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ABSTRACT

This study examined the effect that faculty-student interaction had on the degree aspirations of students, focusing on specific types of interactions that were important in predicting higher degree aspirations. It is based on a subset of student and faculty data from the 1985 freshman survey and 1989 follow-up survey, 1989 faculty survey collected by the Cooperative Institutional Research Program survey. The study focused on student background variables and degree aspirations as entering freshmen and as fourth-year students, as well as faculty and institutional characteristics and Scholastic Aptitude Test (SAT) scores. The findings indicated that as the amount of contact with faculty increased, so did student degree aspirations. Students who spent more hours with faculty, who were invited to professors' homes, or who worked on a professor's research project were more likely to aspire to graduate study than those students who did not. (Contains 16 references.) (MDM)

Faculty-Student Interaction: Uncovering the Types of Interactions That Raise Undergraduate Degree Aspirations

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INTRODUCTION

At large educational institutions, the opportunity to interact one-on-one with a faculty member is often not taken advantage of by undergraduates (Wilson, Gaff, Dienst, Wood, & Bavry, 1975; DeCoster & Brown, 1982). Yet, researchers have shown that faculty-student interaction is important in the development of the student (Astin, 1984; Astin, 1993b; Pascarella, 1984; Wilson, Gaff, Dienst, Wood, & Bavry, 1975). Literature reviews on college impact (Pascarella & Terenzini, 1991), as well as reviews which have focused specifically on the impact of faculty-student interaction (Pascarella, 1980; Endo & Harpel, 1981; Lamport, 1993), have accumulated evidence that faculty do indeed play a role in influencing, both positively and negatively, student outcomes. However, while such research distinguished between formal and non-formal contact (Iverson, Pascarella, & Terenzini, 1984; Pascarella, 1980), it generally does not specify the types of interactions that are important for a student's academic development. It is not enough to know that faculty-student interactions can be influential in student development without knowing the types of interactions that are most influential.

Although the impact of faculty-student interaction has been discussed to influence several outcomes, such as academic achievement, satisfaction with college, intellectual and personal development, persistence, and attrition, this study focuses on degree aspirations because of its importance in influencing students educational attainment. Since aspiring to a higher degree can be a catalyst for pursuing and eventually obtaining a higher degree, this investigation focuses on degree aspirations rather than other student outcomes. Further, this study aims to add to the research on faculty-student interaction by dissecting what "faculty-student interaction" really means. Specifically, the purpose of this investigation is to first examine what effect, if any, faculty-student interaction has on the degree aspirations of students; and second, to observe which types of interactions are

important in predicting higher degree aspirations.

BACKGROUND OF THE STUDY

Much of the research on the impact of faculty-student interaction has been supported directly or indirectly by Astin's (1984) theory of student development. Astin's (1984) theory holds that a student's learning and personal development "associated with any educational program is directly proportional to the quality and quantity of students' involvement in that program" (p. 298). According to Astin (1984), student involvement specifically "refers to the quantity and quality of the physical and psychological energy that students invest in the college experience [e.g., interacting with the faculty] . . . According to the theory, the greater the student's involvement in college, the greater will be the amount of student learning" (p. 307). Therefore, consistent with this theory is the assertion that students who interact frequently with faculty or become involved in programs that provide them with the opportunity to interact with faculty will advance more in their learning and personal development than those who do not.

Research focusing on the decision to go to college provides an insight as to why faculty members play an important part in influencing undergraduates learning and personal development. Consistent in this field of research is the finding that significant others and/or care takers such as teachers, counselors, peers, close friends, older siblings, and especially parents play an important role in encouraging a student to attend college (Trent, 1970; Hossler, Braxton, & Coppersmith, 1989; and Galotti & Mark, 1994). What is interesting to note is that these individuals, more often than not, are in a unique position to influence the student. That is, through their relationship with the student, these significant others are in a position to make a fairly good judgment about the student's academic skills and personal talents, as well as in a position to convey their assessments for the purpose of influencing their future degree attainment and career paths.

