Fayetteville State University
DigitalCommons@Fayetteville State University

Faculty Working Papers from the School of Education

School of Education

8-14-2012

RESEARCH STUDIES IN HIGHER EDUCATION: EDUCATING MULTICULTURAL COLLEGE STUDENTS-Ch 8

Kimberly Brown

Follow this and additional works at: http://digitalcommons.uncfsu.edu/soe_faculty_wp

Part of the Bilingual, Multilingual, and Multicultural Education Commons

Recommended Citation
Brown, K. (2012). Factors Impacting the Academic Achievement of Undecided College Students, In T. Hicks & A. Pitre (Eds.), Research Studies in Higher Education: Educating Multicultural College Students (pp. 189-222). Lanham, MD: University Press of America, Inc.

This Article is brought to you for free and open access by the School of Education at DigitalCommons@Fayetteville State University. It has been accepted for inclusion in Faculty Working Papers from the School of Education by an authorized administrator of DigitalCommons@Fayetteville State University. For more information, please contact mlawson@uncfsu.edu.

Chapter Eight
Factors Impacting the Academic Achievement of Undecided College Students

Kimberly Brown, Ph.D.,
Virginia Tech University

Introduction

Higher education administrators have paid considerable attention to the retention and persistence of undergraduate students in hopes of reducing the percentage of students who leave college prematurely. Retention refers to an institution's ability to retain students from one year to another. Student persistence refers to students' conscious choice and ability to continue in their pursuit of their educational goals. Simply stated, persisters are students who enroll at an institution and continue their enrollment, though not necessarily in consecutive terms, until they have completed their degree requirements (Blecher, 2006). While the terms "retention" and "persistence" are often used interchangeably, it is important to note that retention is an institutional outcome and persistence is a student outcome (Hagedorn, 2003).
Retention and persistence are worthy of examination given that American colleges and universities consistently experience a first to second year persistence rate of only 75 percent. That is, one quarter of entering first year students do not persist to their second year of college (Braxton, 2000). It is important to understand why students are dropping out or have significant variability in enrollment patterns for institutions to respond to students' needs. The increased focus on student retention and persistence is warranted due to two important policy issues within higher education. First, student retention is a means of evaluating institutional performance (Green, 2002; Metz, 2004). Stakeholders today frequently request indicators of performance as a means of establishing institutional accountability and accountability is receiving a great deal of attention within the American higher education system. Retention rates are commonly used as a measure of student achievement and progress.

Second, retention also has significant financial implications that must be considered. When institutions are able to retain students from one year to another,

they better position themselves to positively influence their revenue stream. This is particularly crucial given the increasing financial pressures placed on colleges and universities. An increased focus on improving retention rates, hence increasing revenues from tuition, is one strategy to address this issue. Another strategy includes improving student academic achievement. Academic achievement or a student's ability to meet or exceed the academic standards of a given institution, is important because it reflects a measure of students' acquisition of important skills and attributes considered necessary to demonstrate that student learning has occurred. Some benefits of student academic achievement represent public interests, such as increasing the United States' global competitiveness and increased civic engagement (Lopez-Claros, Porter, Schwab, and Sala-i-Martin, 2006; Jones, 1996). Other benefits of student achievement reflect private interests, including greater earning potential for individuals (College Board, 2006; Institute for Higher Education Policy, 1998, 2005).

Given the significant individual and societal benefits of academic achievement, it is important to consider the factors that influence academic achievement in higher education. Four factors have been identified in the literature as having an impact on academic achievement: student background characteristics, self-perception of abilities, degree aspirations, and choice of academic major. The specific set of background characteristics that students bring with them to college affects their academic performance (Astin, 1993b; Naretto, 1995). Background characteristics include age, gender, race, parental educational background, high school GPA, college admission test scores, and family income level, (Kahn and Nauta, 2001; Leppel, 1984; 2002; McGrath and Braunstein, 1997; Pascarella and Terenzini, 1991; Tinto, 1993). However, these characteristics do not account for all of the variation in academic performance. Another factor that contributes to student academic achievement is self-perception of abilities (Bryson, Smith, and Vineyard, 2002; Jackson, Smith, and Hill, 2003; Sedlacek, 2004). Specifically, students who report higher levels of self-confidence in their abilities tend to be academically successful. It is necessary for students to exhibit confidence in their abilities to achieve their academic goals (Sedlacek, 2004).

A third factor contributing to the academic achievement of students is their degree aspirations. Students reporting a desire to achieve educational goals beyond the bachelor's degree tend to achieve academically, persist, and graduate at greater rates than do students for whom a bachelor's degree is the ultimate educational goal (Walpole, 2007). While it may be beneficial for students to consider long-term goals such as the highest level of degree desired (e.g., earning a master's or doctorate degree), they must first complete a four-year degree and that process begins by selecting a major.

One particular group of students has been highlighted in the literature on academic achievement and academic major. Undecided students are those who are "unwilling, unable, or unready to make educational or vocational decisions" (Gordon, 1995, p. x). This population of students tends to produce lower scores than decided students in terms of high school grade point average, college grade

point average, and American College Testing (ACT) Program composite scores (Wood, 1990). Research also indicates that undecided students have lower academic performance and persistence rates (Leppel, 2001).

Despite a wealth of research on predicting the academic achievement of students, and programs and services designed to promote academic achievement among undecided students, no studies have focused exclusively on understanding the factors which impact the academic achievement of undecided students by examining their background characteristics, self-perception of abilities, and highest degree aspired to from a lens other than the deficiency perspective. In addition, existing literature on undecided students and academic achievement examine this population as a homogeneous group. The current study was designed to address these gaps in the literature.

Purpose Statement

The purpose of this study was to determine the differences between academic achievement and undecided student status. Specifically, this researcher determined how much of the variation in academic achievement could be explained by the pre-college characteristics for Specific Majors (SMs) and Non-Specific Majors (NSMs). These pre-college characteristics included background characteristics, self-perception of abilities, and degree aspirations. Academic achievement was defined as the cumulative GPA at the end of the second semester.

The factors which were examined to determine their impact on academic achievement of undecided students were variables measured by the 2005, 2006 and 2007 Cooperative Institutional Research Program's (CIRP) Annual Freshman Survey (AFS) (Higher Education Research Institute, 2007). The AFS variables used for this study were grouped into three categories: background characteristics, self-perception of abilities, and degree aspirations.

