The Longitudinal Effects of a Women's Mentoring Course on the Retention of Women in Engineering

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Abstract–Since 1998, the University of Illinois has offered a course that provides mentoring relationships in a structured environment. Course instructors assign women engineering students in their second, third, or fourth years to mentor those in their first. After controlling for ethnicity, program of study, academic achievement both before and after admission, total terms enrolled, and time of attendance, the retention of 202 students who had taken the course from 1999 to 2003 were compared to 202 female students who had not taken the course. Additional comparisons were made between the retention rates of mentors and their mentees. First-year students who had taken the course were significantly more likely to stay in engineering as well as mentors.

Introduction

Mentoring has been demonstrated to be one of the most effective ways to increase retention in women engineering students. Administrators of women in engineering programs in the nation reported overwhelmingly that mentoring was the most effective means of increasing retention of women engineering students (Goodman, 2002). Other researchers have also found mentoring to be a proven means of enhancing women's retention rates (Deneen & Dorland, 1992; Hewitt & Seymour, 1992; Sandler & Hall, 1986).

The College of Engineering at the University of Illinois at Champaign-Urbana is a premier school of engineering in the nation and provides one of the most comprehensive engineering programs. As at the majority of engineering colleges in the nation, the attrition rate for women in the College of Engineering at the University of Illinois exceeds that of men. Women drop out of engineering because of perceived – not actual – lack of ability (Jovanovic, 1996). In fact, first-year women's grades are cumulatively higher than those of male students.

To address this issue, the College of Engineering initiated a mentoring program in the fall of 1998 as a project under the Women in Engineering Program. Women participated in the program voluntarily. The program was formulated on best practices of mentoring with a large component modeled after Purdue's nationally recognized mentoring program. Currently, the mentoring program at Illinois is administered through the Office of Special Programs in the College of Engineering.

In 1999, the program was established as a one-semester course (Engr. 199 - Mentoring) in the College of Engineering and has subsequently been offered annually. The enrollment in the course increased from 28 students in 1999 to approximately 79 in the 2003-04 academic year.

The course pairs first-year students with upperclasswomen who may be sophomores, juniors, or seniors. Women graduate students and faculty members serve as informal advisors. Many of the students who participated in the program in its first year have later become mentors themselves in their sophomore, junior, and senior years because they feel strongly about the program's effectiveness. (See Appendix A for more details of the mentoring class.) The initial corporate sponsors of the course were Applied Materials and Intel. For the past three years, the course has been supported by Boeing, Lockheed-Martin, and Alcoa.

Student evaluations were conducted at the beginning and the conclusion of the course. Student responses from course evaluations have indicated positive attitudes toward the course material in Engr. 199 - Mentoring as well as highly positive experiences with their mentors. However, the goals of the course require long-term effects to be the most critical indicators of the success of the mentoring program.

This study investigated the extent to which the goals of Eng 199 were met at the University of Illinois. It looks at the composition and profile of all women who took the mentoring class between Fall 1999 and through Fall 2003. Through a one-on-one matching of these students with women of similar profiles who have not taken the mentoring class, the retention, academic performance, and internal migration of women within engineering disciplines were examined. Finally, differences were investigated between mentees and mentors in the Mentoring Class.

Research questions

The objectives of this study were to answer the following questions:

1) Did the Mentoring Course affect overall retention of women in engineering?
   a. Were mentees more likely to be retained than matched controls?
   b. Were mentors more likely to be retained than matched controls?
2) Did the Mentoring Course affect overall transfer of women from other programs into engineering?
3) Among those women who were enrolled in the mentoring course:
   a. Who were more likely to be retained in engineering—mentors or mentees?
   b. Who were more likely to transfer into an engineering discipline from other programs—mentors or mentees?
4) Did the Mentoring Course affect overall retention of women in specific engineering disciplines?
   a. Did the course affect retention in specific disciplines among mentees?
   b. Did the course affect retention in specific disciplines among mentors?

Data Collection and Sampling

Data for 24 variables were collected on all female students attending the university during the 1999-2003 academic years. A total of 202 students took the mentoring course, and a control group of 202 more students was selected on a one-to-one matching basis. However, 10 of the students were excluded from the study because the students in the pair had attended UIUC for two semesters or less, and it seemed reasonable to define retention as remaining in the same program for at least three semesters. Of the 192 students in the sample who had taken the mentoring course, 84 (43.8%) were mentors, and 108 (56.3%) were “mentees.” The criteria for a

one-to-one matching of each student were set according to the following ranking of variables (1 given the highest priority):

1. First curriculum at time of enrollment into the university.
2. First term of enrollment into the university.
3. Ethnicity.
4. Citizenship (U.S. or not).
5. College Scholastic Index (SI): a composite score used for admissions decisions.
6. Campus Scholastic Index (SI): a composite score used for scholarship decisions.
7. Total number of semesters enrolled in the university.
8. Graded credit hours at the university.