Similarly, faculty who interact closely with undergraduates are in a position to evaluate students' abilities, talents, and skill levels during college. It may be that once a student moves away from home, faculty take the place of a significant other and are able to influence a student's decision to pursue graduate/professional school or aspire toward a professional/graduate degree. Consequently, students who interact frequently with faculty may be receiving subtle or direct hints about their ability to pursue a graduate or professional degree. On the other hand, it may simply be, as Pascarella and Terenzini (1991) have suggested, that since faculty are generally assumed to place a high value on educational attainment, "the more students interact with faculty in informal and formal settings, the more likely they are to be influenced by this value" (p. 394). Regardless, of whether faculties' underlying motives are to encourage students because "they have the right stuff" or because they directly or indirectly impose their values, the results are the same. Undergraduates will be influenced by faculty contact.

Therefore, it is no surprise that researchers have been intrigued by the impact that faculty-student interactions have on students, particularly their impact on undergraduate degree aspirations (Astin, 1984, 1993b; Parcarella, 1980, 1984; Iverson, Pascarella, & Terenzini, 1984). In a longitudinal study incorporating national data (N = 5,162), Pascarella (1984) examined the college environmental factors influencing educational aspirations of 1975 college freshmen. After controlling for several student background variables (e.g., SAT scores, father's education, mother's education, high school grades [GPA], and educational aspirations in 1975), Pascarella found that impersonalism and inaccessibility of the faculty were negatively predictive of educational aspirations for men and women. In other words, students who attended institutions where the faculty were impersonal and inaccessible tended not to aspire toward higher educational aspirations.

More recently, in *What Matters in College?*, Astin (1993b), using longitudinal, national data

of the entering freshman class of 1985, found that after controlling for student, environmental and institutional characteristics, faculty-student involvement variables such as hours per week spent talking to faculty outside of class, working on professors' research projects, and having class papers critiqued by instructors, were significantly associated with higher degree aspirations. However, because the purpose of his book was to summarize the effects of numerous variables, the extent to which faculty-student interaction affects a student's degree aspiration was not explored in depth.

OBJECTIVES

Although past research consistently has shown that students who interact with faculty are more likely to have higher degree aspirations, not many studies have focused on naming the specific types of interactions that are conducive for higher degree aspirations. Consequently, this study is an extension of previous research, in particular Astin's (1993b) work, but with the special focus of uncovering the types of faculty-student interactions that are important, necessary and/or critical in predicting students' higher degree aspirations. Specifically, the research question driving this study is: What types of faculty-student interactions raise students' degree aspirations?

This study has two objectives, first, it aims to support previous research that has found that faculty-student interactions are important in predicting higher degree aspirations (Astin, 1993b; Pascarella, 1984) and second, this study hopes to add to the current literature by naming what types of faculty-student interactions activities are important in predicting higher degree aspirations.

METHODOLOGY

Sample

The sample was derived from the database collected by the Cooperative Institutional Research Program at the UCLA Higher Education Research Institute (HERI). Data used in this study were drawn from the 1985 Freshman Survey, the 1989 Follow-Up Survey, the 1989 Faculty Survey, and

information accumulated on institutional characteristics and SAT test scores. The sample from this national, longitudinal database on college students included 9,631 students (5,598 women; 4,033 men), attending over 300 institutions around the United States. Consequently, this study makes further use of the database from Astin's (1993b) work.

Research Methods

An "Input-Environment-Outcome" (I-E-O) research method was used in order to control for possible confounding variables and examine the impact of several variables on the dependent measure. According to Astin (1993a), "the basic purpose of the I-E-O design is to allow us to correct or adjust for such input differences [e.g., SES, GPA, SATs] in order to get a less biased estimate of the comparative effects of different environments [e.g., faculty-student interactions] on outputs [e.g., degree aspirations]" (p. 19). Therefore, the influence of student background characteristics and institutional variables was controlled before faculty-student interaction variables and other involvement variables were examined. Stepwise regression analysis was performed on the outcome variable with independent variables blocked in a temporal sequence: student background characteristics, institutional/environmental variables, and involvement variables.

Description of Variables

The dependent measure, students' degree aspirations, was measured during the Follow-Up Survey in 1989. Students were asked to indicate the highest degree they plan to complete by marking one of the ten options listed on the survey. In order to group responses into a scale from low aspirations to high aspirations, this variable was recoded and collapsed into five categories: "none," "associate degree or vocational certificate," "bachelor's or equivalent," "masters," and "Ph.D. or equivalent." (See Appendix A for complete variable descriptions and blocking for regression.)