The sample was comprised of undecided, full-time students between the ages of eighteen and twenty at a single institution. The participants were first enrolled as students in the Fall semesters of 2005, 2006, or 2007, and completed the AFS during the summer prior to their matriculation.

Research Questions

The present study examined four research questions:

1. Are there statistically significant differences between Specific Majors (SMs) and Non-Specific Majors (NSMs) in terms of background characteristics?
2. Are there statistically significant differences between Specific Majors (SMs) and Non-Specific Majors (NSMs) in terms of self-perception of abilities?
3. Are there statistically significant differences between Specific Majors (SMs) and Non-Specific Majors (NSMs) in terms of degree aspirations?

4. Are there statistically significant differences between Specific Majors (SMs) and Non-Specific Majors (NSMs) in terms of academic achievement (first year GPA)?

The study was significant for future practice, research, and policy within higher education. In regards to practice, this study provided results that may be of benefit to three constituencies. First, academic advisors were provided with information about the factors that predict academic achievement for undecided students. Advisors might use the findings to assess what services they deliver to undecided majors.

Second, the results of this study were significant for undecided students. This population of students might benefit from the results that highlight the background characteristics, self-perception of abilities, and degree aspirations that were most likely to predict academic achievement. Undecided students could use the findings to assess their own preparedness for academic achievement.

Third, admissions officers are charged with recruiting new classes of students to institutions each year with an expectation that the students will have the ability to succeed academically. This study provided admissions officers with information about the potential impact of background characteristics, self-perception of abilities, and degree aspirations on the academic achievement of undecided students. Admissions officers might use this information to refine their selection process or factors they consider in making their recommendation about which students should be offered admission, admitting students who better match the institution's strengths.

The study also served to promote future research. While end-of-year-one GPA was used as a measure of academic achievement, future investigations might examine academic achievement during the entire college career. Specifically, cumulative grade point average could be tracked at the end of each academic year for which undecided majors were enrolled. Such an approach would provide a broader time frame over which to measure academic achievement and might more accurately measure success for undecided students. This study defined achievement in college exclusively in terms of academic performance. Future studies might seek to broaden the definition of achievement to include both academic and non-academic indicators of achievement. Expanding the operational definition of achievement might provide the opportunity to highlight collegiate achievement in students not always evidenced by their grade point average.

Finally, future research might include an examination of students from other majors. While the current study focused on undecided students, this population constitutes only a fraction of the total enrollment of most higher education institutions. Such a future study might provide a greater awareness of the factors that impact academic achievement for students from various majors.

Policy implications were also evidenced in this study. Academic administrators charged with developing standards for internal transfer (i.e., changing majors within the same institution) could benefit from the results of the current study. The findings provided this group of policymakers with data regarding the factors that

impact academic achievement among undecided students. They might use the results to evaluate the standards used to assess internal transfer applications.

Another way in which the results of the current study might influence policy is related to admission standards. Policymakers might use information about factors that impact achievement when determining admissions standards for undecided students.

Academic administrators concerned with retention of undecided majors might benefit from the results of this study as this population of students tends to have lower retention rates. The results provided insight into the effect of background characteristics, self-perception of abilities, and degree aspirations on the academic achievement of undecided students. The data might be used to develop policies geared towards the unique needs of this group of students.

Literature Review

This study was designed to address a gap in the literature regarding the academic achievement among undecided students during their first year of enrollment at a four-year public research institution. Specifically, differences in academic achievement between Specific Majors (SMs) and Non-Specific Majors (NSMs) in terms of pre-college characteristics were examined. In addition, the study examined whether the pre-college characteristics could be used to successfully predict the academic achievement of undecided students. The literature review is centered on these areas of study.

First, for purposes of this study, first-year college grade point average (GPA) was used as a measure of students' academic achievement. Therefore, GPA as a measure of academic achievement was reviewed. Next, it was necessary to examine the literature on pre-college characteristics that influence academic achievement.

Three groups of studies were reviewed. These included background characteristics, self-perception of abilities, and degree aspirations. Finally, since the study examined achievement among undecided students, research on that population of college students was explored.

GPA and Academic Achievement

In terms of academic achievement in college, grade point average (GPA) is commonly used as an indicator of student achievement. Specifically, first-year college GPA is a measure of the consistent academic achievement of a student across terms (Brashears and Baker, 2003). In addition, the value of using GPA as a measure of academic achievement has been highlighted as GPA has been found to be a significant predictor of persistence (Allen, 1999; Mitchel, Goldman, and Smith, 1999; Murtaugh, Burns, and Schuster, 1999) and serves as one indication of the degree to which students have responded to the institutional environment

(McGrath and Braunstein, 1997; Tinto, 1993; Tross, Harper, Osher, and Kneidinger, 2000).

Allen (1999) examined the existence of an empirical link between motivation and persistence. He concluded that regardless of students' racial/ethnic status (minority or nonminority), first-year college GPA exerts the largest influence on whether or not a student persists. In addition, the higher a student's GPA the greater the probability of retaining that student from the first to the second year of enrollment in college (Murtaugh, Burns, and Schuster, 1999).

Background Characteristics

Most studies suggest that background characteristics influence academic achievement only during the first year of enrollment. Six specific background characteristics have been identified: (a) high school achievement, (b) gender, (c) SAT scores, (d) ethnicity, (e) parental education, and (f) parental income (Terenzini, Theophilides, and Lorang, 1984).

Self-perception of Abilities

Self-concept refers to an individual's image of him/herself. It is a multi-layered construct reflecting various dimensions of students' self-perceptions of their abilities and attitudes (Byrne, 1984; Hansford and Hattie, 1982). More specifically, Ethington (1990) has expanded the concept to include an academic component and has defined academic self-concept as a student's ability and intellectual self-confidence.