In order to do the matching, it was decided that the students in the control group and mentored group would be matched with the College SI and Campus SI scores so that they had similar aptitudes. Although most pairs matched identically on all or most of the criteria, it should be noted that some pairs did not match identically on all variables, especially those variables with lower matching priority. In such cases, the students were matched as closely as possible. Summary statistics of the campus and college SI scores of the mentored students and the control group are given in Table 1.

Table 1
Campus SI and College SI

	No. of students	Mean	Std. Dev.	Min. Score	Max. Score
Campus SI					
Enrolled in Course	175	3.23	0.32	2.20	4.30
Control Group	181	3.24	0.34	2.00	4.30
College SI					
Enrolled in Course	175	3.15	0.38	2.00	4.40
Control Group	181	3.15	0.41	1.70	4.50

The ethnic background and nationality of the students enrolled in the mentoring class and the control group are presented in Table 2 and Table 3.

Table 2
Ethnic Background (percentage)

	Asian	Black	Hispanic	White	Unknown
Enrolled in Course	25.5	5.7	4.2	62.0	2.6
Control Group	22.4	7.8	3.1	64.6	2.1

Table 3
Nationality (percentage)

	US Citizens	Lawful permanent residents	Non-resident aliens	Resident aliens
Enrolled in Course	84.9	3.6	4.7	6.8
Control Group	89.1	1.6	4.7	4.7

The first curriculum at time of enrollment for both groups is summarized in Appendix B, and the first term of enrollment in Appendix C.

Results

The first research question about the retention of women in engineering, and Part A of the third question, about mentors or mentees being more likely to be retained, were examined with a logistic regression model. In the model, retention in engineering was the dichotomous dependent variable, and enrollment in the course and mentor/mentee pair assignment (whether a mentor/matched with a mentor, or a mentee/matched with a mentee) were the dichotomous independent variables. In this sample of students whose first curriculum was in engineering, retention was defined simply as being enrolled in an engineering curriculum in the last semester of enrollment. Covariates examined were the same as the variables used for matching subjects: college SI, number of semesters enrolled in the university, and number of graded university credit hours (campus SI was too highly correlated with college SI to include in the model, .944). As might be expected due to the matching procedure, none of the covariates were significant at the $a = .05$ level. An interaction between course participation and mentor/mentee pair designation was tested, but was insignificant. Correlations between the variables are summarized in Appendix D, and the logistic regression model is summarized in Table 4.

Table 4
Logistic Regression of Retention in Engineering on Mentoring Course Enrollment, Mentor/Mentee Pair Assignment, College SI, Number of Semesters Enrolled, and Number of Graded Credit Hours (N = 325)

	B	S.E.	Sig.	Exp(B)
Enrolled in Course	1.121	.272	.000	3.068
Mentor/Mentee Pair Ass.	1.051	.288	.000	2.862
College SI	-.064	.083	.443	.938
Number of Semesters	-.003	.008	.715	.997
Number of Credit Hours	-.358	1.234	.771	.699
Constant	1.121	.272	.000	3.068

Note. $?^2 = 34.017$, $df = 5$, $p < .0005$.
For the test of an interaction between course enrollment and mentor/mentee pair assignment, $?^2 = 1.796$, $df = 1$, $p = .180$.
Enrolled in Course was coded "1" for enrollment in the mentoring course, and "0" for not enrolled.
Mentor/Mentee Pair Assignment was coded "1" for mentor pair, and "0" for mentee pair.

In logistic regression, Exp(B) is equivalent to an odds ratio, *?*. In this model, the odds of being retained in engineering for students enrolled in the course are 3.068 times the odds for unenrolled students. The odds of a mentor or matched student remaining in engineering are 2.862 times the odds of a mentee or matched student, and because any interaction between course enrollment and mentor/mentee pair assignment is insignificant, it is assumed that the ratio remains the same even when looking at just the students enrolled in the course (Research Question 3a). Therefore, no evidence was found for a difference in the likelihood of mentees or mentors being retained in engineering relative to that of their matched controls. In other words, mentees were much more likely to be retained in engineering than their matched controls, but no more so than mentors were more likely to be retained than their matched controls.