The first input block is comprised of several student characteristics that were derived from

the 1985 Freshman Survey. Students background characteristics and personal characteristics (i.e., opinions, attitudes and self-ratings) such as SAT scores, socio-economic status, self-rating on drive to achieve and leadership ability, as well as attending college to prepare for graduate school were selected and controlled because previous research demonstrated that they are predictive of students' degree aspirations (Astin, 1993b; Pascarella, 1984). Students' degree aspirations in 1985, the pretest and potentially the most predictive input variable (Pascarella, 1984), was controlled because of its high correlation with the outcome variable. Other variables such as the predisposition to meet faculty, academic self-interest, aspiring to be a college professor, and having as a goal to write original works were used to control for students' predisposition to interact with faculty.

The second block (the environment), included measures of the institution as well as measures of the faculty environment derived from the 1989 Faculty Survey. Structural characteristics such as the selectivity of the institution, whether it was private or public institution, if they attended a university, four year or two-year college, and size of the institution were included in this block. Other institutional, environmental variables such as those describing the student, research, and diversity orientation of the faculty and the student/faculty ratio were selected because of their potential to influence the level and amount of faculty-student involvement. Also, since peers can have a strong influence over several aspects of a students life (Astin, 1983b), including aspirations, a measure of the intellectual self-esteem of the peer group was controlled. Lastly, since students who live on campus have more opportunity to interact with faculty (Astin, 1984), on-campus residence of the students was also controlled in this block.

The last block of variables, also derived from the Follow-up Survey, were comprised of two types of involvement variables. While one set of variables measured students' general involvement on campus, the other set of variables measured students' satisfaction and interaction with the faculty.

In order to control for the general effects of involvement, variables such as being involved in an honors program, participating in clubs/organization and/or intramural sports, working on independent research projects, tutoring students, participating in campus demonstrations, and socializing with someone of a different ethnic group were included in this block.

Eight faculty variables derived from the 1989 Follow-up survey were included in this block. Specifically, students were asked to respond to certain aspects of the faculty-student relationship they experienced such as the type of faculty-student involvement and perceptions of this interaction. Students were asked to estimate the amount of hours they spent talking to faculty outside of class, to indicate whether they had ever worked on a professor's research project, had assisted a faculty member teach a class, and had been a guest in a professor's home during the past year. In addition, students were also asked to rate their satisfaction with the opportunity to discuss course work and assignments outside of class with a professor, as well as with the amount of contact that was available with faculty and administrators. Lastly, respondents were asked to indicate how well the statement "there is little contact between students and faculty" described their campus and to indicate their level of agreement with the statement "there are many opportunities for faculty and students to socialize with one another."

RESULTS

Obtained by performing a two-way cross tabulation, Table 1 illustrates the changes in highest degree aspirations among 1985 entering college freshmen in 1989. As can be seen, there was an increase in aspirations for almost all degrees. More students aspired to obtain graduate degrees (i.e., master's & Ph.D.'s or equivalent) in 1989 then in 1985, in particular a master's degree. Although there was a net decrease in students' aspirations toward obtaining a bachelor's degree as the highest degree, this can be explained by the net increases in students' graduate degree aspirations.

Next, a three-way cross tabulation was conducted with students' initial degree aspirations, 1989 higher degree aspirations, and a faculty-student contact variable. The faculty-student contact variable, comprised of all the faculty-student involvement variables described in the methods section, was recoded into low, medium, and high faculty-student contact. Controlling for the level of faculty-student interaction, Table 2 illustrates that students who were in the high faculty interaction group had the highest graduate degree aspiration increase (+9.3%), followed by the medium interaction (+7.7%) and low interaction group (+1.6%). In other words, students who interacted frequently with faculty aspired for graduate degrees more often than those who interacted with faculty occasionally or not at all.

Regression Analysis

Although the analysis above reveal a positive relationship between faculty-student interaction and degree aspirations, cross-tabulations alone do not provide enough conclusive evidence to ascertain the impact of student and environmental variables on higher degree aspirations. Furthermore, since students with initially high aspirations may be more likely to seek out faculty to begin with, a regression analysis is necessary to control for initial aspirations. Only then can we test whether faculty-student interactions have an effect on degree aspirations.

