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Studying the Impact of First-Year Seminar Completion on First-Generation Academic Success

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STUDYING THE IMPACT OF FIRST-YEAR SEMINAR COMPLETION ON FIRST-GENERATION ACADEMIC SUCCESS

By

AMBER NICOLE MIDDLETON, Bachelor of Business Administration

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FIRST-GENERATION ACADEMIC SUCCESS

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ABSTRACT

Of the first-time undergraduate students who enroll full-time at a four-year institution of higher education, only about half will complete a degree within six years (Kena et al., 2016), and this figure is even lower for those students whose parents did not attend college (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Warburton, Bugarin, & Nuñez, 2001). The purpose of this study was to examine the effectiveness of first-year seminars in increasing the academic success of first-generation college students. The study utilized OLS regressions, logit regressions, and predicted probabilities to examine the effects of first-year seminar completion on four elements of academic success of the first-generation student population: first-year grade point averages, first to second-year retention, four-year graduation rates, and six-year graduation rates. The study found that first-generation students who complete the first-year seminar course have higher first-year GPAs, are more likely to return to the institution after their first year, and are more likely to graduate within six years compared to those who do not complete the first-year seminar. Completion of the first-year seminar does not significantly influence four-year graduation rates. The effects of completing a first-year seminar course on grade point averages, retention, and graduation are not significantly different for first-generation college students compared to continuing-generation college students.

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CHAPTER 1

INTRODUCTION

In recent decades, the United States has seen increased access to postsecondary education for all segments of the population. Despite increased access, some historically underrepresented groups, such as first-generation college students, have difficulty succeeding at the postsecondary level. Research has shown that first-generation college students differ from their continuing-generation peers not only in their pre-college characteristics and familial support, but also in their transitional experience to college and ability to successfully complete a degree (Choy, 2001). Therefore, it is important to study how certain interventions may increase the success of this critical population of students. This study analyzed the effects of first-year seminar completion on the academic success of first-generation students at one regional public university.

Statement of the Problem

First-generation students tend to have lower grade point averages (GPAs), lower first to second-year retention rates, and lower graduation rates compared to their continuing-generation peers (Choy, 2001). These differences may be attributed to the fact that first-generation students have a lower sense of self-efficacy (Inman & Mayes, 1999), tend to begin college less academically prepared (Chen, 2005; Choy, 2001), and are overrepresented in the most disadvantaged racial and income groups (Chen, 2005; Choy, 2001; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Research suggests that first-year seminar programs are helpful in increasing retention and academic success for

the general population of college students (Clark & Cundiff, 2011; Habley & McClanahan, 2004; Porter & Swing, 2006). However, existing literature does not currently examine how these positive effects apply to the first-generation student population.

Purpose of the Study

The purpose of this study was to examine the effectiveness of first-year seminars in increasing the academic success of first-generation college students. Measures of effectiveness included first-year grade point averages, one-year retention, graduation within four years, and graduation within six years.

Research Questions

This study addressed the following research questions:

1. How do the first-year grade point averages of first-generation college students who complete a first-year seminar differ from those of first-generation students who do not complete the seminar?
2. How does the first to second-year retention of first-generation college students who complete a first-year seminar differ from that of first-generation students who do not complete the seminar?
3. How do the graduation rates of first-generation college students who complete a first-year seminar differ from those of first-generation students who do not complete the seminar?

4. Do the effects (or non-effects) of completing a first-year seminar course on grade point averages, retention, and graduation rates differ between first-generation and continuing-generation college students?

Significance of the Study

Of the first-time undergraduate students who enroll full-time at a four-year institution of higher education, only about half will complete a degree within six years (Kena et al., 2016), and this figure is even lower for those students whose parents did not attend college (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Warburton, Bugarin, & Nuñez, 2001). Most students who leave college without obtaining a degree do so within the first year (Barefoot, 2000; Johnson, 2012). Consequently, higher education institutions have employed many initiatives to support students in their first year of college. The first-year seminar course is the most commonly implemented intervention designed specifically for first-year students (Tobolowsky & Associates, 2008). This study sought to measure the effectiveness of first-year seminar programs on the success of first-generation college students, as well as all full-time, first-time undergraduates.

Limitations

Innumerable factors affect a student's GPA, retention, and eventual graduation. Although this study utilized multiple control variables, it was not possible to control for every causative factor.