The vast majority of research in this area has focused on pre-school, elementary, and secondary school youth, with substantially less attention given to examining the self-perception of abilities of college students (Smart and Pascarella, 1986). A review of the current literature indicates the same trend to be true today. Minimal research exists regarding college students' self-perception of abilities compared to younger student populations. Despite the limited research on college students' self-perception of abilities, there is clear consensus among researchers on two related issues. First, academic achievement is positively influenced by self-perception of abilities (Bauer and Liang, 2003; Hamacheck, 1995; Hickman, Bartholomae, and McHenry, 2000;

Pritchard and Wilson, 2003; Zheng, et. al, 2002). Evidence supporting this conclusion includes Bauer and Liang's (2003) findings that students' personality type (encompassing self-perception of abilities) influences first-year GPA. Additionally, self-perception of abilities serves as a good predictor of future academic achievement (Pritchard and Wilson, 2003; Tross, Harper, Osher, and Kneidinger, 2000). The current study seeks to explain the variance in academic achievement for undecided students and because of its clearly established

relationship with academic achievement, students' self-perception of abilities is included in the analysis.

Degree Aspirations

It is important to examine educational aspirations as they are a "fundamental part of the attainment process and yet are among the least understood concepts in higher education" (Carter, 2001, p. 6). Anecdotally, without aspirations college students' educational plans are not likely to come to fruition. However, research also confirms the relative strength of educational aspirations as a contributor to academic achievement. Pascarella (1984) investigates the influences of the college environment on students' educational aspirations and concludes "by far, the best predictor of educational aspirations at the end of the second year of college was the level of educational aspiration at entrance to college" (p. 767). In addition, others have reached similar conclusions noting that "the student's degree aspirations at the time of college entrance are the most potent predictors of enrollment in graduate and professional school" (Astin, 1977, p.112).

Defining aspiration can be difficult as it has been considered a concept that is synonymous with several other terms including expectation, educational plan, wish, dream, intention, and ambition (Carter, 2001). For the current study, aspirations are defined as the "goal that one intends or expects to attain" (Berman and Haug, 1975, p. 166). The goal under investigation in the current study includes the highest degree aspired to by first-year college students.

Aspirations have been studied since the late 1960s (Carter, 1999). However, when aspirations are investigated particular focus has been placed on research design and college students. Regarding design, researchers have studied aspirations as either an outcome or as a predictor of an outcome. For example, several scholars have concluded students' aspirations are directly affected by institutional characteristics and experiences (Carter, 2001; Hossler and Gallagher, 1987; Astin, 1993b; Smith, 1990). Fewer studies have used aspirations as anindicator of an outcome (Dey and Astin, 1993; Hull-Toye, 1995; Pascarella, Smart, and Stoecker, 1989).

The aspirations of college students are frequently examined in the literature. However, Carter (2001) notes more research related to aspirations for the high school-to-college population exists than research reporting on college students' plans to attend graduate school. The current study builds on this body of literature by examining the post-baccalaureate degree aspirations of college students as indicated prior to enrollment in their first term of college.

Undecided Students

One body of literature on undecided students recognizes the diversity of needs among this group of students by creating sub-types, or categories of undecided students. In one model, four general categories of undecided students were identified: tentatively undecided, developmentally undecided, seriously undecided, and chronically indecisive. Tentatively undecided students are characterized as happy and playful (Lucas and Epperson, 1988), are comfortable with themselves and have a relatively high vocational identity level. These undecided students are closer to making a decision than are the developmentally undecided students (Gordon, 1998).

Evidence exists to support the general perception within higher education for students who are undecided or have not declared a major are less likely to persist. In his study examining student attrition, Noel (1985) described uncertainty of major as a form of attrition and concluded "uncertainty about what to study is the most frequent reason talented students give for dropping out of college" (p. 12). This conclusion is also supported by Sprandel (1985) who argued undecided students experience less academic achievement because they do not have a purpose for attending school. Anderson (1985) believed undecided students ultimately fail to persist because they do not have a clear focus and they lack direction in terms of their educational and career goals. The general belief that undecided students are more attrition prone simply because they have not declared a major represents a more negative view of this student population.

A major shift in assumptions regarding undecided students and persistence occurred in the mid-1980s due to conclusions drawn from studies being conducted at the time. Notably, Lewallen (1992) disputes that undecided students are less likely to persist because the methodology of the majority of studies that draw such a conclusion is flawed. Although frequently cited on this topic, these findings "were not empirically derived from studying students, but were the result of respondent's opinions, perceptions, and judgments" (Lewallen, 1992, p. 29). Instead of drawing their conclusions from student data, the researchers surveyed administrators and staff.

Additional studies counter previous misconceptions that undecided students are more likely to drop out of college (Graunke et al., 2006; Lewallen, 1993). Graunke, et al. (2006) investigated the impact of institutional commitment, commitment to an educational goal, and commitment to an academic major on the probabilities of graduation for first-year students. Their results indicated commitment to an academic major, or decidedness, was negatively associated with probabilities of degree completion.

The current study seeks to expand existing literature on factors which impact academic achievement by investigating undecided students. Furthermore, it is important to note that not all undecided students have the same needs and concerns. Therefore, this study explores academic achievement by varying levels of

undecidedness (Specific Majors and Non-Specific Majors). Using a multiple regression analysis, the background characteristics, self-perceptions of abilities, and degree aspirations of undecided students were examined in an effort to determine which factors have an impact on the academic achievement of this population.

Results of Study

The sample of undecided students is described by examining the differences between the NSMs and SMs in terms of their background characteristics, self-perception of abilities, degree aspirations, and academic achievement. These findings relate to the first four research questions. To address the final two research questions, the nature of the relationship between the two sub-groups of undecided students and their respective background characteristics, self-perception of abilities, and degree aspirations were examined to determine how much variance in academic achievement can be explained by these factors.

Comparing NSMS and SMS

The data set for this study provided the opportunity to investigate the similarities and differences between 852 undeclared students who were classified as either NSMs (n=538) or SMs (n=314). The literature describes academic achievement as an important measure of student persistence. In addition, a review of the literature notes a number of pre-college characteristics that influence academic achievement including background characteristics, self-perception of abilities, and degree aspirations.

Research Question One: Background Characteristics

The first research question posed in the study focused on differences between SMs and NSMs by background characteristics. The background characteristics included sex, high school grade point average, parental income, race, parental education, and SAT score. Crosstab analysis was conducted on all background characteristics except SAT scores. Crosstabs are designed for discrete variables, usually those measured on nominal or ordinal scales. Because SAT scores are continuous variables that can assume many different values, crosstab analysis was not an appropriate form of analysis. Therefore, a t-test was used to examine differences in the two groups by SAT score.

