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AUTHOR Ethington, Corinna A.; Wolfle, Lee M.

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ABSTRACT

In order to increase women's representation among quantitative degrees, Berryman (1985) suggested two strategies: (1) increase women's share of the initial mathematical/scientific pool; or (2) reduce attrition from the pool. However, current research indicates that the decision to enter a quantitative field of study for women is the result of a complex interaction of many factors. This study examines the manner in which these factors influence women's choice of undergraduate fields of study by proposing a model indicating hypothesized patterns of effects. The estimation of the model resulted in the exogenous background variables producing the predominant influences in the model. Data for this study were drawn from the 1980 sophomore cohort of the national longitudinal "High School and Beyond" survey. The analyses reported here were based on 1,893 women who participated in all waves of that study, who had attended a postsecondary educational institution, and for whom data for all variables were available. Results suggest that while parents encourage academic performance in general, they tend to discourage daughters from entering quantitative fields of study in college. It is suggested that intervention strategies targeted no later than junior high school be developed for use with females and their parents to increase awareness of opportunities for women and to effect change in attitudes and course-taking patterns. (Author/KM)

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THE SELECTION OF QUANTITATIVE UNDERGRADUATE FIELDS OF STUDY:

DIRECT AND INDIRECT INFLUENCES

Corinna A. Ethington

University of Illinois at Chicago

and

Lee M. Wolfle

Virginia Polytechnic Institute and State University

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THE SELECTION OF QUANTITATIVE UNDERGRADUATE FIELDS OF STUDY: DIRECT AND INDIRECT INFLUENCES

Abstract

In order to increase women's representation among quantitative degrees, Berryman (1985) suggested two strategies: increase women's share of the initial mathematical/scientific pool or reduce attrition from the pool. However, current research indicates that the decision to enter a quantitative field of study for women is the result of a complex interaction of many factors. This study examined the manner in which these factors influence women's choice of undergraduate fields of study by proposing a model indicating hypothesized patterns of effects. The estimation of the model resulted in the exogenous background variables producing the predominant influences in the model. Results suggest that while parents encourage academic performance in general, they tend to discourage their daughters from entering quantitative fields of study in college. It is suggested that intervention strategies targeted no later than junior high school be developed for use with females and their parents to increase awareness of opportunities for women and to effect change in attitudes and course-taking patterns.

THE SELECTION OF QUANTITATIVE UNDERGRADUATE FIELDS OF STUDY

DIRECT AND INDIRECT INFLUENCES

Sex-stereotyped expectations and opportunities have inhibited many women in the past from entering quantitative fields of study, which in turn led to their underrepresentation in the scientific and engineering occupations. Recent statistics, however, have shown increases in the representation of women in many fields. For example, data from the Bureau of the Census (1984) show that the representation of women has grown from 9% to 13% in medicine, from 2% to 5% in engineering, and from 12% to 24% in pharmacy. At the institutional level, Berryman (1985) reports that women are receiving an increasing proportion of quantitative degrees offered at every level. However, this growth has not been proportional to the increased representation of women in non-quantitative areas, and is almost "entirely attributable to their greater representation at the degree levels themselves, not to changes in their field choices" (Berryman, 1985, p. 10). Thus, it appears that women today are taking advantage of the increased educational opportunities, but not in areas leading to increased occupational opportunities. This is surprising given the relaxing of the barriers to women's entry into various occupational categories and the changing societal norms.

In order to increase women's representation among quantitative degrees at all levels, Berryman (1985) suggests two strategies: increase women's share of the initial mathematical/scientific talent pool or reduce attrition from the pool. She defines this pool as consisting of those individuals who prior to high school express career interests in areas requiring quantitative college training, high school students participating in advanced, elective mathematics and sciences courses, and students majoring in quantitative fields in college and graduate school. She further posits that this pool reaches maximum size prior to ninth grade, and that while there is some migration into the pool during the high school years, "after high school migration is almost entirely out of, not into, the pool" (Berryman, 1985, p. 11).

Berryman's (1985) supposition is documented by studies in which the more important correlates and predictors of women's choice of quantitative fields of study were the number of science and mathematics courses taken in high school and mathematical ability (e.g., Carney and Morgan, 1981; Dunteman, Wisenbaker, and Taylor, 1979; Peng and Jaffe, 1979; Ware, Steckler, and Leserman, 1985). This research suggests that strategies to increase the size of the scientific/mathematical pool should be implemented prior to and during high school in order to assure that students receive the proper preparation for entry at college into quantitative fields of study.