It is important to note that students at the institution studied self-selected to participate in the first-year seminar by voluntarily registering for and attending the

course. Random assignment of students would increase the validity of the study. However, because the goal of the first-year seminar course is to increase student success, randomly assigning students to not participate in the course could be considered unethical. Also, the cost of the course (approximately $200 in the years studied) may have been a deterrent to participation.

Parents' education level was self-reported by students on their application for admission to the institution. Those students who chose not to answer the question were excluded from the study. Additionally, this study only included data from a single institution.

Delimitations

The study population included all full-time, first-time undergraduates in fall terms 2006, 2007, 2008, and 2009. Although these data were not the most recent available, these particular years were selected to allow for calculation of six-year graduation rates on all cohorts. Six-year graduation rates are commonly utilized as a measurement of student outcomes by postsecondary institutions and other agencies, including the Texas Legislative Budget Board and the U.S. Department of Education.

Only full-time, first-time undergraduate students were included in this study. Full-time, first-time undergraduate students are those students who have no prior postsecondary experience (except for college credits earned before graduation from high school) attempting 12 or more semester credit hours during the specified term, as defined by the U.S. Department of Education (2015).

CHAPTER 2

LITERATURE REVIEW

First-generation College Students

The literature includes multiple definitions of the term *first-generation*. This study utilized the most common definition and classified first-generation students as those whose parents have never attended college (Billson & Terry, 1982; Chen, 2005; Choy, 2001; Lohfink & Paulsen, 2005; Nuñez & Cuccaro-Alamin, 1998; Westbrook, 2010). Conversely, continuing-generation students were those students with at least one parent who had some measure of postsecondary education. This does not necessarily mean that the parent earned a degree, only that they attended college for any period of time (Giancola, Munz, & Trares, 2008; Lohfink & Paulsen, 2005; Westbrook, 2010).

Pre-College Characteristics of First-generation Students

As they enter college, first-generation college students differ from their peers in a number of ways that that may cause their college experience to be more difficult. First-generation college students report significantly lower levels of self-efficacy than do their continuing-generation counterparts (Inman & Mayes, 1999; Ramos-Sánchez & Nichols, 2007; Wang & Castañeda-Sound, 2008). Because confidence in academic ability is associated with better adjustment to college, first-generation students are less likely to successfully adapt to the postsecondary environment (Ramos-Sánchez & Nichols, 2007).

First-generation students also tend to begin college less academically prepared than their continuing-generation peers. First-generation students are less likely to have

taken a rigorous high school curriculum or an advanced placement test (Choy, 2001). They also score lower on senior achievement tests (Chen, 2005) and college entrance examinations compared to their continuing-generation peers (Chen, 2005; Choy, 2001; Warburton et al., 2001).

In addition to beginning college with less self-efficacy and less academically prepared, first-generation college students are overrepresented in disadvantaged racial, sex, and income groups. First-generation students are more likely to be non-white, female, and low-income (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Terenzini et al., 1996). In a 2005 study comparing the determinants of persistence for first-generation and continuing-generation students, Lohfink and Paulsen found that "being a Hispanic first-generation student, a lower income first-generation student, or a female first-generation student, made first-to-second year persistence more problematic" (2005, p. 418). In contrast, none of these variables were associated with persistence for continuing-generation students. In discussing the results of this study, Lohfink and Paulsen describe first-generation students as "inhabiting intersecting sites of oppression based on race, class, and gender" (2005, p. 411).

Transition to College

Regardless of generational status, the transition from high school to college is a critical juncture in a student's postsecondary career, and the majority of college students who drop out do so during their first year (Barefoot, 2000; Johnson, 2012). Many of these dropouts are not the result of academic failure, but of the students' inability to adapt

to their new postsecondary environment (Levitz & Hovland, 1998). This transition tends to be even more challenging for first-generation students who, in addition to the academic and social transitions faced by all new college students, must also transition culturally, all while receiving less family support (Terenzini et al., 1994) and managing additional commitments outside of school (Choy, 2001; Terenzini et al., 1996).

First-generation college students are more likely than their continuing-generation peers to be married (Warburton et al., 2001), have children (Nuñez & Cuccaro-Alamin, 1998), and work full-time while attending school (Choy, 2001; Terenzini et al., 1996; Warburton et al., 2001). They are also more likely to attend part-time (Warburton et al., 2001) and live off-campus (Nuñez & Cuccaro-Alamin, 1998). Because these factors represent competing priorities and less time spent on campus, they may inhibit first-generation students from fully integrating academically and socially. Nuñez and Cuccaro-Alamin (1998) found first-generation students less likely to participate in academic integration activities, such as discussing academic matters with faculty or studying with friends, and less likely to participate in social integration activities, such as school clubs or student assistance programs.