On the course evaluation forms there were several responses from students supporting the positive role the course played in their persistence in engineering. For example, one mentee wrote, "Even though my mentor doesn't know it, it's mainly because of her that I have decided to stay in General Engineering." A mentor wrote, "The ability to mentor first-year students, giving them encouragement and academic advice, gave me the strength I needed to continue, but having a faculty mentor gave me the encouragement to not give up!"

Because of the small number of students in the sample who did not start out in engineering (N = 34), a chi-squared table was used in order to examine the second research question about whether the course affects the transfer of women into engineering from other disciplines. A student was considered to have transferred into engineering if she had a non-engineering curriculum in the first term of enrollment, but an engineering curriculum in the last term.

Table 5
Frequencies and Percentages of Students Transferring Into Engineering From Other Disciplines by Enrollment in the Mentoring Course (N = 34)

	Enrolled in Course	Not Enrolled	Total
Transferred Into Engineering	16	6	22
	94.1%	*54.5%*	*64.7%*
Did Not Transfer	1	11	12
	5.9%	*45.5%*	*35.3%*
Total	17	17	34
	100.0%	*100.0%*	*100.0%*

Note. $?^2 = 12.879$, $df = 1$, $p < .0005$.

The odds of transferring into engineering if the student was enrolled in the course were 29.333 times the odds of an unenrolled student transferring. The number of students enrolled in the course (N = 17) was too small to examine with statistical methods. However, nine of the ten students who were mentors transferred into engineering, whereas only two of the seven who were mentees made the switch.

A logistic regression model was employed in order to answer Research Question 4 about whether the course affected retention in specific engineering disciplines, and Research Questions 4a and 4b about whether mentor/mentee status affected retention in specific engineering disciplines within the course itself. The dichotomous dependent variable was whether or not the student had the same engineering major in the last term of enrollment as the first term. The independent variables were enrollment in the course and mentor/mentee pair assignment. Covariates examined included each of the matching variables, though all were again insignificant. An interaction between course participation and mentor/mentee pair designation was tested, but was insignificant. The model is summarized in the table below:

Table 6
Logistic Regression of Retention in Specific Engineering Discipline on Mentoring Course Enrollment, Mentor/Mentee Pair Assignment, College SI, Number of Semesters Enrolled, and Number of Graded Credit Hours (N = 325)

	B	S.E.	Sig.	Exp(B)
Enrolled in Course	.635	.234	.007	1.888
Mentor/Mentee Pair Ass.	.688	.247	.005	1.990
College SI	-.040	.073	.588	.961
Number of Semesters	-.007	.007	.308	.993
Number of Credit Hours	.025	1.074	.982	1.025
Constant	.635	.234	.007	1.888

Note. $?^2 = 19.368$, $df = 5$, $p = .002$.
For the test of an interaction between course enrollment and mentor/mentee pair assignment, $?^2 = .439$, $df = 1$, $p = .508$.
Enrolled in Course was coded "1" for enrollment in the mentoring course, and "0" for not enrolled.
Mentor/Mentee Pair Assignment was coded "1" for mentor pair, and "0" for mentee pair.

In this model, the odds of being retained in their engineering majors for students enrolled in the course are 1.888 times the odds for unenrolled students. The odds of a mentor or matched student remaining in her engineering major are 1.990 times the odds of a mentee or matched student, and because any interaction between course enrollment and mentor/mentee pair assignment is insignificant, it is assumed that the ratio remains the same even when looking at just the students enrolled in the course (Research Questions 4a and 4b). Therefore, no evidence was found for a difference in the likelihood of mentees or mentors being retained in the same engineering major relative to that of there matched controls. In other words, mentees were much more likely to be retained in specific engineering majors than their matched controls, but no more so than mentors were more likely to be retained than their matched controls.

Two-by-two contingency tables (course enrollment by retention in major) were examined for each of the 15 engineering majors represented by the sample, but none were significant. Two-by-two contingency tables of mentor/mentee status by retention in major were also examined for each of the 15 majors represented by the 175 engineering students who enrolled in the course. Again, none of the tests was significant. A third group of tables were examined to compare

mentees and matched controls for retention in the same major, but no significant relationships were found.