It would appear that encouraging high ability females to enroll in advanced elective mathematics and science courses in high school would be a simple strategy to undertake. In fact, students themselves have expressed a greater need for counseling in high school regarding career and educational plans and choosing courses (Bachman, Johnston, and O'Malley, 1984). But factors not as easily manipulated come to bear. Waite and Berryman (1985) and Chipman and Thomas (1985) suggest that occupational expectations related to sex-role orientations may be the motivating influence for women's lack of enrollment in advanced mathematics and science courses, for the career choices may reflect conflict between family and ca... orientations (Rossi, 1984). Thus, while women think the study of science is appropriate for women in general, they are less likely to see themselves in science occupations (Steinkamp and Maehr, 1984). Additionally, one of the primary attitudinal barriers to women's enrollment in high school mathematics courses has been women's perception of mathematics as a male domain (Fennema and Sherman, 1977) resulting in women avoiding fields requiring the greatest mathematical competence (Boli, Allen, and Payne, 1985). Other attitudes that have been shown to influence the study of mathematics are enjoyment of mathematics, confidence in one's ability to do mathematics, anxiety related to mathematics, and the usefulness of mathematics (Brush, 1980; Fennema and Sherman, 1977; Fox, 1980; Tobin and Fox, 1980), and studies by Leder (1982) and Ware, et al. (1985) suggest that women were more likely than men to attribute success or failure in mathematics to internal rather than external causes.

Race and socioeconomic status also have been shown to be influential factors in the selection of quantitative fields of study. Dunteman, et al. (1979) found that for blacks, higher family socioeconomic status increased the likelihood of selection of a science major, and when background measures were controlled for, blacks had a higher probability of selecting a major in science than did whites. In a summary of studies comparing males and females on some measure of orientation to science, Steinkamp and Maehr (1984) found females' orientations to be higher than males' in disadvantaged communities but lower in upper middle class communities, and Berryman (1983) reported ethnic/socioeconomic interactive effects on the selection of quantitative undergraduate majors. In addition to the influence of the family socioeconomic status, parental influence and evaluation of their daughter's ability has been shown to affect women's subsequent interest in quantitative studies (Belotti, 1975; Kaminski, 1978). Belotti (1975) and Malcolm, Hall, and Brown (1976) even suggest that the stereotypic childrearing practices associated with girls are less conducive to scientific achievement and may inhibit the development of quantitative interests.

It is apparent from these research findings that the decision to enter a quantitative field of study for women is the result of a complex interaction of many factors. In order to devise strategies aimed at increasing the size of the pool or decreasing attrition from it, it is necessary to understand how the influence of these factors are manifested on decisions. The purpose of this paper is to examine the manner in which these factors influence women's choice of undergraduate fields of study by proposing a model indicating hypothesized patterns of effects. The estimation of the direct, indirect, and total effects implied by the model would capture a broader understanding of the nature of the influence of the factors.

METHOD

The Model

The model proposed in this study was conceptualized from the previously cited research findings and incorporates variables found to be associated with women's choice of quantitative fields of study. It is a block-recursive, 15-variable model in which the variables comprise three primary sources of influence. The first block of variables consists of measures of student background (e.g., socioeconomic status, race) and attitudes (e.g., attitude toward mathematics) and attributes (e.g., self-esteem, locus of control, early field of study choice) influenced by pre-high school experiences. These variables are considered exogenous variables and are correlated for reasons unanalyzed in this model.

These variables are seen to influence the first block of endogenous variables which represent high school course enrollment and orientations prior to college entry (e.g., sex-role and family orientations, perceptions of sources of influence on educational plans). Since each of these variables were measured when the students were seniors in high school, no causal relationships are hypothesized among them. The second block of endogenous variables represents high school academic accomplishments (e.g., grades, mathematics and science achievement). While these variables were also measured when the students were seniors in high school, they are considered outcomes of the high school experience that are affected by the influences of the preceding variables in the model. In particular, the influence of parents and school personnel is seen to be an on-going process throughout the high school years. Finally, choice of undergraduate field of study is seen to be causally dependent on all preceding variables in the model.