The crosstabs analysis, as shown by the resulting chi squares, led to four significant differences between groups. First, a significant difference in terms of sex was revealed. Specifically, more NSMs were female (N=283) than male (N=255),

while significantly more males (N=240) than females (N=74) were SMs. The differences by sex were significant at the level of p=.000 (see Table 8.1).

The findings also revealed significant differences between NSMs and SMs related to their high school grade point average. Table 8.1 reveals that NSMs tended to report higher grades earned during high school than SMs (p=.022). The three highest grade options students could report included: (a) A or A+, (b) A-, and (c) B+. The percentages of NSMs indicating these grade options were 21.19 percent, 33.09 percent, and 32.34 percent respectively for a total of over 86 percent. For the SM group the respective percentages were 16.56 percent, 25.80 percent, and 38.22 percent, or a total of only 80 percent.

The analysis also revealed that significantly more of the sample were students from the majority race category (White) in comparison to the non-majority race category (all other race categories) regardless of their major classification (NSM versus SM) (p=.007). Of the total sample, 685 students were of the majority and 167 were from the non-majority group. The original data included nine options for students to self-identify their race. However, the cell sizes for all groups other than Whites were too small to stand alone in the analysis. Therefore, it was necessary to create the majority and non-majority dichotomy for analysis purposes.

Parental education was grouped into three options: low, medium, and high. In each of these three groups, NSMs represented a larger percentage of the sample than SMs, with the exception that there were more SMs than NSMs at the low level. The difference between NSMs and SMs in respect to parental income was significant at the level of p=.022 (see Table 8.1).

There were no significant differences between the NSMs and SMs on the remaining two demographic characteristics. Specifically, Table 8.1 highlights the fact that regardless of whether students indicated their parents' income level as low, middle, or high no significant differences emerged between NSMs and SMs. In an effort to examine differences between the two groups in relation to their SAT scores, a t-test was conducted (see Table 8.2). Although the mean SAT score for the two groups varied (NSM mean=1194.89, sd=104.86; SM mean=1184.75, sd=102.35) the difference was not significant (p=.170).

Research Question Two: Self-perception of Abilities

The second research question in the study examined differences between NSMs and SMs on self-perceptions of ability. Current literature indicates students' self-perception of abilities influences their projected academic achievement in college. This study examined self-perceptions of four abilities including analytic ability, artistic ability, leadership ability, and emotional health. Using crosstab analysis, findings suggested no significant differences between NSMs and SMs in terms of their analytic ability, leadership ability, and emotional health (see Table 8.3).

However, significantly more NSMs indicated higher self-ratings of their artistic ability (p=.019) than their SM counterparts.

Table 8.1. Results of Crosstabs Comparing NSMs (n=538) and SMs (n=314) on Background Characteristics Based on Chi Square Comparisons

Variables		NSM		SM		Total		P-value
		N	%	N	%	N	%	
Sex	M	255	47.4	240	76.43	495	58.1	
	F	283	52.6	74	23.57	357	41.9	
	Tot	538	100	314	100	852	100	.000*
High School GPA	C+	1	0.19	0	0	1	0.12	
	B-	11	2.04	10	3.18	21	2.46	
	B	60	11.15	51	16.24	111	13.03	
	B+	174	32.34	120	38.22	294	34.51	
	A-	178	33.09	81	25.80	259	30.40	
	A/A+	114	21.19	52	16.56	166	19.48	
	Total	538	100	314	100	852	100	.022*
Parental Income	Low	44	8.18	32	10.19	76	8.92	
	Middle	110	20.45	74	23.57	184	21.6	
	High	384	71.38	208	66.24	592	69.48	
	Total	538	100	314	100	852	100	0.28
Race	Majority	448	83.27	237	75.48	685	80.4	
	Non-maj	90	16.73	77	24.52	167	19.6	
	Total	538	100	314	100	852	100	.007*
Parental Education	Low	101	18.77	84	26.75	185	21.71	
	Med	226	42.00	123	39.17	349	40.96	
	High	211	39.22	107	34.08	318	37.32	
	Total	538	100	314	100	852	100	.022*

Table 8.2. Results of T-test Comparing SAT Scores between NSMs (n=538) and SMs (n=314)

		N	Mean	SD	P-value
SAT Score	NSM	538	1194.89	104.86	.170
	SM	314	1184.75	102.35	
	Total	852			

Table 8.3. Results of Crosstabs Comparing NSMs (n=538) and SMs (n=314) on Self-perception of Abilities

Variables		NSM		SM		Total		
		N	%	N	%	N	%	P-value
Analytic Ability	Below avg	222	41.26	117	37.26	339	39.79	
	Average	190	35.32	115	36.62	305	35.8	
	Above avg	126	23.42	82	26.11	208	24.41	
	Total	538	100	314	100	852	100	0.476
Artistic Ability	Below avg	248	46.1	126	40.13	374	43.9	
	Average	141	26.21	72	22.93	213	25.0	
	Above avg	149	27.7	116	36.94	265	31.1	
	Total	538	100	314	100	852	100	.019*
Leadership Ability	Below avg	7	1.3	3	0.96	10	1.17	
	Average	390	72.5	242	77.07	632	74.18	
	Above avg	141	26.21	69	21.97	210	24.65	
	Total	538	100	314	100	852	100	0.332
Emotional Health	Below avg	217	40.33	126	40.13	343	40.26	
	Average	164	30.48	98	31.21	262	30.75	
	Above avg	157	29.18	90	28.66	247	28.99	
	Total	538	100	314	100	852	100	0.973

Research Question Three: Degree Aspirations

A final pre-college characteristic which has been found to have an impact on academic achievement is degree aspirations, the subject of the third research question posed in the study. While the literature on college students tends to examine degree aspirations as an outcome, the current study used it as a means to examine differences between NSMs and SMs and later its relative influence on academic achievement. For the current sample of 852 students, a p-value of .471 indicated no significant differences existed between the NSMs and SMs (see Table 8.4).