Table 3 describes the results of the regression analysis. In order to show how the effect of each variable changes after the input, institutional, and involvement variables are controlled, the standardized regression coefficients (betas) for each variable after each block are included in Table 3 along with the multiple correlation (R) and the simple correlation (r). Interestingly, 23 variables entered the regression equation in predicting 1989 higher degree aspirations and all had a positive effect. These variables entered the equation at $p.<005$ with an overall multiple correlation coefficient of .49 and an r-squared of .24.

Freshmen Predictors

Consistent with the results of previous research (Pascarella, 1984), the most powerful predictor of 1989 degree aspirations is the pretest, degree aspirations in 1985 (beta at step 1 = .37). The strength of this relationship remained relatively strong throughout the regression, showing its largest drop when the variables SAT Composite (SATs) and attending college to prepare for graduate school entered at steps 2 and 3. However, this beta drop in 1985 degree aspirations can be explained by the multicollinearity among the variables which ultimately cause them to share predictive power with the pretest in predicting the outcome. In other words, students who indicated higher degree aspirations in 1989 had higher degree aspirations as freshmen, probably scored well on their SATs, and marked "going to college to prepare for graduate school" as an important reason for attending college.

The simple correlation revealed no relationship between being female and degree aspirations (r = -.00). However, once SATs are controlled, being a woman appears to have a positive effect on higher degree aspirations. That is, senior women would be more likely to aspire toward higher degrees if it was not for the fact that they tend to score lower on their SATs. In regards to the other input characteristics, findings suggest that students from higher socio-economic status, who have higher high school GPAs or believe they possess high leadership abilities or aspire to write original works or are scholarly oriented (i.e., thinking highly of oneself in regards to academic ability, intellectual self-confidence and aspiring to graduate with honors) are more likely to aspire four years later towards a higher degree.

Institutional Predictors

Four institutional variables entered the regression. Faculty diversity orientation, institutional selectivity, private institution, and on-campus residence revealed their positive contribution towards

other variables from entering the equation. Specifically, two satisfaction measures, satisfaction with the opportunity to talk to professors and the contact with the faculty and administration, and three types of involvement measures, hours spent talking to faculty outside of class, worked on professors research, and been a guest in a professor's home, were independent predictors of higher degree aspirations.

Looking more closely at the faculty-student interaction variables, findings reveal that although highly correlated to each other (r = .62), the two faculty-student satisfaction measures exhibited the same initial relationship with the outcome variable (r = .16) and showed no difference in their regression coefficients after having controlled for the input, environmental, and involvement variables. As expected, these variables lost most but not all of their predictive power when the first faculty-student variable entered (i.e., hours spent talking with faculty). Nevertheless, it appears that students who are satisfied with the opportunity to talk to professors about course work and class assignments outside of class or who are satisfied with the amount of available contact with faculty and administrators will be more likely to aspire toward higher degrees.

In regards to the faculty-student involvement variables, being a guest in a professor's home (r = .20) appeared to have the strongest relationship with 1989 degree aspirations, followed by working on a professor's research project (r = .18), and hours spent talking with professors outside of class (r = .17). Once the student, environmental and involvement variables are controlled, final betas reveal that these effects are still significant.

To observe more closely the intensity of the faculty-student interaction exposure, additional analyses were performed on the three faculty-student involvement variables that entered the regression. A three-way cross tabulation was performed to examine the relationship between faculty-student interaction and graduate degree aspirations when freshmen year aspirations are held constant.

Table 4 presents the percentage of students aspiring to graduate degrees (Master's level or higher) at increasing levels of interaction and reveals that there was an increase in the percentage of students aspiring to graduate degrees as the hours per week spent with faculty increased. For example, while only 43.6% of students who had no graduate aspirations in 1985 and spent less than one hour per week talking to faculty outside of class aspired to a graduate degree, an impressive 80% of students who had no graduate aspirations in 1985 but spent more than 6 hours per week with the faculty ultimately aspired to such degrees. Although there is not as great of a change between those students in 1989 who had already aspired a graduate degree in 1985 as hours per week spent with faculty increases, findings still suggest that as the hours per week spent with faculty increases so do students' aspirations.