Sample

Data for this study were drawn from the 1980 sophomore cohort of "High School and Beyond" (HSB), a nationwide longitudinal study of high school sophomores and seniors in 1980 sponsored by the Office of Educational Research and Improvement. Following the initial survey and testing in 1980 of over 30,000 sophomores, the entire cohort was surveyed and tested again in 1982 when they were near the end of their senior year of high school. The second follow-

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up survey randomly selected about half of the original sample to participate in the 1984 follow-up. A complete description of these data can be found in the user's guide (Jones, Sebring, Ioanna, Spencer, Spencer, and Butz, 1986). The analyses reported here were based on 1,893 women who participated in all three waves of the HSB survey, who had gone on to attend a postsecondary educational institution after high school, and who had complete reports for all of the variables described below.

Variables

Full operational definitions for all variables used in the analyses are given in Table 1. The exogenous student background and attribute measures were taken from the 1980 base-year survey when the respondents were high school sophomores. The measures constituting the two blocks of endogenous variables were taken from the first follow-up survey in 1982 when these same students were seniors in high school. The measure representing field of study was constructed from variables found in the second follow-up survey in 1984, two years after high school graduation.

Insert Table 1 About Here

Analyses

The extant literature includes several studies (e.g., Berryman, 1983; Dunteman, et al., 1979) in which the results suggest that the effects of some of the variables included in the model may differ for blacks and whites. This possibility was examined by computing the interaction terms between race and other variables in the model. The appropriate interaction terms were then added to each equation defining the model. The increase in the amount of variance explained by adding the interaction terms was then tested for statistical significance for each of the equations. In no case was there a significant increase in the amount of variance explained, and, consequently, the model was estimated for the combined sample of blacks and whites.

The causal effects implied in the proposed model were estimated with ordinary least squares procedures using GEMINI (Wolfle and Ethington, 1985), a FORTRAN program based on the work of Sobel (1982) that computes indirect effects and their standard errors in addition to the usual regression results. Three types of effects were forthcoming; direct, indirect, and total. The direct causal effects are represented by regression coefficients, either standardized (beta weights) or unstandardized (b weights). The indirect causal effects are estimated by the sums of the products of direct effects through intervening variables in the model. These effects represent the influence on the dependent variable that is the result of directly influencing prior causal variables in the model. The total causal effects are simply the sum of the direct and indirect effects. All analyses were conducted using the means, standard deviations, and correlations given in Table 2.

Insert Table 2 About Here

RESULTS

The estimated coefficients of each of the nine structural equations defining the causal model described above are given in both standardized and metric form in Table 3. The equation for variable 15 (Field of study) shows the direct effects of each variable in the model on choice of undergraduate field of study. As can be seen, the fourteen variables in the model explain 9.4% of the variance of the criterion ($F = 13.95$, $p < .001$), slightly higher than the 6% reported for women by Peng and Jaffe (1979) who also used a longitudinal data set (National Longitudinal Study). Indirect and total effects are given in Table 4.

Insert Tables 3 and 4 About Here

The results given in Tables 3 and 4 show that few measures outside the exogenous background measures influence the selection of undergraduate field of study. However, the number of mathematics and science courses taken in high school is the most influential variable in the model. Not only does this measure have the largest direct effect on field of study, but when this direct effect is combined with the significant indirect effect, it has the largest total effect as well. The indirect effect of this variable is mediated through mathematics achievement, the only other non-background measure to have significant direct effects on the criterion.

The indirect effect of parental influence is also mediated through mathematics achievement. The negative effect of this variable indicates that the more influence parents have on plans after high school, the less likely their daughter is to select a quantitative field of study in college. Thus, the results from this combined sample of black and white women are consistent with those of Malcolm, Hall, and Brown (1976), wherein the families of minority women scientists were reported to have discouraged scientific interests.

The suggestion by Waite and Berryman (1985) and Chipman and Thomas (1985) that sex-role orientation may be a motivating influence in women's selection of quantitative fields of study is not supported in this study. This measure did not directly or indirectly influence field of study, and while it did have a positive effect on mathematics achievement, this effect was not strong enough to carry over indirectly to field of study.

The importance of women's background and attributes developed prior to high school completion in influencing undergraduate field of study is evidenced in the pattern of effects seen in the model. Five of the seven variables having significant direct effects on field of study and four of the six significant indirect effects come from this block of variables. In addition, these background measures exert strong direct and indirect effects on the intervening variables in the model.