In addition to academic and social transitions, many first-generation students must also adapt culturally. When discussing the difficulty of this cultural transition, it is important to remember that these students are "*breaking*, not continuing, family tradition" (Terenzini et al., 1994, p. 63, emphasis in original). Many first-generation students receive less support from family and friends (Terenzini et al., 1996) and

encounter conflict between the culture of their family and friends and their new college culture (Nuñez & Cuccaro-Alamin, 1998). London (1992) explains that "these students live and share in the life and traditions of two distinct cultures, never quite wanting or willing to break with their past, even if permitted to do so, and never fully accepted, because of prejudice, in the culture in which they seek a place" (p. 7).

Outcomes of First-generation Students

While exact retention figures vary, it is widely understood that first-generation students are less likely than their continuing-generation peers to return for their second year of college (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Warburton et al., 2001). According to Choy (2001), first-generation students are twice as likely as continuing-generation students to drop out of college before the second year, and those who drop out are less likely than others to later reenroll. This holds true even when controlling for factors such as financial aid, race, and socioeconomic status, making first-generation status one of the most significant factors related to retention and degree attainment. Because retention is necessary for timely degree attainment, it is not surprising that first-generation students are also less likely to attain a bachelor degree within five years (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998).

It has been established that first-generation college students are at a distinct disadvantage relating to persistence and degree attainment. However, the literature also presents encouraging news for this group of students. Choy (2001) found that after graduation, first-generation and continuing-generation college students have similar

short-come labor outcomes. Choy's findings were consistent with the earlier work of Nuñez and Cuccaro-Alamin (1998) who determined that, if they attained a bachelor or associate degree, first-generation students earned comparable salaries and were employed in similar occupations as their continuing-generation peers.

First-Year Seminars

The first-year seminar course is the most commonly implemented intervention designed specifically for first-year students (Tobolowsky & Associates, 2008). Although first-year seminar programs vary across institutions, most programs seek to promote academic performance, persistence, and degree completion by integrating students into the university community both academically and socially (Goodman & Pascarella, 2006; Tobolowsky & Associates, 2008).

History of First-Year Seminars

Although first-year seminars have reportedly existed since the late 19th century, the modern movement began at University of South Carolina in 1972 with the primary goal of increasing understanding and communication between students, faculty, staff, and administrators (Tobolowsky & Associates, 2008). Other goals of the course included increasing retention, enhancing undergraduate education, and expanding students' understanding of the purpose of higher education. As other institutions witnessed the success of the program at University of South Carolina, they began to offer similar courses for first-year students. By 2005, 95 percent of four-year institutions in the United States offered some type of first-year seminar course (Pascarella & Terenzini, 2005).

Attributes of First-Year Seminars

The term "first-year seminar" encompasses a relatively diverse concept. A first-year seminar can be an elective or a required course. Moreover, first-year seminars vary in duration, content, structure, and credit value. Barefoot and Fidler's (1992) work coding first-year seminar programs into types or categories is helpful in understanding the various offerings of these programs.

Extended orientation seminars introduce students to university life and include topics such as study skills, student engagement, and campus resources. In *academic seminars with uniform content across sections*, some course time may be spent addressing extended orientation topics, but the majority of instruction is spent exploring a selected topic. Similarly, *academic seminars with variable content across sections* address interdisciplinary academic themes, but topics vary across sections and "may evolve from any discipline or may include societal issues" (Barefoot & Fidler, 1992). *Professional seminars* are organized and taught by the college of the student's major and often serve as an introduction to a specific discipline. Lastly, *basic study skills seminars* are typically offered to academically "at-risk" students and focus on study skills and life management skills. Many institutions employ multiple seminar types to meet the needs of their diverse student bodies. Barefoot and Fidler described programs utilizing multiple seminar types as *hybrid* first-year seminar programs.

First-year seminar courses may be instructed by faculty, student affairs professionals, or other campus professionals (Padgett & Keup, 2011; Smith, 2012).

