncontinuing students were the most unstable.

CHAPTER V

SUMMARY AND DISCUSSION

A summary of the research problem, the methods used, and the findings of the study are included in this chapter as well as a discussion of the findings. The discussion of findings is divided into two sections: implications to research and theory and implications to practice. Also included are recommendations and statements of limitations and delimitations.

Summary

The purpose of this study was to understand factors which might influence an individual's decision to discontinue attendance or to persist to goal accomplishment in ABE. Specifically, the focus was on age, gender, and academic variables as they might be related to completion, continuation, and noncontinuation in ABE classes.

The study sample was comprised of 2323 ABE students enrolled in ABE through a midwestern, urban, community college during fiscal years 1988-89 and 1989-90. Data were derived from individual student records and program reports. Variables included age and gender as well as a group of academic variables, including entry-level math and reading TABE scores, last grade attended, level of first placement in ABE, and information on TABE testing.

Using a combination of descriptive statistics (frequencies, percentages, and means) and inferential statistics (crosstabulations with chi-squares, Pearson correlation coefficients, ANOVA, and full model discriminant analysis), the study examined learners "at risk" in ABE programs. Descriptive statistics provided a profile of the outcomes of ABE enrollment and identified each category of students by gender and previous educational background. Inferential statistics described possible relationships between academic variables and student categories, and the discriminant analysis generated a predictive model of completion, continuation, and noncontinuation.

Descriptive findings of the study include: (1) of those students who enrolled in ABE over half discontinued attendance; (2) of those who discontinued, the greatest number of students left before completing 12 hours of class instruction; (3) gender was fairly evenly distributed across student categories, although more females completed a GED and tended to "stop out" and re-enroll; and (4) last grade attended had little impact on outcome of enrollment, although noncontinuing students had attended eleventh and twelfth grade more often than had other student categories.

Crosstabulations with chi-squares yielded the following findings about TABE testing and level of first placement: (1) approximately 80 percent of the students in the sample took some kind of TABE test; (2) level D TABE tests were taken by the majority of students; (3) completing students were the largest group of students taking another type of entry-level test; (4) most students were

placed at level 1B (the middle level); and (5) chi-squares indicated significance within all crosstabulation tables. The Pearson correlation coefficient found moderate positive relationships between math and reading TABE scores and level of first placement.

Analysis of variance found significant differences among the three student groups on both reading and math scores, but not for age. One significant function emerged from the discriminant analysis, and reading scores were the strongest predictor in this function. The resultant prediction model correctly classified groups 43 percent of the time. Completing students were correctly identified 70 percent of the time and continuing students 58 percent of the time. The model was not successful in predicting noncontinuing students.

Discussion

One of the assumptions gong into the study was that for a prediction model to be of practical importance to ABE it would have to (1) use a few easily obtained variables and (2) avoid additional stress or time on the part of the students or the instructors. Prediction models cited in the literature often used multiple variables obtained from lengthy questionnaires to predict attrition or persistence. Another technique was to administer additional tests or evaluations. While some of these were effective in identifying students at risk, they imposed yet another test, form, or interview on both the instructor and the student. The literature has shown that ABE students will not attend class for very long periods of time.

so it does not seem desirable to use time in class to do multiple evaluations. It is also possible that testing engenders anxiety in students, and this could contribute to a student not wanting to return. As such, this study used the TABE scores and age (few in number and readily obtainable from information routinely acquired at time of entry) to build a prediction model which would differentiate students who continue and those who withdraw and which could be of immediate practical use to the practitioner.

Results of the study were positive for predicting those who complete and to a somewhat lesser extent those who continue in the program. Practitioners can use that information to target students who have high scores and encourage them to complete goals as quickly as possible.

Those students who discontinue, however, are still somewhat of an enigma. For example, as a group, the short-term non-completers had the highest average of last grade attended with the exception of other completing students. They very often did not complete the testing process, and their reported mean TABE scores were lower than those of completing students, but higher than continuing students. Noncontinuing students also showed the greatest standard deviation from the mean, thus indicating a more diverse group than the other two groups. These findings could indicate a variety of things. Students who discontinue are capable of completing goals based on their levels of educational attainment and their test scores. Hence, other factors must enter into decisions to withdraw. Because of the

high number of noncontinuing students who did not complete or did not take tests, the testing process itself may need further investigation.

That age was not a factor in predicting persistence or attrition was a somewhat surprising finding, although several previous studies indicating that youth were at greater risk for noncontinuation concluded that it was not a strong factor.

In general, this study was able to build a prediction model that was able to differentiate continuing and completing students. Noncontinuing students, however, are a challenge to be researched further.

Implications for Research and Theory

Results of this study support previous research indicating that demographic variables are not particularly effective for differentiating among students who complete, continue, or discontinue classes in ABE. Although younger age has been found to be associated with noncontinuation in some studies, this research found that age was not a factor in outcomes of enrollment or identification of "at risk" students.

Higher reading and math scores, as demonstrated in the prediction model, were correlated with ABE completion, a finding consistent with previous research. Students with higher entry-level scores represented less of a risk for noncontinuation. Those with lower reading and math scores may be "at risk" even though this model did not adequately discriminate this group.