Summary of Findings

Key findings of the study were:

1) The women in the Mentoring class had a significantly higher overall retention compared to women who did not take the class.
    a. Mentees were much more likely to be retained in engineering than their matched controls.
    b. Mentors were much more likely to be retained in engineering than their matched controls
2) Women not in an engineering program who had taken the mentoring class were more likely to transfer into engineering compared to those who did not take the class.
3) By investigating the retention rates and transfer data between mentors and mentees, we find that
    a. Among the women who took the mentoring class, there was no significant difference in the retention rates between mentors and mentees.
    b. A higher percentage of mentors transferred from non-engineering majors into engineering compared to mentees in our sample. However, the sample size was too small to test this statistically for generalization.
4) A greater number of women who took the mentoring class stayed in their specific engineering disciplines as opposed to those who did not take the class.
    a. Mentees were much more likely to be retained in specific engineering majors than their matched controls
    b. Mentors were much more likely to be retained in specific engineering majors than their matched controls

Discussion and Conclusions

The findings of this study indicate that the mentoring course has been successful in achieving its key objective: improving the retention of women in engineering. In addition, it was found that women who were not in engineering but were enrolled in the mentoring course were more likely to transfer into engineering than those who did not take the class. While the mentoring class didn't have a significant impact on academic performance, students in the mentoring class had much higher retention and transfer rates into engineering compared to those who did not take the class.

It may be noted that the operational definition of retention and the transfer into engineering did not account for changes in curricula before enrollment in the course. As a result, it is risky to infer a cause-effect relationship between course enrollment and changes in curricula. This could be addressed through student self-reports, whether through interviews and focus groups or simple questionnaires. The quantitative procedures used here could also be augmented by examining other relevant covariates, such as age, SES, and educational background, like parents' education. Other directions for further study include examining the impact of course enrollment on engineering GPA, degree attainment, drop out rate, and graduate school and career performance and longevity.

Overall, our findings at the University of Illinois are consistent with other studies cited in this report and endorse the importance and impact of mentoring in generating higher levels of interest in women in science and technology where they are still a minority.

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Appendix A

Description of the Mentoring Program

Objectives

The Mentoring Course objectives were to:

1. Develop mentoring relationships between women engineers at all levels,
2. Provide a supportive environment where women engineers can provide advice and guidance for each other,
3. Inform students of resources (e.g., tutoring, scholarships) on campus,
4. Provide information on skills needed including time management, interviewing, and resume writing, and
5. Provide leadership training.

Population Served

First-year women in engineering and related disciplines were matched with upper class women in the same department. In turn, the upper class women were matched with graduate women. For each department (twelve departments in the UIUC College of Engineering), we attempted to find a faculty advisor.

First-year women were recruited for the course through a "welcome" letter sent to women during the summer and at freshmen summer registration. Announcements were also made about the course through student organizations such as the Society of Women Engineers, Women in Computer Science, and Women in Electrical and Computer Engineering. In addition, women enrolled in Math and Computer Science in the College of Liberal Arts and Sciences received notification of the class. We also spoke at two freshman orientation sessions for women, one sponsored by the Women in Engineering Program and the other by the Women in Math, Science, and Engineering Residence Hall.

Sophomores, juniors, and seniors were also able to register for the course in the spring. Announcements were made to the student organizations previously listed. Before classes began (after we had obtained the names and departments of the first-year women who had enrolled in the course), we sent emails to solicit additional mentors as needed in specific departments.

Graduate students for the course were solicited during the spring semester. Graduate students were required to attend all the class meetings and participate in some informal activities. Since they received no credit for their participation, they received a stipend in the amount of 50 dollars. At least one graduate student was obtained for each department represented.

Faculty women were asked to participate in the program in the spring. During the seven years of the program, we have had a loyal group of faculty participants with some faculty members serving year after year.

Administration

Engr. 199 is a one-hour class with the students meeting for two hours every other week. During the weeks that the class did not meet, mentees and mentors met and completed informal activities. Each semester, the course had a theme that centered on leadership. The topics and the course textbook varied somewhat from year to year, because of the number of students who repeated the course. Mentees often became mentors, and mentors would choose to serve as mentors to new students again.

Class Meetings

At the first class meeting, mentor and mentees completed a Mentoring Contract which they signed. The instructor led a discussion on what defined a good mentoring relationship. A workshop on resume writing was presented near the beginning of the semester. This was designed to help first-year women prepare their first resume for Engineering Expo held the second week of the semester in the fall. A large number of companies participated in Engineering Expo each year. All first-year women in the course were required to attend the Expo with their mentors. Even though the first-year student may not have been looking for a summer internship, they watched and learned from their mentors on how to "work" a career fair.