Smith's (2012) study revealed no significant differences in the effectiveness of first-year seminar sections taught by faculty, student affairs staff, and institutional staff. Institutions commonly utilize upper-level undergraduate or graduate students as peer mentors or co-instructors of first-year seminars (Barefoot, 2005). According to Latino and Unite (2012), these student instructors offer much more than a cost-effective means of adding additional staff to the seminar. Peer educators offer a unique perspective and are perceived by first-year students as more approachable than professors. As first-year students "frequently mimic positive academic behaviors of peers and gravitate toward programs or activities in which peer educators are involved" (Latino & Unite, p. 33), these peer educators also serve as important role models.

Evaluation of First-Year Seminars

As with every educational initiative, assessment of first-year seminar programs is integral to measuring the effectiveness and understanding the value of the program, and many studies have compared the outcomes of first-year seminars against the stated goals. Goodman and Pascarella (2006) indicated that one "common goal of first-year seminars is to increase academic performance and persistence through academic and social integration" (p. 26). Tinto's (1975) seminal research on retention suggested that students who academically and socially integrate into the campus community increase their commitment to the institution and are more likely to graduate, and research indicates that first-year seminar courses have a positive impact on academic and social integration (Fidler, 1991; Goodman & Pascarella, 2006). In Fidler's (1991) study at the University

of South Carolina, students who participated in a first-year seminar were more likely to seek out a faculty member and use student services compared to non-participants. Students who participate in first-year seminar courses also had "more meaningful interactions with faculty and with other students" and became more involved in extracurricular activities (Goodman & Pascarella, 2006, p. 27).

Although increasing retention and GPA are two common goals of first-year seminar programs, the literature offers conflicting results regarding the impact of first-year seminar courses on these measures. Many studies associated participation in a first-year seminar course with increased student retention (Fidler, 1991; Porter & Swing, 2006; Schnell & Doetkott, 2002-2003). Other researchers, however, remained cautious of suggesting a positive relationship between first-year seminar participation and retention. Pascarella and Terenzini (2005) warned that no study is capable of controlling for all pre-college student variables and that these factors are likely to be confounded with the effects of participating in the seminar. Jamelske (2009) found students who participated in a first-year seminar course were not more likely to persist, but did earn higher GPAs than those who did not participate. After accounting for self-selection by matching on propensity scores, Clark and Cundiff (2011) found no impact on GPA and only a weak positive impact on retention.

The literature also suggests that student characteristics can affect the outcomes of first-year seminar courses (Potts & Schultz, 2008). Potts and Schultz (2008) studied the effects of combining a first-year seminar with learning communities. Overall, the effects

were not statistically significant. However, when the analysis was focused specifically on students identified as "at-risk" (those living off campus, scoring below the university's ACT test admission standard, or ranking below the university's high school rank admission standard), the positive effects of this combination became more evident.

Conclusion

Research suggests that first-year seminar programs are helpful in increasing academic success for the general population of college students (Clark & Cundiff, 2011; Habley & McClanahan, 2004; Porter & Swing, 2006). However, it is also clear that the pre-college characteristics, college transition experiences, and academic outcomes of first-generation students differ from those of their continuing-generation counterparts (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998). Because the literature indicates that student characteristics can affect the outcomes of first-year seminar courses (Potts & Schultz, 2008), it is possible that completion of a first-year seminar affects the academic success of first-generation students differently than their continuing-generation counterparts. This study examined the effects of first-year seminar completion on some elements of academic success of the first-generation student population, thus enhancing the body of knowledge regarding two prevalent subjects in higher education: first-generation college students and first-year seminars.

CHAPTER 3

DATA AND METHODS

Method of Data Collection

Before engaging in this research study, approval to conduct the study was obtained from the university's Institutional Review Board for Protection of Human Subjects in Research (see Appendix A). Upon receiving permission to proceed, student-level archival data were obtained from the study institution's Office of Institutional Research. Data did not include personally identifiable information. Only data previously collected by the Office of Institutional Research were utilized; students were not contacted (see Appendix B).

Study Population and Environment

As previously indicated, the study population included all full-time, first-time undergraduates in fall terms 2006, 2007, 2008, and 2009. The population also included full-time, first-time undergraduates students enrolled in the fall term who attended college for the first time in the prior summer term and students who entered with advanced standing (college credits earned before graduation from high school). This definition of full-time, first-time undergraduates is utilized by the U.S. Department of Education National Center for Education Statistics, Texas Legislative Budget Board, and other higher education agencies. Because archival data on the entire population was available, a sample was not selected. After excluding cases with incomplete data, the final study population included 6,798 students.