Table 8.4. Results of Crosstabs Comparing NSMs (n=538) and SMs (n=314) on Degree Aspirations

Variables		NSM		SM		Total		P-value
		N	%	N	%	N	%	
Degree Aspirations	Less than Bach deg	3	0.56	0	0	3	0.35	
	Bach deg	120	22.3	66	21.02	186	21.83	
	Post-Bach deg	409	76.02	246	78.34	655	76.88	
	Other	6	1.12	2	0.64	8	0.94	
	Total	538	100	314	100	852	100	0.471

Research Question Four: Academic Achievement

As noted in previously, first-year grade point average is frequently used as a measure of student achievement and has been found to have a significant impact on persistence in the literature. Therefore, in the current study, the first-year GPAs of 852 undecided students were analyzed using an independent sample t-test to determine if significant differences in first-year GPA existed for NSMs and SMs. The findings revealed there is a statistically significant difference between the two groups in terms of their academic achievement as measured by their cumulative, first-year GPA (t=6.431, p=.000). The mean first-year GPA for NSMs (3.02) was significantly higher than that for SMs (2.73) (see Table 8.5).

Table 8.5. Results of T-test Comparing First Year GPA between NSMs (n=538) and SMs (n=314)

		N	Mean	SD	P-value
Academic Achievement	NSM	538	3.02	0.6	.000*
	SM	314	2.73	0.68	
	Total	852			

*p<.05

Discussion

Results of this study are discussed in relation to the four research questions posed in the study. The first four research questions examined whether differences existed between NSMs and SMs in terms of their background characteristics, self-perceptions of abilities, degree aspirations, and academic achievement.

Background Characteristics

The first research question presented in this study examined whether significant differences in background characteristics existed for NSMs and SMs. To explore this question a crosstab was used based on the belief that background characteristics might be causally influencing students' undecided status. Findings revealed significant differences with respect to four background characteristics: (a) sex, (b) high school GPA, (c) race, and (d) parental education.

Gender

First, in terms of sex, the SM group included more males (76.43 percent) than females (23.57 percent). This finding was not completely surprising as the gender distribution of the study's total sample was comprised of 58.10 percent males and 41.90 percent females and institutional data indicate the gender distribution of first-year undecided students for 2005-2007 consisted of 59.57 percent males and 40.43 percent females. Nevertheless, males represented a significantly larger portion of the SM group. One plausible explanation for this difference relates to the nature of the SM population. At the institution at which this study was conducted, the majority of students in the SM group were denied admission into a single degree option, general engineering, which tends to have a first-year student gender distribution includes more males than females. Specifically, the gender distribution for the first-year students in engineering during 2005-2007 for males and females was 84.25 percent and 15.75 percent, respectively. Therefore, the gender demographics of the SM group more closely matched those of their most frequently cited choice of major.

A noteworthy finding, however, is revealed regarding sex and the NSM group which was composed of significantly more females (52.60 percent) than males (47.40 percent). This finding deviates from both the sample population as well as the first-year, undecided student population during 2005-2007, so the reasons that females make up a greater portion of the NSM group cannot be easily explained. It is possible students' reasons for choosing a major can provide some context to interpreting this finding. Malgwi, Howe, and Burnaby (2005) found that females' aptitude in a particular subject was a significant influence on their choice of major. In light of their finding, females at the university from which the current sample

was derived may not initially had confidence in their aptitude in the majors for which the institution has its greatest reputation: Engineering and Architecture. If their confidence was lower in these areas, perhaps they felt the need to explore more options before committing to major. On the other hand, males to choose their major based on perceived potential for career advancement and higher salary expectations (Malgwi, Howe, and Burnaby, 2005). Therefore, they would have selected a major during the admission process regardless of their aptitude and preparedness to begin the major. These influences on students' choice of major may explain why the NSM group has significantly more females than males.

High School GPA

The institution at which this study was conducted is considered selective in terms of their admission standards. Specific evidence of this includes the fact that in 2007 the average high school GPA of students who were offered admission to the institution was a 3.85. In light of these high academic credentials of potential first-year students, it is startling to note the significant difference in high school grades between the NSM and SM groups. Specifically, a greater percentage NSMs (54.28 percent) indicated an average high school grade of an A than SMs (42.36 percent). In addition, a smaller percentage of NSMs (45.72 percent) reported their average high school grade as a B or less than the NSM group (57.64 percent). Both findings support the idea that NSMs had higher levels of academic performance in high school than the SMs.

This finding is counterintuitive given the assumption that students who are committed to a particular major or degree program experience greater levels of academic achievement as a result of their goal commitment and focus. That is, the SMs were undecided only because they were not accepted into their first choice major, hence could be considered committed to an academic program. However, the lower levels of average high school grades for the SM group might be explained by the fact that many of these students were denied entry into their first choice of major because their high school credentials, including grades, were not as competitive as those who were offered admission. If the SM group had average high school grades which mirrored the overall average GPA for students admitted to the university, more SMs would have been directly admitted into their first choice of major instead of enrolling in the undecided option.

Race

A third significant difference in background characteristics between NSMs and SMs was found in relation to race. Due to the small number of students representing racial backgrounds other than Caucasian, the analysis of differences by race were based on a comparison of majority and non-majority students. Findings revealed the overall sample's racial distribution between majority and non-majority students to

be 80.40 percent and 19.60 percent, respectively. However, closer examination reveals differences between the undecided student statuses. The racial distribution among the NSM group was very similar to the sample distribution: majority (83.27 percent) and non-majority (16.73 percent) students. For the SM group, though, there is a greater deviation from the sample population with 75.48 percent majority and 24.52 percent non-majority students. Clearly, the SMs have a greater representation of non-majority students than the NSM group. Societal forces again may partially explain the impact of race on undecided major status. The non-majority SM group members may have experienced more pressure from parents and their communities to begin their college enrollment focused on a particular major. This would decrease or better manage the time required to complete their degree. While the intent of these expectations may have been to encourage and provide focus for non-majority students, these students may have ultimately chosen to apply for admission to a major for which they were not prepared to succeed.

Parental Education

The final background characteristic for which significant differences between NSMs and SMs were revealed is parental education, with significantly more SMs (26.75 percent) having parents with lower levels of education than NSMs (18.77 percent). This finding is interesting in light of the fact that only 21.71 percent of the sample population indicated low parental educational levels. One possible explanation could be related to the difference found in race. Since a significant portion of the SM group was comprised of non-majority students, it would follow that their parents were also considered non-majority. As non-majority parents they may have less education than the majority parents. Other feasible explanations for this finding are not available but the current finding warrants future investigation.