Table 5 presents the relationship between degree aspirations in 1989 and having been a guest in a professor's home. As can be seen, regardless of initial aspirations, students who are more frequent guests in professors' homes are more likely to plan to attend graduate school.

Simarlarly, Table 6 presents the relationship between graduate degree aspirations in 1989 and working on a professors' research. Despite the dichotomous nature of the variable, the importance of working on a professor's research project is highlighted. That is, regardless of students' initial aspirations, students who work on a professor's research project are more likely to aspire graduate degrees than those who do not.

LIMITATIONS

Although findings reveal that there are certain interactions that are more effective in raising a student's degree aspirations than others, this study is limited because the instruments that were utilized to assess the faculty-student interaction did not allow for the analysis of the duration and intensity of all the faculty-student interaction variables. In other words, although students were asked

to indicate if they had ever participated in certain activities with a faculty member, how often and to what extent they participated in that type of interaction could not be determined. Consequently, from these findings, it is impossible to determine how many times it is necessary for a student to visit a professor's home or work on a professor's research before changes in degree aspirations begin to occur. Furthermore, since this study had a finite number of faculty-student variables, limited by the questions included in 1989 Follow-Up survey, other types of interactions such as co-authoring an article with a professor or participating in recreational sports with a faculty member were not explored.

Furthermore, although there is substantial evidence to reason that the interaction with faculty preceded students' change in degree aspirations, the direction of effect cannot be known for certain. The causal direction between faculty-student interaction and higher degree aspirations can be questioned because aspirations and faculty-student interaction were measured at the same time. Although some researchers (Pascarella and Terenzini, 1991) have pointed out that "students with high aspirations may simply be more likely to share faculty values and enjoy social interaction with them" (p. 395), findings from this study suggest that faculty did influence students' degree aspirations. In other words, data suggests that this causal relationship can be supported because higher degree aspirations were controlled (e.g., reason for going to college: preparing for graduate school and 1985 degree aspirations) and cross tabulations did reveal that as the hours per week spent with faculty increased so did students' aspirations. Nevertheless, it is the ultimate choice of the reader to decide from the findings presented what came first, "the chicken or the egg."

CONCLUSIONS AND RECOMMENDATIONS

This study provides substantial evidence to support previous research which has found that faculty-student involvement is important in predicting higher degree aspirations. Consistent with

Astin's (1984) involvement theory which asserts that students' learning and personal development is directly proportional to the quality and quantity of students' involvement in that program, findings suggest that as the amount of contact with faculty increases so do students' aspirations. However, the purpose of this study was not to simply sustain this widely accepted finding, but to reveal the specific types of interactions that positively influence students' degree aspirations. Consequently, in regards to the research question, *What types of faculty-student interactions raise students' degree aspirations?,* results from this study reveal that the following variables are important predictors of higher degree aspirations for undergraduate students: spending more hours with the faculty, working on a professor's research project, becoming a guest in a professor's home, and being satisfied with the opportunity they have to talk to professors and the contact they have with the faculty and administration. Thus, students who participate in these types of faculty-student interactions are involved in activities which have the potential to raise their degree aspirations.

Working on a professor's research project and being invited as a guest in a professor's home create opportunities for students to spend more time with a faculty member. Moreover, while such activities as working on a professor's research and becoming a guest in his/her home provide the opportunity for students' to spend time with faculty, they also provide a setting where quality time can be spent with the professor and a mentoring relationship can develop. DeCoster & Brown (1982) have asserted that, "a mentoring role can enhance the quality of faculty-student relationships in college . . . [as well as] assist in humanizing the general college environment for students" (p. 5).

Research focusing on the importance of faculty-student mentoring relationships in the college environment has suggested that the influence of faculty in this type of relationship can be very powerful (Lester & Johnson, 1981; Johnson, 1989; DeCoster & Brown, 1982; Johnson, 1989). According to Lester and Johnson (1981),

> The mentor must care enough about the student to take time to teach, to show, to challenge, and to support. In some elusive fashion, the mentor must embody values, aspirations, wisdom, and strength that the student respects and perhaps wish to attain as well (pp. 50-51).