The institution studied is a comprehensive public university in a rural setting in the Southern United States. The university enrolls around 13,000 students and offers approximately 80 undergraduate majors, 40 graduate degrees, and three doctoral programs. Over 90 percent of first-time undergraduate students reside on campus.

Using Barefoot and Fidler's (1992) first-year seminar types, the seminar program at the study institution is classified as a *hybrid* program. Course topics include critical thinking skills, study skills, time and money management, goal setting, career planning, and a review of university resources and regulations. The seminar meets two hours per week and is graded with a letter grade. Students who complete the course earn one semester credit hour. Each section is taught by an instructor (faculty or institutional staff) and an upper-level student instructor, as is common among first-year seminar programs (Latino & Unite, 2012). Participation in the course is optional, and enrollment is limited to 25 students per section. Stated goals of the course include improved critical thinking skills, higher college grade point averages, and greater likelihood of continued enrollment in college leading to eventual graduation.

Variables

Four dependent variables, representing stated goals of the first-year seminar program at the study institution, were operationalized for this analysis. The "First-year GPA" variable, measured on a four-point scale, represents the cumulative grade point average of each student at the end of their first year enrolled. This ratio-level variable was used in Ordinary Least Squares (OLS) regression.

The next three dependent variables represent specific student success outcomes. "Returning Student," "Graduate 4 Years," and "Graduate 6 Years" are dichotomous variables that were used in logit regressions. Logit regressions allow for analyzing how each independent variable affects the probability of an outcome. The "Returning Student" variable scores students depending on whether they enrolled the fall term following their first year. This nominal variable was coded *zero* if the student did not enroll the fall term following their first year and *one* if the student did enroll.

The "Graduate 4 Years" variable scores students on whether they completed an undergraduate degree within four years of their first term enrolled. This nominal variable was coded *zero* if the student did not graduate within four years and *one* if the student did graduate within four years.

The "Graduate 6 Years" variable scores students on whether they completed an undergraduate degree within six years of their first term enrolled. This nominal variable was coded *zero* if the student did not graduate within six years and *one* if the student did graduate within six years. All students coded *one* on the "Graduate 4 Years" variable were also coded *one* on this variable.

With the three dichotomous dependent variables, it is important to note that a code of *one* represents a successful outcome – returned the following fall, graduated within four years, and graduated within six years. Therefore, positive coefficients in the logit results indicate an increased probability of a successful outcome. Summary statistics for the dependent variables are presented in Table 1.

Table 1: Summary Statistics - Dependent Variables					
	N	**Mean**	**Std. Dev.**	**Min**	**Max**
First-Year GPA	6,798	2.37	0.93	0	4
Returning Student	6,798	0.64	0.48	0	1
Graduate 4 Years	6,798	0.23	0.42	0	1
Graduate 6 Years	6,798	0.43	0.49	0	1

The independent variable of interest, "First-Year Seminar," scores students on whether they completed the first-year seminar within their first year of enrollment. This nominal variable was coded *zero* if the student did not complete the first-year seminar course within their first year of enrollment and *one* if the student did complete the course.

It is well established that first-generation college students differ from their continuing-generation peers. The literature also indicates that students who elect to take a first-year seminar course are different from those students who choose not to take the course (Clark & Cundiff, 2011). The current study controlled for many of these differences by selecting seven additional independent variables that are frequently cited as predictors of student success, including SAT composite score, high school rank percentile, family income, generational status, age, race/ethnicity, and sex (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Warburton et al., 2001). The aforementioned independent variables were used as controls in OLS regressions, logit regressions, and predicted probabilities.

The "SAT Score" variable, a ratio-level variable measured on a 1,600 point scale, is the sum of each students' SAT Math score and SAT Reading score. If a student's

record included multiple SAT scores (meaning they took the test more than once), only the highest score was included in this study. While ACT score is also a predictor of student success, collinearity issues (Pearson's *r* value of .79 between SAT and ACT scores) prevented inclusion of both types of scores. More students provided SAT scores; therefore, the SAT score variable was chosen for inclusion in the study.

The "High School Rank" variable is the high school class rank for each student expressed as a percentile. Because this ratio variable is expressed as a percentile, values range from *zero* to *100*. For example, a student with a rank percentile of *95* ranked higher than 95 percent of their high school graduating class.