Self-perception of Abilities

The second research question posed in this study examined whether significant differences in self-perceptions of abilities could be identified for NSMs and SMs. Respondents' self-perceptions of abilities were represented by one item on the AFS that included 21 sub-items. These 21 sub items were collapsed into four groups based on previous research in which factor analysis was conducted on the 21 sub-items in order to cluster related items. The factor analysis yielded the following clusters and their corresponding labels: (a) analytical ability (academic and mathematical ability), (b) artistic ability (artistic ability and creativity), (c) leadership ability (leadership and public speaking ability, and intellectual and social self-confidence), and (d) emotional health (drive to achieve, emotional health, and initiative) (Zheng, et. al, 2002). These four factors were included in a crosstab analysis to explore potential differences between the two groups.

Of the four self-perceptions of abilities examined, the only significant difference between NSMs and SMs was in the ratings of their artistic abilities. Specifically, a greater percentage of SMs (36.94 percent) rated their artistic ability as above average than NSMs (27.70 percent). Given that artistic ability is a measure students' artistic and creativity, this finding does not come as a surprise because of the nature of the institution at which the study was conducted. This university has top-ranked engineering and architecture programs. These programs tend to attract students with interests in design and creativity. Recall that the SM group included students who were denied admission to their first choice major. The overwhelming majority of students in the SM group were denied admission into Engineering and Architecture. Specifically, 478 first-year students were denied admission to majors within the architecture college and 833 within general engineering from 2005 to 2007 out of a total undecided population of 3990 students. Both of these academic majors place a major emphasis on creativity and design which might explain the higher self-ratings of self-perception of artistic abilities by SMs. Both engineering and architecture and design students have to demonstrate a skill set based on artistry and creativity.

Degree Aspirations

Examining whether significant differences in degree aspirations could be identified for NSMs and SMs was the purpose of the third research question. The analysis employed to address this question was a crosstab. The 10 response options related degree aspirations from the Annual Freshman Survey were collapsed into four groups: (a) less than a Bachelor's degree, Bachelor's degree, post-Bachelor's degree, and other. The greatest percentage of responses indicated students aspired to a Bachelor's degree (21.83 percent) or post-Bachelor's degree (76.88 percent) regardless of students' affiliation with either the NSM or SM group. No significant difference was found between NSMs and SMs in terms of their degree aspirations ($p=.471$).

There are a couple potential explanations for this finding. First, the institution from which the sample was drawn is a major research university with highly competitive admission standards. The average SAT score for entering classes in the three years in which the sample matriculated was 1203. Also, faculty members were awarded $5,888,585,133 in research grants during those years and there is a growing emphasis on engaging undergraduates in research activities. Finally, the students in the sample completed the AFS prior to enrolling at the institution. It is possible that they had high aspirations prior to selecting a university to attend and that their selection of this particular university was, in part, due to their assumption that a degree from the school would facilitate their post-baccalaureate degree plans, regardless of their undecided status (NSM or SM).

Alternatively, the finding might be explained by the types of academic programs offered at the institution where the study took place. As noted previously,

the university is host to top-rated programs in architecture and engineering. There are also major programs in sciences, business, natural resources, and agriculture. Many of these are fields in which advanced degrees are the norm for career success. This might explain why both groups in the study (NSMs and SMs) reported high degree aspirations.

Academic Achievement

Perhaps the most interesting finding of this study came from the finding related to the fourth research question: Are there significant differences between NMSs and SMs in terms of their academic achievement, as measured by their first-year cumulative college GPA? The mean first-year GPAs for NSMs and SMs were 3.02 and 2.73, respectively. Though both mean GPAs are commendable and would indicate academic success at most institutions of higher learning, the results reveal the difference is highly significant at the level of p=.000. Most surprising is the fact that NSMs generally earned higher GPAs than SMs. This finding is counterintuitive in that there is a generally held belief that the more certain a student is about his/her major choice the more likely that student is to be academically successful (Anderson, 1985; Leppel, 2001, Sprandel, 1985). In the case of the current study, SMs are students who originally applied for admission into a specific major but were not accepted because of additional entrance requirements beyond those of the institution. SM status would indicate students have a more focused and deliberate plan to declare their intended major as quickly as possible in comparison to NSMs. They have usually researched what it will take to transfer and are able to clearly articulate the requirements and procedures that must be completed prior to initiating the transfer process. On the other hand, NSMs are characterized as truly undecided students who want to spend some time exploring all of the various degree programs and options available at the institution.

Interpreting this finding is challenging. Perhaps the flexibility of course scheduling for NSMs facilitates greater levels of academic achievement. In particular, as truly undecided students, NSMs have more opportunities during their first year of enrollment to select a variety of courses that satisfy both degree requirements and personal interests, while also providing students the chance to explore various academic fields and disciplines. Students who are more interested in their coursework may experience higher levels of academic achievement. The same options are not available to SMs. Because these students have a specified academic plan in place and often have to complete prerequisite courses before they can even be considered for admission into their intended major, their course scheduling options are more rigid. SMs are often also under time constraints and need to complete these required courses within a predetermined time frame in order to be considered competitive applicants for internal transfer. This situation can jeopardize the success of SMs who may not have selected the most appropriate

major and are attempting to complete course work for which they are not as prepared.

However, it is important to note that this finding should have been predictable to some degree because of the finding related to high school grades. Recall that there was a significant difference between NSMs and SMs in terms of high school grades. Prior research has shown that a consistent predictor of first year college GPA is high school GPA (Daugherty and Lane, 1999; DeBerard, Spielmans, and Julka, 2004; Noble and Sawyer, 2002). The results of the current study indicate high school GPA is a factor in which a significant difference exists between NSMs and SMs. Logic would suggest that higher academic achievement in high school would produce high academic achievement in college.

Limitations of the Study

Limitations have been revealed throughout the course of conducting and analyzing the data set. Specifically, three limitations emerged involving the generalizability of the results, the narrow definition of achievement, and the classification of undecided students.

One limitation of the current study centers on its generalizability, or the ability to use the findings to draw general conclusions about other groups of undecided students. The sample included students from only one institution and it is not clear whether their academic success (GPA) is related to the selectivity of the institution. The results should be generalized with caution to undecided students at institutions other than selective research universities.