For each subsequent class session during the semester, there was a seminar speaker from industry or academia. The presentation topics included: Leadership Styles, Handling Success and Failure, and Working Effectively on a Team. A Business Etiquette Dinner concluded the course and was one of the most highly rated sessions of the semester. An instructor from the College of Business conducted the business etiquette lesson at one of our local restaurants. In addition to table manners for job interview and/or company visits, students learned basic information on interacting with professionals. Electronic mentors and our corporative representatives (see information to follow) were invited.

The seminar presentation at each class meeting was often followed by small group activities. The mentor/mentee pairs were placed in groups of four. A graduate student and a faculty member served as informal mentors for each group. Thus, at all levels, students were mentored, first-year women were mentored by upperclasswomen, upperclasswomen by graduate students, and graduate students by faculty.

Each class session concluded with a light dinner that allowed students to talk to the seminar speaker informally and with each other. We have found over the years that the dinner period is very important to the course. The dinner period allows the undergraduate students in the class the opportunity to interact with graduate students and faculty members in an informal setting. We have found that undergraduate women are more likely to approach and talk with a graduate student or faculty person in such a relaxed setting. Forming a sense of "community" has been found to be a key element in the retention of women students (Goodman Report, 2002).

Informal Activities

During the weeks that the class did not meet, the mentors and mentees participated in informal activities. The mentor/mentee pairs were required to attend Enginering Expo or another career fair; and then they could choose seven activities from the following list:

1. Attend Engineering Expo or an alternative Expo with your Mentor during the semester.
2. Tour campus with your Mentor for resources pertinent to your major.
3. Have an informal meeting with your Mentor, e.g. meet for coffee.
4. Attend a student organization meeting with your Mentor.
5. Attend a Counseling Center presentation.
6. Attend a Career Center presentation.
7. Invite a faculty member for Lunch/Dinner/Snack.
8. Invite an industry representative for Lunch/Dinner/Snack.
9. Attend a company information session with your Mentor.
10. Attend a workshop for I-Trak (the Engineering Career Services online job application system).
11. Plan Spring semester's class schedule with your Mentor.
12. Have a study session with your Mentor.
13. Visit your grad student or professor's lab with your Mentor.
14. Something of your choice which must be approved in advance.

Following each informal activity, the mentor and mentee independently recorded their experiences and their reflections on how they felt their mentoring experience was progressing. A mentoring journal was provided to them.

In addition to the "required" informal activities, mentors and mentees often met on their own, sometimes meeting with graduate students and faculty members. For example, in the Department of Mechanical and Industrial Engineering, the faculty members organized weekly group activities. The students and faculty members chose activities such as bowling together or having a potluck at someone's home.

Electronic Mentors

Mentees and mentors were required to obtain electronic mentors either through one of our corporate sponsors or MentorNet. The students corresponded with their electronic mentors at least four times during the semester. The students were asked to submit a report on their correspondences with their electronic mentor.

Textbook and Readings

The textbooks for the course each fall centered on leadership skills and women. The same textbook was never repeated as women would enroll in the course for more than one year. Textbooks used in the past included: *Women and the Leadership Q: Revealing the Four Paths to Influence and Power* by Shoya Zichy, and *Seven Secrets of Successful Women* by Donna Brooks and Lynn Brooks. In addition, we prepared a booklet of readings on mentoring and the different topics covered by the seminar speakers.

Requirements of the Course

The undergraduate students in the course were required to attend every formal meeting, keep a journal, and complete a take home exam at mid-semester and at the end of the semester. The journals were read by the instructor three times during the semester. One such reading occurred two weeks into the semester. This was to determine if the mentee/mentor relationships were working or if there were any problems. If the instructor noted a lack of communication between

mentee and mentor, she intervened. In addition, it was helpful to read the journals this frequently to determine if any first-year students were having difficulty in school.

The graduate students were required to attend all formal meetings and take the students in their group on a tour of their laboratories. It was recommended strongly to the graduate students that they participate in the informal activities. The graduate mentors did not maintain a journal or complete any of the written assignments.