The "Family Income" variable scores the sum of the student's adjusted gross income and the parent's adjusted gross income. This variable is ordinal in nature. Students with a family income of less than $20,000 are coded *one*, students with a family income ranging from $20,000 to $39,999 are coded *two*, students with a family income ranging from $40,000 to $59,999 are coded *three*, students with a family income ranging from $60,000 to $79,999 are coded *four*, and students with a family income of $80,000 or greater are coded *five*.

The "Generational Status" variable is nominal in nature. Continuing-generation students are coded *zero*; first-generation students are coded *one*. As outlined in the literature review, this study defined first-generation students as those whose parents have never attended college (Billson & Terry, 1982; Chen, 2005; Choy, 2001; Lohfink & Paulsen, 2005; Nuñez & Cuccaro-Alamin, 1998; Westbrook, 2010). Conversely,

students with at least one parent who attended college for any period of time were considered continuing-generation students (Giancola, Munz, & Trares, 2008; Lohfink & Paulsen, 2005; Westbrook, 2010).

The "Age" variable is the age (in years) of students as of the census date of the term in which they are considered a first-time undergraduate student. Age is a ratio-level variable. The "Race/Ethnicity" variable is coded *zero* for White and *one* for non-White. Because collinearity issues prevented the use of additional, more specific race and ethnicity categories (the race variables dropped from the models when all were included), non-White includes all other races and ethnicities. The "Sex" variable is coded *zero* for female and *one* for male.

Current literature suggests that differences exist between first-generation college students and their continuing-generation counterparts (Chen, 2005; Choy, 2001; Inman & Mayes, 1999; Nuñez & Cuccaro-Alamin, 1998; Ramos-Sánchez & Nichols, 2007; Wang & Castañeda-Sound, 2008; Warburton et al., 2001), but does not address whether these differences cause the effects of first-year seminar completion to vary between the two groups. The last independent variable addresses this question by measuring the interaction between the two independent variables of interest, "Generational Status" and "First-Year Seminar". Adding an interaction term to the regression model allows for testing of additional hypotheses and can increase understanding of the relationships between the variables in the model.

This interaction variable "Generational Status/First-Year Seminar Interaction" allows the researcher to determine whether the effects of first-year seminar completion differ for first-generation students compared to continuing-generation students, as to the effect on first-year grade point averages, first to second-year retention, four-year graduation rates, and six-year graduation rates. This nominal variable has a minimum of *zero* and a maximum of *one*. If the two variables are linked in an important way, results will be statistically significant. Summary statistics for the independent variables are presented in Table 2.

Table 2: Summary Statistics - Independent Variables

	N	Mean	Std. Dev.	Min	Max
First-Year Seminar	6,798	0.66	0.47	0	1
SAT Score	6,798	976.98	139.94	490	1520
High School Rank	6,798	64.28	23.21	0	100
Family Income	6,798	3.49	1.44	1	5
First Generation	6,798	0.18	0.38	0	1
Age	6,798	18.42	0.66	15	33
Race/Ethnicity	6,798	0.39	0.49	0	1
Sex	6,798	0.38	0.49	0	1
Generational Status/FYS Interaction	6,798	0.11	0.32	0	1

Methods

Three methods of analysis were utilized in this research – OLS regressions, logit regressions, and predicted probabilities. All statistical tests were run with STATA Data Analysis and Statistical Software (Version 14). OLS regressions were used to analyze the relationship between the ratio-level dependent variable First-Year GPA and the independent variables operationalized previously. OLS regressions predict linear

outcomes, where a one-unit change in an independent variable results in a one-unit change in the dependent variable, while controlling for the partial effects of the independent control variables. The OLS regression formula is presented in Equation 1 (E1).

$$E1: \quad \hat{y} = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3 (X_3) \ldots + \varepsilon$$

Where $\hat{y}$ is the predicted value of y (outcome), α is the y-intercept (constant), β_1 is the beta coefficient, X_1 is the variable value, and ε is the error term.

Logit regressions were used to analyze the relationship between the dichotomous dependent variables Returning Student, Graduate 4 Years, and Graduate 6 Years and the independent variables operationalized previously. Logit regressions predict the probability of an event occurring (returning, and graduating within four years, or graduating within six years) while controlling for the partial effects of the independent control variables. The logit regression formula is presented in Equation 2 (E2).

$$E2: \quad \Pr (y = 1 \mid X) = 1/1 + \exp(-X\beta)$$

Where $\Pr (y = 1 \mid X)$ is the probability of y being 1 (desired outcome) given (|) X (set of predictor variables) and β (regression coefficients). Unlike OLS, which assumes a linear relationship, logit is an exponential (exp) function that assumes a non-linear, S-shaped relationship.