It is necessary to point out that whether students come to college with high aspirations and naturally gravitate toward the faculty for "words of wisdom", or whether the faculty-student interaction is haphazard (e.g., student takes an independent study with a faculty to fulfill a requirement) or purposeful (e.g., student takes an independent study with a faculty to get to know him or her better) the fact is that students' degree aspirations will still be enhanced by faculty-student contact.

Although the final r-squared accounted for only 24% of the variance in predicting higher degree aspirations, the importance of this study should not be underestimated. The modest effect faculty can have on students' degree aspirations is critical. Furthermore, this study is one of the first to examine closely what types of faculty-student interactions activities are important in college. Consequently, this study provides important insights on the types of faculty-student interactions that are necessary to develop and propagate on college campuses. Policy implications of this study include encouraging administrators, student affairs officers, and particularly faculty to provide the opportunity for these types of interactions to occur on their campuses. Although many colleges already offer programs which provide students with the opportunity to participate in research projects and become a guest in a professor's home, the spaces available to participate in these programs are often limited. For example, the University of California, Los Angeles (UCLA) has a program, Dinner for 12 Strangers, which provides students with the opportunity to become a guest in an alumni, staff, or faculty member's home. However, these home visits are limited to the volunteers who host these dinners. Consequently, only about 90 students participate in this program a year. However, if each faculty member volunteered to host a dinner for 12 students once a year, the opportunities for

students to participate in such a program would be increased astronomically. Although this program can be used as a model by other institutions, it is recommended that programs be tailored to fit the needs of students and faculty. Furthermore, programs designed to encourage interactions between faculty and students should not be categorized as programs benefiting students only. That is, when designing programs, faculty benefits should also be considered and promoted.

This study raises several questions which suggest that future research is needed in this area. Specifically, investigations are needed which explore more closely how these types of interactions between faculty and students influence a student to aspire towards higher degrees. In other words, are faculty actively encouraging students to pursue higher degrees or are students learning through experience (e.g., working on professors research) that they have the research skills to pursue graduate studies? Do students through their interaction with faculty become less intimidated by the rigors of academia? Are validations and encouragement from the faculty necessary for this change to occur? Are the types of interactions the same for men and women? Consequently, research which focuses on the relationship between the faculty member and students is necessary in order to uncover the nature of the relationships and to determine what environments are necessary for a positive outcome.

Finally, further research needs to examine if those students who actually aspired toward higher degrees ultimately pursued them. Although this study suggests that certain faculty-student interactions can influence students' degree aspirations, future research should investigate if these types of faculty-student interactions actually influence behavior. Aspiring towards a higher degree and actually pursuing a higher degree are two different things. Consequently, longer term follow-up studies have the potential to strongly confirm the importance of specific faculty-student interactions in a student's personal and academic development.

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Table 1.
Changes in Degree Aspirations of 1985 College Fresh[illegible] in 1989 (N = 15,043)

Degree Aspiration	Percentage In 1985	1989	% Change
Ph.D. or Equivalent a	31.7	32.6	+ .9
Master's	37.9	43.3	+5.4
Bachelor's or Equivalent b	27.5	18.8	- 8.7
AA or Vocational Cert.	2.1	3.5	+1.4
None	.8	1.8	+1.0

a Includes Ed.D., MD, D.O., D.D.S., D.V.M., LL.B. or J.D (Law).
b Includes BA, BS, B.D and M. Div. (Divinity).

Table 2.
Changes in Degree Aspirations of 1985 College Freshmen in 1989, Controlling for Student-Faculty Interaction (N = 15,043)

	Percentage Change of Students Who Had								
	Low Interaction (N=5,091)			Medium Interaction (N=4,303)			High Interaction (N=5,649)		
Degree Aspiration	1985	1989	Change	1985	1989	Change	1985	1989	Change
Ph..D. or Equiv. a	27.3	23.3	- 4.0	29.0	29.7	+ .7	37.9	43.2	+ 5.3
Master's	36.8	42.4	+ 5.6	38.9	45.9	+ 7.0	38.1	42.1	+ 4.0
			+ 1.6			+ 7.7			**+ 9.3**
Bachelor's or Equiv. b	32.7	27.2	- 5.5	29.1	19.1	-10.0	21.6	11.2	-10.4
AA or Vocational Cert.	2.3	4.3	+ 2.0	2.2	3.7	+1.5	1.8	2.5	+ .7
None	1.0	2.8	+ 1.8	.8	1.6	+ .8	.6	1.1	+ .5

a Includes Ed.D., MD, D.O., D.D.S., D.V.M., LL.B or J.D (Law).
b Includes BA, BS, B.D and M. Div. (Divinity).
Note: Percentages in bold represent the total change in graduate & professional degree aspirations.