The fact that previous educational attainment seemed to have little impact on outcomes of enrollment was surprising, as was the finding that noncontinuing students had actually attended eleventh and twelfth grades more frequently than had completers or continuers. This may yet be another indicator of why it is difficult to identify those students "at risk" of noncontinuation.

Standard deviations for students who discontinued attendance in ABE classes were greater than for other categories, another indication that there was much greater diversity in this group than in other student groups. This finding, along with the finding that it was difficult to predict membership of noncontinuing students in the prediction model, would indicate a need for more research on this particular group of students.

Student retention is clearly a complex problem for adult educators. A thorough understanding of the ABE audience, their needs and objectives, and the barriers they face is essential in reducing the rate of noncontinuation.

One of the issues that emerged from this study was that of "stop out" students (students who enter, leave, and re-enter ABE programs multiple times). Many of the students classified as noncontinuing will re-enter ABE at some later date and complete their goal. Some of these students will have entered and discontinued several times before goal accomplishment. Impacts to ABE programs as a result of "stop out" students include: redundancy of effort including repetitive test taking and duplicated paper work; (2) waste

of time and energy by teachers, tutors, and administrators; (3) the emotional toll extracted from staff who may feel a sense of failure when students discontinue attendance; and (4) the expense associated with multiple enrollments. The nature of these students and the factors that influence their re-entry are virtually unexplored in ABE research, as are the impacts to the ABE program.

Yet another possible problem associated with "stop out" is a tendency for the in and out activiity of these students to inflate noncontinuation statistics. The rates of noncontinuation may, in fact, be lower if it were possible to account for multiple enrollments. Further research might focus on this impact.

Another way of viewing "stop out" in ABE, however, is to consider the opportunity afforded by ABE programs to enroll multiple times with relative ease. This may, in fact, be a necessary and advantageous component for students who have multiple barriers to regular attendance. Perhaps the opportunity to re-enroll leads to higher goal completion over the long term. Again, research is needed to explore this issue and to address related phenomena associated with the "stop out" student.

Yet another area to be explored in future research is the impact of testing on attrition. It would seem that anxiety created by the test taking procedures and insecurity generated by results of that testing may be a factor contributing to noncontinuation. All aspects of the testing procedure, including when tests are given, how they are given, and how results are interpreted, should be explored.

Research efforts are most deficient in the area of program context variables, including those directly associated with the teaching-learning process. In addition, little research has attempted to examine the relationship between instructional strategies and dropout and persistence in ABE. Researchers and practitioners need to not only encourage persistence, but also cause learning to take place. More research emphasis is needed on determining strategies for learning that work best for individual learners.

Finally, this study, as well as many in the past, used traditional quantitative models in an attempt to better understand non-continuation in ABE. Results of this and other such research seem to confirm the limited nature of this approach. Much of the literature alluded to the idea that a more multi-dimensional approach is needed. Intensive qualitative studies, such as in-depth interviews with participants and investigations of socio-cultural contexts, offer a promising focus for additional research.

Implications for Practice

The study revealed that the largest segments of those who discontinued attendance in ABE stayed in class less than 12 hours. This finding may have implications for new student orientation, testing, and other factors which may be of influence in the first few sessions of ABE classes.

The study found those students who did not complete goals did not appear to be much different than completing students. Since higher reading and math scores were associated with completion, it

stands to reason that practitioners might focus on students with higher scores to increase the number of students achieving goals.

The sharp differences in missing data for the discriminant analysis among those who completed and those who withdrew before completing 12 hours of instruction suggest the need to think more carefully about the effects of testing on new enrollees. It is possible that many of the short-term noncontinuing students did not return either because of perceptions of poor performance on the entry-level tests completed or because of anxiety created by taking the tests in a new situation. TABE testing information reinforced this conclusion. More noncontinuing students than any other category did not complete tests or had no test scores recorded. Practitioners may need to consider how the testing process is handled and perhaps to rethink both the timing of the tests as well as how they are given.

Recommendations

Based on the findings presented, the following recommendations for research in this area have been identified.

1. An in-depth examination of the phenomenon of "stop-out" in ABE.

2. A thorough examination of the impact of testing on the ABE student, including testing procedures, intepretation of tests, student perceptions of testing, and anxiety that may be generated by testing.

3. More research studies which focus on program context and learner needs.

4. A study of relationships between instructional strategies and dropout and persistence in ABE.

5. Intensive qualitative studies which focus on socio-cultural and psychosocial issues as well as on social networks as factors which may influence persistence and noncontinuation.

Three additional recommendations for practice should also be considered.

1. Consider implementation of a student orientation designed to minimize factors which may influence early noncontinuation.

2. Develop strategies to facilitate progress of students with higher entry-level scores.

3. Consider modifications to the procedures used for administration of entry-level tests.

Limitations

The data in this study were limited to files and records maintained at the participating community college on all ABE students enrolled during the 1988-89 and 1989-90 school years. The completeness of the data depended, in large part, on how completely and accurately information was provided on student enrollment forms, cumulative records, and annual reports.

Delimitations

Since this study was limited to ABE students at the community college studied, results may not generalize to students in other ABE programs in other locations. This is particularly true because of the number of missing cases in the discriminant analysis. However, the size of the sample still lends validity to the study internally. Because of the size of the sample studied, it is expected that these findings will contribute to understanding of ABE non-continuation in general.

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