Berryman's (1985) call for the identification before and during high school of potential members of the scientific/mathematical talent pool is supported by the strong effects seen in this model of the sophomore choice of field of study. This variable is the second most influential one in the model. In addition to having strong direct and total effects on undergraduate field of study, the indirect effects are the result of strongly influencing the number of mathematics and science courses taken in high school.

Additional positive direct effects on field of study are seen from self-concept and attitude toward mathematics, indicating that for the women in this sample, more positive self-concepts and attitudes toward mathematics enhance the likelihood of selection of quantitative fields of study. The significant indirect effects of attitude toward mathematics, mediated through the number of mathematics and science courses taken, result in this measure having the third largest total effects. The role of attitudes in this model supports the conclusion by Boli, et al. (1985) that negative attitudes toward mathematics result in women avoiding fields requiring the greatest mathematics competence.

The interactive effects of race and socioeconomic status found by Berryman (1983) and Dunteman, et al. (1979) were not found in this study, but both variables had significant effects in the model. The negative direct and total effects of race indicate that for black and white women with equal measures on other variables in the model, the black women were more likely to select a quantitative field of study. This finding parallels that of Dunteman, et al. (1979) and supports the supposition made by Hall and Kammer (1986) that sex rather than race was the major factor in the under-representation of minority women in the sciences.

The effects of socioeconomic background are indicative of the complexity of the influences on women's decisions relative to the selection of undergraduate field of study. This measure had a negative direct effect and a positive indirect effect resulting in a non-significant total effect. The negative direct effect indicated that the higher the socioeconomic status of the woman's family, the less likely she would opt for a quantitative undergraduate major. Yet, the indirect effects were positive because of the positive influences of this measure on the number of mathematics and science courses taken and mathematics achievement. These opposing effects of socioeconomic status are perhaps understood by examining the indirect effects of this measure on mathematics achievement. The total indirect effect of socioeconomic status on mathematics achievement is .120. However, this effect would be larger were it not for the negative effect mediated through parental influence. Thus, it appears that higher status enhances academic performance, but parental influence is also greater in higher socioeconomic families and that influence tends to discourage women from quantitative interests. Steinkamp and Maehr (1984) found similar relationships relative to orientations toward science and posited that these effects were a manifestation of the lack of inculcation of stereotypic attitudes toward women in quantitative fields within disadvantaged communities.

CONCLUSIONS

The results of this study further substantiate the need for early interventions in order to increase women's share of the initial mathematical/scientific talent pool defined by Berryman (1985). The dominant effects of sophomore choice of field of study the the number of mathematics and science courses taken in high school suggest that strong efforts should be made to identify and encourage those women who prior to high school express interests in quantitative fields of study or occupations. In fact, it would seem that these efforts should be targeted no later than junior high school and possibly as early as late elementary or middle school. Effective counseling strategies should be devised that not only support these initial interests and guide in the selection of appropriate course-taking, but enhance by shaping more positive attitudes and self-concepts. Indeed, among high ability women not expressing overt interests in quantitative areas, the enhancement of positive attitudes toward mathematics and science and, in particular, the appropriateness of quantitative studies for women, could lead to the development of interest in these areas.

It is also apparent from these findings that it is equally important to work with the parents of these students. These results suggest that while parents encourage academic performance in general, they tend to discourage their daughters from entering quantitative fields of study in college. In addition, the manner in which the effects of socioeconomic status were manifested suggest that any academic and educational advantages afforded by higher socioeconomic status are not carried over in support of quantitative studies in college. Thus, efforts should be made to not only shape more positive attitudes among young women toward quantitative studies, but among their parents also. Intervention programs such as Multiplying Options and Subtracting Bias (Fennema, Becker, Wolleat, and Pedro, 1980) could be used with parents and their daughters to increase awareness of opportunities for women and to effect change in attitudes and course-taking patterns.

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Table 1. Variable Descriptions for Model of Choice of Quantitative Undergraduate Fields of Study.