Table 3.
Predictors of Degree Aspirations (N=9,631)

Step	Variable Entering	Multiple R	r	Beta After Input	Beta After Institutional	Final Beta
Input Variables						
1	1985 Degree Aspiration	37	37	24	22	20***
2	SAT Composite	40	25	10	07	06***
3	Preparing for Grad School	41	27	10	09	08***
4	Socio-Economic Status	42	19	08	05	05***
5	Scholarly Oriented	42	24	04	05	03**
6	High School GPA	43	19	06	06	04***
7	Goal: Write Original Works	43	11	05	04	02**
8	Self Rate: Leadership Ability	43	14	04	04	02**
9	Gender: Female	43	-01	03	02	02
Institutional Variables						
10	Faculty Diversity Orientation	44	13	09	08	05***
11	Institutional Control: Private	44	17	07	05	01
12	On-Campus Residence	46	12	05	04	02**
13	Institutional Selectivity	46	23	06	04	04***
Involvement Variables						
14	Hours Spent Talking w/Faculty	46	17	14	12	05***
15	Worked on Independent Research	47	21	13	12	06***
16	Tutored Another Student	48	17	11	11	06***
17	Enrolled in Honors Program	48	24	12	11	06***
18	Worked on Professors Research	49	19	11	10	06***
19	Satisfaction: Contact w/Faculty/Admin.	49	16	12	10	03***
20	Been Guest Professors Home	49	20	12	10	04***
21	Socialized w/Someone of Other Ethnic Group	49	15	08	06	03***
22	Participated in Campus Demonstrations	49	15	08	06	03***
23	Satisfaction: Opportunity to Talk to Prof's	49	16	11	09	03***

Note: Beta coefficients represent the standardized regression coefficients that each variable would receive if it entered the regression at the next step. Decimals are omitted from Multiple R, r, and all Beta coefficients. Only p-values for final betas are reported.
** $p < .01$, *** $p < .001$

Table 4.
Percent Aspiring to Master's Degree or Higher at Increasing Levels of Faculty Contact, Controlling for 1985 Degree Aspirations

	Percent Aspiring to Graduate Degree by Hours per week Spent on Talking with Faculty Outside of Class			
Degree Aspirations in 1985	None	> 1 Hour	1-5 Hours	6 or more Hrs.
Ph.D or Equivalent	80.3	85.1	90.5	92.5
Master's	62.0	75.6	84.3	89.2
Bachelor's or Equivalent	43.6	53.4	65.6	70.6
AA or Vocational Certificate	21.9	35.1	62.5	66.7
None	45.5	43.6	70.9	80.0

Table 5.
Percent Aspiring to Master's Degree or Higher at Different Levels of Having Been a Guest in a Professor's Home, Controlling for 1985 Degree Aspirations

	Percent Aspiring to a Graduate Degree by How Often a Student Had Been a Guest in A Professors Home		
Degree Aspirations in 1985	Not at all	Occasionally	Frequently
Ph.D or Equivalent	85.3	91.4	94.6
Master's	75.8	86.2	93.8
Bachelor's or Equivalent	54.8	58.4	76.9
AA or Vocational Certificate	38.7	71.6	91.0
None	54.0	79.3	00.0

Table 6.
Percent Aspiring to Master's Degree or Higher of Those Worked on a Professors' Research Project, Controlling for 1985 Degree Aspirations

	Percent Aspiring to a Graduate Degree by Working on Professors Research	
Degree Aspirations in 1985	NO	YES
Ph.D or Equivalent	85.7	93.5
Master's	78.5	85.1
Bachelor's or Equivalent	57.3	70.4
AA or Vocational Certificate	45.7	63.1
None	55.0	79.1