Predicted probabilities were generated on logit regression outcomes. SPost, a collection of post-estimation commands developed by Long and Freese (2014), was used in STATA Data Analysis and Statistical Software (Version 14) to generate predicted

probabilities. In each of the predicted probabilities, the desired predicted outcome (return, graduate within four years, and graduate within six years) is a function of the independent variable of interest's (First-Year Seminar) minimum value of *zero* (did not complete seminar) and maximum value of *one* (did complete seminar), while holding the remaining independent variables at their mean value.

The predicted probability results on the logit regression outcomes show the probability of returning, graduating in four years, and graduating in six years having not completed the seminar course and the probability of returning, graduating in four years, and graduating in six years having completed the seminar course. The minimum value is then subtracted from the maximum value to calculate a "Difference" score. This score represents the increased probability, if any, of returning and graduating in four or six years for students who completed the first-year seminar. Additional predicted probabilities were generated to compare the effects of first-year seminar completion on the academic success of first-generation students and continuing-generation students.

SPost was also used to generate predicted GPA values on the OLS results. These predicted outcomes show the predicted GPA value for first-generation students having not completed the seminar course and the predicted GPA value for first-generation students having completed the seminar course.

Hypotheses

Based upon the earlier literature review, five research hypotheses and five null hypotheses were developed for this study. The study tested the following hypotheses:

H_1 – First-generation students who completed the first-year seminar course will have higher first-year GPAs than first-generation students who did not complete the first-year seminar, while controlling for SAT composite score, high school rank percentile, family income, generational status, age, race/ethnicity, and sex.

H_{01} – There is no relationship between completing the first-year seminar course and first-year GPAs.

H_2 – First-generation students who completed the first-year seminar course will have higher first to second-year retention than first-generation students who did not complete the first-year seminar, while controlling for SAT composite score, high school rank percentile, family income, generational status, age, race/ethnicity, and sex.

H_{02} – There is no relationship between completing the first-year seminar course and first to second-year retention.

H_3 – First-generation students who completed the first-year seminar course will have higher four-year graduation rates than first-generation students who did not complete the first-year seminar, while controlling for SAT composite score, high school rank percentile, family income, generational status, age, race/ethnicity, and sex.

H_{03} – There is no relationship between completing the first-year seminar course and four-year graduation rates.

H_4 – First-generation students who completed the first-year seminar course will have higher six-year graduation rates than first-generation students who did not complete the first-year seminar, while controlling for SAT composite score, high school rank percentile, family income, generational status, age, race/ethnicity, and sex.

H_{04} – There is no relationship between completing the first-year seminar course and six-year graduation rates.

H_5 – The effects of completing a first-year seminar course on grade point averages, retention, and graduation rates will be greater for first-generation college students compared to continuing-generation college students.

H_{05} – The effects, if any, of completing a first-year seminar course on grade point averages, retention, and graduation rates will not be significantly different for first-generation college students compared to continuing-generation college students.

Conclusion

To summarize, this study utilized OLS regressions, logit regressions, and predicted probabilities to examine the effects of first-year seminar completion on four elements of academic success of the first-generation student population: first-year grade

point averages, first to second-year retention, four-year graduation rates, and six-year graduation rates.

CHAPTER 4

RESULTS

Analysis and presentation of the data are included in this chapter. First, results from the OLS regressions and logit regressions are presented for the cumulative data and for each annual cohort (2006, 2007, 2008, and 2009). Next, predicted probabilities and interaction term results are discussed. Unless otherwise stated, the coefficients discussed are statistically significant.

Cumulative OLS Regressions

OLS regressions were used to analyze the relationship between the ratio-level dependent variable First-Year GPA and the independent variables listed in Table 3. OLS regressions predict linear outcomes, where a one-unit change in an independent variable results in a one-unit change in the dependent variable, while controlling for the partial effects of the independent control variables.