A second limitation involves the definition of achievement. For purposes of this study, achievement was measured as a function of academic success; first-year GPA. Although previous literature affirms that GPA is a consistent measure of academic achievement, there are alternative measures of achievement. For example, for undecided students, achievement could be measured by students' ability to make a decision about and transition into a major that is congruent with their skills, interests, and abilities. In addition, achievement could be measured by assessing the number of times students change their major after exiting an undecided program. More major changes would be a good indication that a student continues to face difficulty in deciding on an appropriate field of study. Other measures of academic achievement might have led to different results.

A final limitation relates to the classification of undecided students into two sub-categories: NSM and SM. While background characteristics, self-perceptions of abilities, and degree aspirations explained a larger amount of variance for students in the NSM group than the SM group, it is clear that much is still unknown about the factors that impact the academic achievement for both groups. More variation may exist within the population of undecided students than can be adequately assessed using simply two groups to differentiate its members.

Despite these limitations, significant information has been provided by the results of the current study in terms of the differences between NSMs and SMs. In addition, the amount of variance in academic achievement explained by these variables for both groups was highlighted. Previous literature has investigated the factors that impact academic achievement in many student populations but those studies have excluded undecided students. In addition, when research was conducted on undecided students in prior studies it frequently involved a comparison between undecided students and students from degree-granting majors. My results provide a unique perspective by which to evaluate undecided students.

In conclusion, the significant findings in the current study were not surprising, as each of the factors revealed in my study had been previously reported in the literature as having an impact on academic achievement for other populations of students. For both groups, the models presented explained a statistically significant portion or variance. However, for practical purposes the percentage of variance explained was relatively low (NSM=16.6 percent and SM= 6.8 percent). More research regarding the factors that influence the academic success of this population is warranted. With increased academic achievement, it is expected that this population will also increase in retention rates. Improved retention rates are a means of assessing institutional accountability (Green, 2002; Metz, 2004; Trow, 1996) and increasing institutional revenues (Jones, 1996). Since undecided students comprise a growing percentage of matriculating college students, improving their academic achievement, hence their retention rates, has important implications for colleges and universities.

References

Allen, D. (1999). Desire to finish college: An empirical link between motivation and persistence. *Research in Higher Education, 40*(4), 461-485.

Anderson, E. (1985). Forces influencing student persistence and achievement. In Noel, L., Levitz, R., Saluri, D. and Associates. *Increasing student retention: Effective programs and practices for reducing the dropout rate*. San Francisco, CA: Jossey-Bass.

Astin, A. W. (1977). *Four critical years: Effects of college on beliefs, attitudes, and knowledge*. San Francisco, CA: Jossey-Bass.

Astin, A. W. (1993b). *What matters in college: Four critical years revisited*. San Francisco: Jossey-Bass.

Bauer, K. W. and Liang, Q. (2003). The effect of personality and precollege characteristics on first-year activities and academic performance. *Journal of College Student Development, 44*(3), 277-290.

Berman, G. S. and Haug, M. R. (1975). Occupational and educational goals and expectations: The effects of race and sex. *Social Problems, 23*, 166-181.

Blecher, L. (2006). Persistence toward bachelor degree completion of students in family and consumer sciences. *College Student Journal*, *40*(3), 469-484.

Brashears, M. T., and Baker, M. (2003). *A comparison of the influence of traditional predictors and individual student talents upon collegiate success: A longitudinal study.* Paper presented at the Southern Agricultural Education Research Conference, February 1-3, Mobile, AL.

Braxton, J. M. (2000). *Reworking the departure puzzle*. Nashville: Vanderbilit University Press.

Bryson, S., Smith, R., and Vineyard, G. (2002). Relationship of race, academic and nonacademic information in predicting first-year success of selected admissions first-year students. *Journal of the First Year Experience and Students in Transition, 14*(1), 65-80.

Byrne, B. M. (1984). The general/academic self-concept nomological network: A review of construct validation research. *Review of Educational Research, 54*, 427-456.

Carter, D. F. (1999). The impact of institutional choice and environments on African-American and white students' degree expectations. *Research in Higher Education, 40*(1), 17-41.

Carter, D. F. (2001). A *dream deferred? Examining the degree aspirations of African American and White college students*. New York: Routlegdge Falmer.

College Board. (2006). *Education pays: Second update*. Retrieved October 10, 2007, from http://www.collegeboard.com/prod_downloads/press/cost06/education_pays_06.pdf

Daugherty, T. K., and Lane, E. J. (1999). A longitudinal study of academic and social predictors of college attrition. *Social Behavior and Personality, 27*(4), 355-362.

DeBerard, M. S., Speilman, G. I., and Julka, D. L. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, *38*(1), 66-80.

Dey, E. L., and Astin, A. W. (1993). Statistical alternatives for studying college student retention: A comparative analysis of logit, probit, and linear regression. *Research in Higher Education, 34*(4), 569-581.

Ethington, C. A. (1990). A psychological model of student persistence. *Research in Higher Education, 31*(3), 279-293.

Gordon, V. N. (1995). *The undecided college student: an academic and career advising challenge*. Springfield, Ill.: Thomas Publishing.

Gordon, V. N. (1998). Career decidedness types: A literature review. *Career Development Quarterly, 46*, 386-403.

Graunke, S. S., Woosley, S. A., and Helms, L. L. (2006). How do their initial goals impact students' chances to graduate? An exploration of three types of commitment. *NACADA Journal, 26*(1), 13-18.

Green, K. C. (2002). In search of academic accountability. *Converge*, *5*(1), 44-46.

Hagedorn, L. S. (2003). *How to define retention: A new look at an old problem*. Unpublished reports from TRUCCS to the Los Angeles Community College District. Los Angeles.

Hamacheck, D. (1995). Self-concept and school achievement: Interaction dynamics and a tool for assessing the self-concept component. *Journal of Counseling and Development, 73*, 419-425.

Hansford, B. C., and Hattie, J. A. (1982). The relationship between self and achievement/performance measures. *Review of Educational Research, 52*, 123-142.

Hickman, G. P., Bartholomae, S., and McHenry, P. C. (2000). Influence of parenting styles on the adjustment and academic achievement of traditional college freshmen. *Journal of College Student Development, 41*(1), 41-54.