Appendix A.
Variable Descriptions and Blocking for Regression

Variable	Special Description
Input Variables	
Highest Degree Aspiration in 1985	Five-point scale: 1= "none" to 5= "Ph.D. or equivalent"
Gender: Female	Male=1; Female=2
High School GPA	1= "D" to 8= "A or A+"
Predisposition to Meet Faculty	=Activity in Past Year: Asked Teacher for Advice + Activity in Past Year: Was Guest in Teacher's Home
Scholarly Oriented	=Self-Rating: Academic Ability + Self-Rating: Intellectual Self-Confidence + Possible Future Activity: Graduate with Honors
Self Rating: Drive to Achieve	Five-point Scale: 1= "lowest 10%" to 5= "highest 10%"
Self-Rating: Leadership Ability	Five-point Scale: 1= "lowest 10%" to 5= "highest 10%"
Attending College to Prepare for grad school	Three-point Scale: 1= "not impt" to 3= "very impt."
Academic Self-Interest:	=Goal: Become authority in my own field + Goal: Obtain Recognition from colleagues
College Teacher as Career Choice	Dichotomous: No=1; Yes=2
Goal: Write Original Works	Four-point Scale: 1= "not impt." to 4= "essential"
Socio-Economic Status	=Estimated family income + father's education + mother's education
SAT Composite Score	SAT-Verbal + SAT-Math
Institutional Variables	
Institutional Control: Private	Public= 1; Private= 2
University	Dichotomous: No=1; Yes=2
Four-Year College	Dichotomous: No=1; Yes=2
Two-Year College	Dichotomous: No=1; Yes=2
Institutional Selectivity	Average SAT of entering freshmen divided by 10
Size of Institution	Undergraduate full-time enrollment
Research Orientation of the Faculty	includes items that have to do with faculty's publication rate, time spent conducting research, and personal commitment to research and scholarship. (see Astin 1993 for full description of composite variable
Diversity Orientation of the Faculty	Includes items that have to do with faculty's incorporation of readings on women, gender, racial and ethnic issues and writings on these issues. (see Astin 1993 for full description of composite variable)
Student Orientation of the Faculty	Includes items that have to do with the extent faculty believe that their colleagues are interested in and focused on student development. (see Astin 1993 for full description of composite variable)
Student/Faculty Ratio	students per faculty
Peer Mean of Intellectual Self-esteem	=academic ability + mathematical ability + public speaking ability + drive to achieve + leadership ability + intellectual self-confidence + writing ability.
On-campus Residence	Lived in college dormitory, frat or sorority house, or other campus student housing 1st-4th year
Involvement Variables	
Activity: Worked on Prof's Research Project	No= 1; Yes= 2
Activity: Assisted Faculty In Teaching Class	No= 1; Yes= 2
Satisfaction: Opportunity to Talk to Professors	Four-point Scale: 1= "can't rate" to 5= "very satisfied"
Satisfaction: Contact with Faculty/Admin	Four-point Scale: 1= "can't rate" to 5= "very satisfied"
Description: Little Contact b/w Student & Faculty.	Three-point Scale: 1= "not descriptive" to 3= very dscrptv."
Opinion: Many Opportys. for Faculty.-Student Social.	Three-point Scale: 1= "disagree strgly." to 3="agree strgly."
Hrs. Spent Talking with Faculty Outside of Class	Ten-point Scale: 1= "none" to 10= "over 20 hrs/wk"
Activity: Been Guest In Prof's Home	Three-point Scale: 1= "not at all" to 3= "frequently"
Enrolled in an Honors Program	No= 1; Yes= 2
Hours per/wk spent on student clubs/groups	Ten-point Scale: 1= "none" to 10= "over 20 hrs/wk"
Worked on independent research project	Three-point Scale: 1= "not at all" to 3= "frequently"
Tutored another student	Three-point Scale: 1= "not at all" to 3= "frequently"
Participated in Intramural Sports	Three-point Scale: 1= "not at all" to 3= "frequently"
Participated in Campus Demonstrations	Three-point Scale: 1= "not at all" to 3= "frequently"
Socialized with Someone of Different Ethnic Grps.	Three-point Scale: 1= "not at all" to 3= "frequently"
Outcome	
Highest Degree Aspiration in 1989	Five-point scale: 1= "none" to 5= "Ph.D. or equivalent"