Variable	Description
SES	Base-year socioeconomic status constructed from father's occupation, father's education, mother's education, family income, and material possessions in the household. Item BYSES in Jones, et al. (1986) (38).*
Race	Coded 1 if white, 0 if black. Recoded from item RACE (31).
Self-concept	Average composite scale of the standardized scores of the items composing self-concept. Item BBCONCPT (838).
Locus of control	Same as above. Item BBLOCUS (842).
Sophomore choice	Likely field of study in college; coded 1 if respondent indicated engineering, physical sciences, or mathematics; coded 0 otherwise. Recoded from item BB120 (790).
Attitude toward mathematics	Sum of six attitudinal questions about mathematics, BB008AB (330), BB008AC (331), YB035E (449), YB035F (450), YB035G (451), and YB035H (452), each one of which was coded 1 for positive attitude toward math, and 0 for negative attitude.
Math/science courses	Sum of the number of courses complete in high school for algebra 1, FY5A (1261), algebra 2, FY5B (1262), geometry, FY5C (1263), trigonometry, FY5D (1264), calculus, FY5E (1265), physics, FY5F (1266), chemistry, FY5G (1267), and biology, FY5H (1268).
Parental influence	Sum of father's, FY62A (1501), and mother's, FY62B (1502), influence on plans after high school.
School influence	Sum of guidance counselor's, FY62C (1503), and teacher's, FY62D (1504), influence on plans after high school.

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Table 1. (continued).

Variable	Description
Sex-role orientation	Sum of three variables with regard to women's roles: FY72A (1566) was reverse coded, FY72B (1567), and FY72C (1568). Higher values reflect more liberal attitudes.
Family orientation	First principal component of factor analysis of four family variables: happy family life, FY73B (1570), children with better opportunities, FY73G (1575), living close to parents, FY73H (1576), and having children, FY73K (1579).
High school grades	High school grade average, in which HSGRADES (4348) was recoded so higher numbers indicated higher grades.
Science achievement	HSB science test formula score completed during senior year of high school, FYSCINFS (3005).
Mathematics achievement	Sum of two HSB mathematics formula scores completed during senior year of high school: FYMTH1FS (2969) and FYMTH2FS (2987).
Field of study	Recode of SY18H (3312) in which the variable equals 1 for fields of: all computer science except for data processing, all engineering except for surveying and mapping sciences, all life sciences, all mathematics, all physical sciences, engineering technology, science technologies, and multidisciplinary fields of biology and physics, and engineering and other; otherwise the variable equals 0.

* The numbers in parentheses indicate the starting data column field reported in Jones, et al. (1986).

TABLE 2

Means, Standard Deviation, and Correlations (N = 1893)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. SES	1.000														
2. Race	.226	1.000													
3. Self-concept	-.032	.144	1.000												
4. Locus of control	.170	-.007	-.218	1.000											
5. Sophomore choice	.046	.022	.012	.013	1.000										
6. Attitude toward mathematics	.038	-.022	-.115	.127	.111	1.000									
7. Math/Science courses	.284	.051	-.086	.262	.174	.290	1 000								
8. Parental influence	.259	.022	-.070	.061	.007	.055	.123	1.000							
9. School influence	-.069	-.169	-.068	.021	-.020	.043	.011	.215	1.000						
10. Sex-role orientation	.062	-.149	-.034	.161	.025	.032	.142	-.012	.015	1.000					
11. Family orientation	-.008	090	-.052	.001	-.008	.033	-.045	.098	-.007	-.192	1.000				
12. High school grades	.141	.179	-.080	.265	.084	.176	.411	.099	.035	.025	.027	1.000			
13. Science achievement	.260	.337	-.055	.291	.078	.154	.442	.038	- 070	.102	-.055	.417	1.000		
14. Mathematics achievement	.295	.280	-.011	.274	.148	.299	.655	.048	-.043	.107	-.027	.512	.631	1.000	
15. Field of study	.001	-.060	.019	.031	.194	.143	.224	.018	024	060	-.016	.077	.099	.174	1.000
Mean	.174	.848	-.035	266	042	3 720	4.155	4.642	3.452	9.037	-.022	5.954	11.100	19.151	.118
SD	.687	.359	.702	.547	.200	1.746	2.280	1.170	1.129	1.803	.802	1 184	3.965	9.219	.323

TABLE 3
Direct Effects in Model of the Selection of Quantitative Undergraduate Fields of Study[a]