Higher Education Research Institute. (2007). CIRP freshman survey. Available from the Higher Education Research Institute web site, http://www.gseis.ucla.edu/heri/researchers/instruments/CIRP/2007SIF.PDF.

Hossler, D., and Gallagher, K. S. (1987). Studying student college choice: A three-phase model and the implications for policymakers. *College and University, 62*(3), 207-221.

Hull-Toye, C. S. (1995). *Persistence based upon degree aspiration*. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Orlando, FL. (ERIC Document Reproduction Service No. ED 391-414).

Institute for Higher Education Policy. (1998). *Reaping the benefits: Defining the public and private value of going to college*. Washington, D.C.: Institute for Higher Education Policy.

Institute for Higher Education Policy. (2005). *The investment payoff: A 50-state analysis of the public and private benefits of higher education*. Washington, D.C.: Institute for Higher Education Policy.

Jackson, A. P., Smith, S. A., and Hill, C. L. (2003). Academic persistence among Native American college students. *Journal of College Student Development, 44*(4), 548-565.

Jones, E. A. (1996). National and state policies affecting learning expectations. *New Directions for Higher Education*, 96, 7-18.

Kahn, J. H., and Nauta, M. M. (2001). Social-cognitive predictors of first-year college persistence: The importance of proximal assessment. *Research in Higher Education, 42*(6), 633-652.

Leppel, K. (1984). The academic performance of returning and continuing college students: An economic analysis. *Journal of Economic Education, 15*(1), 46–54.

Leppel, K. (2001). The impact of major on college persistence among freshmen. *Higher Education, 41*(3), 327-342.

Leppel, K. (2002). Similarities and differences in the college persistence of men and women. *The Review of Higher Education*, 25(4), 433-450.

Lewallen, W. C. (1992). Persistence of the undecided: The characteristics and college persistence of student's undecided about academic major or career choice. *Dissertation Abstracts International, 53*, 12A, 4226.

Lewallen, W. C. (1993). The impact of being "undecided" on college student persistence. *Journal of College Student Development, 34*, 103-112.

Lopez-Claros, A., Porter, M. E., Schwab, K, and Sala-i-Martin, X. (2006). *The Global Competitiveness Report 2006-2007*. England: Macmillan Publishers Limited.

Lucas, M. S. and Epperson, D. L. (1988). Personality types in vocationally undecided students. *Journal of College Student Development*, *29*(5), 460-466.

Malgwi, C. A., Howe, M.A., and Burnaby, P.A. (2005). Influences on students' choice of college major. *Journal of Education for Business, 80*(5). 275-282.

McGrath, M. and Braunstein, A. (1997). The prediction of freshmen attrition: An examination of the importance of certain demographic, academic, financial, and social factors. *College Student Journal, 31*(3), 396-408.

Metz, G. W. (2004). Challenge and changes to Tinto's persistence theory: A historical review. *Journal of College Student Retention*, *6*(2), 191-207.

Mitchel, D. F., Goldman, B. A., and Smith, M. (1999). Change factors affecting college matriculation: A re-analysis. *Journal of the First-Year Experience and Students in Transition, 11,* 75–92.

Murtaugh, P.A. Burns, L. D., and Schuster, J. (1999). Predicting retention of university students. *Research in Higher Education, 40*(3), 355-371.

Naretto, J. A. (1995). Adult student retention: The influence of internal and external communities. *NASPA Journal, 32*, 90-97.

Noble, J. P. and Sawyer, R. L. (2002). Predicting different levels of academic success in college using high school GPA and ACT composite score. *ACT Research Report Series*, 1-22.

Noel, L. (1985). Increasing student retention: New challenges and potential. In L. Noel, R. Levitz, and D. Saluri (Eds.), *Increasing student retention* (pp. 1-27). San Francisco: Jossey-Bass.

Pascarella, E. T. (1984). College environmental influences on students' educational aspirations. *Journal of Higher Education, 55*, 751-771.

Pascarella, E. T. Smart, J. C., and Stoecker, J. (1989). College race and the early status attainment of black students. *Journal of Higher Education, 60(1)*, 82-107.

Pascarella, E. T., and Terenzeni, P. T. (1991). *How college affects Students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Pritchard, M. E. and Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development, 44*(1), 18-28.

Sedlacek, W. E. (2004). *Beyond the big test: Non-cognitive assessment in higher education*. San Francisco: Jossey-Bass.

Smart, J. C. and Pascarella, E. T. (1986). Socioeconomic achievements of former college students. *Journal of Higher Education, 57*(5), 529-549.

Smith, D. G. (1990). Women's colleges and coed colleges: Is there a difference for women? *Journal of Higher Education, 61*(2), 181-195.

Sprandel, H. Z. (1985). Career planning and counseling. In Noel, L., Levitz, R., Saluri, D. and Associates. *Increasing student retention: Effective programs and practices for reducing the dropout rate*. San Francisco, CA: Jossey-Bass.

Terenzini, P. T., Theophilides, C., and Lorang, W. (1984). Influences on students' perception of their personal development during the first three years of college. *Researching Higher Education 21,* 178–194.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nod edition). Chicago, IL: University of Chicago Press.

Tross, S. A., Harper, J. P., Osher, L. W., and Kneidinger, L. M. (2000). Not just the usual cast of characteristics: Using personality to predict college performance and retention. Journal *of College Student Development, 41*, 323-334.

Trow, M. (1996). Trust, markets and accountability in higher education: A comparative perspective. Center for Studies in Higher Education Research and Occasional Paper Series CSHE.1.96. Retrieved at http://cshe.berkeley.du/publications/docs/ROP.Trow.Trust.1.96.pdf.

Walpole, M. (2007). *Economically and educationally challenged students in higher education:Access to outcomes.* Series: ASHE Higher Education Report, v. 33, no. 3.

Wood, P. H. (1990). *The comparative academic abilities of students in education and other areas of a multi-focus university* (Report No. SP032663). Bowling Green State University. (ERIC Document Reproduction Service No. ED327480).

Zheng, J. L., Saunders, K. P., Shelley, M. C., and Whalen, D. F. (2002). Predictors of academic success for freshmen residence hall students. *Journal of College Student Development, 43*(2), 267-283.