Evaluation

An assessment was completed at the beginning of the semester on students' past experience with mentoring. Each formal meeting was evaluated by the students to gain feedback on the speaker. An end of the semester evaluation was also conducted. Students were also asked to fill out brief evaluation sheets on each of the guest speakers who made presentations to the class. In addition, the course was evaluated by the University of Illinois Instructor Course Evaluation System (ICES) through the University's Center for Teaching Excellence.

Appendix B

Frequency Distribution of Curricula at First Enrollment

	Frequency	Percent	Cumulative Percent
Actuarial Science	2	.5	.5
Aero & Astro Engineering	36	9.4	9.9
Agr. Engineering & Agr. Science	2	.5	10.4
Astronomy	2	.5	10.9
Bioengineering	16	4.2	15.1
Biology	4	1.0	16.1
Chemical Engineering	26	6.8	22.9
Chemistry	2	.5	23.4
Civil Engineering	32	8.3	31.8
Computer Engineering	20	5.2	37.0
Computer Science	20	5.2	42.2
Electrical Engineering	52	13.5	55.7
Engineering Mechanics	2	.5	56.3
Engineering Physics	2	.5	56.8
General Curriculum	14	3.6	60.4
General Engineering	76	19.8	80.2
Human Resources & Family Std	2	.5	80.7
Industrial Engineering	14	3.6	84.4
Kinesiology	2	.5	84.9
Materials Science & Engr.	18	4.7	89.6
Math & Computer Science	2	.5	90.1
Mechanical Engineering	30	7.8	97.9
Nuclear Engineering	4	1.0	99.0
Physics	4	1.0	100.0
Total	384	100.0	

Appendix C

Frequency Distribution of First Term of Enrollment

	In_Class		
Term of Enrollment	Not in Class	In Class	Total
Fall 1995	7	7	14
	3.6%	*3.6%*	*3.6%*
Fall 1996	8	6	14
	4.2%	*3.1%*	*3.6%*
Spring 1997	0	1	1
	.0%	*.5%*	*.3%*
Summer 1997	1	0	1
	.5%	*.0%*	*.3%*
Fall 1997	5	5	10
	2.6%	*2.6%*	*2.6%*
Spring 1998	0	1	1
	.0%	*.5%*	*.3%*
Summer 1998	0	1	1
	.0%	*.5%*	*.3%*
Fall 1998	26	27	53
	13.5%	*14.1%*	*13.8%*
Summer 1999	1	1	2
	.5%	*.5%*	*.5%*
Fall 1999	30	27	57
	15.6%	*14.1%*	*14.8%*
Summer 2000	0	1	1
	.0%	*.5%*	*.3%*
Fall 2000	24	25	49
	12.5%	*13.0%*	*12.8%*
Fall 2001	46	45	91
	24.0%	*23.4%*	*23.7%*
Summer 2002	0	2	2
	.0%	*1.0%*	*.5%*
Fall 2002	25	26	51
	13.0%	*13.5%*	*13.3%*
Spring 2003	2	1	3
	1.0%	*.5%*	*.8%*
Fall 2003	17	16	33
	8.9%	*8.3%*	*8.6%*
Total	192	192	384
	100.0%	*100.0%*	*100.0%*

Note. The absence of a term of enrollment indicates a frequency of zero.

Appendix D

Correlations Between Retention, Having Same Major, Course Enrollment, Mentor/Mentee Pair Assignment, College SI, Number of Semesters Enrolled, and Number of Graded Credit Hours (N = 384)

	Retention	Same major	Course enrollment	Mentor/ mentee pr.	College SI	No. of semesters	Graded credit hrs.
Retention	1						
	350						
Same major	.729**	1					
	350						
Course enrollment	.219**	.134*	1				
	350	*350*					
Mentor/ mentee pr.	.192**	.123*	.000	1			
	350	*350*	*384*	*384*			
College SI	.080	.055	.000	.197**	1		
	325	*325*	*356*	*356*	*356*		
No. of semesters	-.044	-.112*	.053	.244**	.146**	1	
	350	*350*	*384*	*384*	*356*	*384*	
Graded credit hrs.	-.051	-.125*	.081	.210**	.114*	.840**	1
	350	*350*	*384*	*384*	*356*	*384*	*384*

**$p < .01$. * $p < .05$.

Note. Retention was coded 0 for not retatined, and 1 for retained. Same major was coded 0 for No, and 1 for Yes. Course enrollment was coded 0 for not enrolled in the course, and 1 for enrolled. Mentor/mentee pair assignment was coded 0 for mentee matched pair, and 1 for mentor matched pair.