	Dependent Variables								
	7	8	9	10	11	12	13	14	15
1. SES	.236* (.784)	.262* (.447)	-.038 (-.062)	.074* (.194)	-.033 (-.039)	-.034 (-.059)	.061* (.353)	.071* (.950)	-.056** (-.026)
2. Race	.003 (.022)	-.029 (-.093)	-.153* (-.483)	-.169* (-.848)	.108* (.241)	.176* (.582)	.323* (3.575)	.241* (6.188)	-.084* (-.075)
3. Self-concept	-.012 (-.040)	-.053** (-.088)	-.039 (-.063)	.026 (.066)	-.067* (-.076)	-.029 (-.049)	-.032 (-.181)	.039** (.518)	.045** (.021)
4. Locus of control	.187* (.781)	-.000 (-.000)	.013 (.027)	152* (.502)	-.011 (-.016)	169* (.365)	.175* (1.270)	.106* (1.793)	-.026 (-.015)
5. Sophomore choice	.134* (1.524)	-.008 (-.046)	-.019 (-.108)	.022 (.202)	-.012 (-.046)	016 (.092)	.000 (.006)	.026 (1.215)	.153* (.247)
6. Attitude toward mathematics	.241* (.314)	.040 (.027)	.037 (.024)	.006 (.007)	.031 (.014)	.050** (.034)	.036 (.083)	.130* (689)	.067* (.012)
7. Math/Science courses						.347* (.180)	.342* (.595)	.557* (2.251)	.159* (.022)
8. Parental influence						.035 (.036)	-.032 (-.108)	-.054* (-.424)	.010 (003)
9. School influence						.044** (.046)	-.017 (-.058)	.002 (.019)	.011 (.003)
10. Sex-role orientation						-.024 (-.015)	.057* (124)	.036** (.185)	.020 (.004)
11. Family orientation						.016 (023)	-.057* (-283)	-.013 (-.148)	.006 (.003)
12. High school grades									-029 (-008)
13. Science achievement									.025 (.002)
14. Mathematics achievement									.072** (.003)
15. Field of study									
R^2	.210	.073	.033	.054	014	231	343	526	094

[a]Metric coefficients are given in parentheses.
*p<.01; **p<.05

TABLE 4

Indirect and Total Effects in Model of the Selection of Quantitative Undergraduate Fields of Study[a]

	Dependent Variables							
	Indirect Effects				Total Effects			
	High School grades	Science achievement	Mathematics achievement	Field of study	High School grades	Science achievement	Mathematics achievement	Field of study
1. SES	.087* (.150)	.079* (.457)	.120* (1.615)	.057* (.027)	.053** (.092)	.140* (.810)	.191* (2.565)	.001 (.000)
2. Race	-.001 (-.003)	-.011 (-.123)	-.004 (-.114)	.016 (.014)	176* (.579)	312* (3.452)	.236* (6.074)	-.068* (-.061)
3. Self-concept	-.010 (-.016)	.003 (.019)	-.002 (-.030)	.000 (.000)	-.038 (-.065)	-.029 (- 162)	.037 (.488)	.045** (.021)
4. Locus of control	.062* (.134)	.073* (.530)	.110* (1 853)	.048* (.028)	.231* (.499)	.248* (1.800)	.216* (3 646)	.022 (.013)
5. Sophomore choice	.045* (.264)	.048* (.956)	.076* (3.492)	.028* (.045)	.060* (.356)	.049** (.963)	102* (4.706)	.181* (.292)
6. Attitude toward mathematics	.087* (.059)	.079* (.180)	132* (.696)	057* (.011)	.137* (.093)	115* (.262)	262* (1.384)	.124* (.023)
7. Math/Science courses				.039** (.006)	.347* (.180)	.342* (.595)	.557* (2.251)	.197* (.028)
8. Parental influence				-.006** (- 002)	.035 (.036)	-.032 (-.108)	-.054* (-.424)	.004 (.001)
9. School influence				-.002 (-.000)	.044** (046)	- 017 (-.058)	002 (019)	.010 (.003)
10. Sex-role orientation				.005 (.001)	-.024 (-.015)	057* (.124)	036** (185)	.024 (.004)
11. Family orientation				-.003 (-.001)	.016 (023)	-.057* (- 283)	- 013 (- 148)	.004 (.001)
12. High school grades								-.029 (-.008)
13. Science achievement								.025 (.002)
14. Mathematics achievement								.072** (.003)

[a]Metric coefficients are given in parentheses
*p < .01; **p < .05