Table 3: OLS Regression - First-Year GPA (Cumulative)

	β	**S.E.**	**Sig**
First-Year Seminar	0.14	0.02	0.000
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.08	0.01	0.000
First Generation	-0.11	0.03	0.000
Age	0.02	0.02	0.252
Race/Ethnicity	-0.02	0.02	0.426
Sex	-0.26	0.02	0.000
Constant	-0.43	0.31	0.163
Adjusted $R^2 = 0.222$			
N = 6,798			

The OLS regression predicted that completing the First-Year Seminar, having higher SAT Scores, higher High School Rank, higher Family Income, and being female affected First-Year GPA positively, while being a first-generation student or male student affected First-Year GPA negatively. While Age affected First-Year GPA positively, and Race/Ethnicity affected it negatively, neither was statistically significant. Table 3 summarizes the OLS results.

First-year seminar completion predicted significantly higher first-year GPA values ($\beta = .14$, $p < .0001$). The independent variables listed in Table 3 explain 22.2 percent of the variance in First-Year GPA (Adjusted $R^2 = 0.222$).

Cumulative Logit Regressions

The logit regressions on the dichotomous student success outcome variables produced results consistent with the earlier literature review. When interpreting logit coefficients, it is important to note how the dependent variables were coded—zero represents the outcomes not occurring and one represents these events occurring (returning after one year, graduating within four years, or graduating within six years). Consequently, positive coefficients indicate that the independent variable increases the probability of an event occurring. Table 4 summarizes the analysis results.

As indicated in Table 4, the association between first-year seminar completion and one-year retention was positive, meaning that as participation in the first-year seminar program increases, one-year retention also increases. First-year seminar completion was also associated with increased likelihood of graduation within four years

(although not statistically significant) and increased likelihood of graduation within six years.

Table 4: Logit Regressions (Cumulative)			
	Dependent Variables		
Independent Variables	Returning Student	Graduated 4 Years	Graduated 6 Years
First-Year Seminar	0.29***	0.04	0.20***
	(0.06)	(0.07)	(0.05)
SAT Score	0.01***	0.01***	0.01***
	(0.01)	(0.01)	(0.01)
High School Rank	0.01***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)
Family Income	0.08***	0.18***	0.18***
	(0.02)	(0.03)	(0.02)
First Generation	-0.24***	-0.27**	-0.25***
	(0.07)	(0.09)	(0.07)
Age	0.01	-0.02	-0.01
	(0.04)	(0.05)	(0.04)
Race/Ethnicity	0.34***	-0.08	-0.03
	(0.06)	(0.07)	(0.06)
Sex	-0.14**	-0.74***	-0.37***
	(0.06)	(0.07)	(0.05)
Constant	-2.31**	-4.96***	-2.96***
	(0.81)	(0.99)	(0.81)
Pseudo R^2	0.03	0.09	0.06
Log Likelihood	-4259.25	-3340.57	-4371.57
N	6,798	6,798	6,798

Note: standard errors in parenthesis.
*p<.05, **p<.01, ***p<.001

First-generation status was negatively associated with one-year retention, graduation within four years, and graduation within six years. This finding reinforces

earlier literature (Choy, 2001; Nuñez & Cuccaro-Alamin, 1998; Warburton et al., 2001) regarding the struggles of first-generation college students.

As expected, both SAT scores and high school rank were positively associated with one-year retention, graduation within four years, and graduation within six years. Family income was also positively linked with all three student success outcomes. This means that the higher the family income, the more likely a student was to return after the first year, graduate within four years, and graduate within six years.

Age increases the probability of a student returning after one year. However, Age decreases the probability of a student graduating within four years and graduating within six years. With that said, none of these coefficients were statistically significant.

The Race/Ethnicity variable produced interesting results. Being non-White was associated with increased one-year retention. Being non-White was associated with decreased four-year and six-year graduation rates, but the graduation coefficients were not statistically significant. Lastly, being female was positively associated with all three student success outcomes. Female students were more likely to return after one year, graduate within four years, and graduate within six years, while male students were less likely to achieve these outcomes.

2006 OLS Regressions

The OLS regression on the 2006 cohort predicted that completing the First-Year Seminar, having higher SAT Scores, higher High School Rank, higher Family Income, and being female affected First-Year GPA positively, while being a First-generation or

male student affected First-Year GPA negatively. While Age affected First-Year GPA negatively, and Race/Ethnicity affected it positively, neither was statistically significant. Table 5 summarizes the OLS results.

Table 5: OLS Regression - First-Year GPA (2006)

	β	S.E.	Sig
First-Year Seminar	0.20	0.04	0.000
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.05	0.02	0.006
First Generation	-0.15	0.06	0.014
Age	-0.05	0.03	0.177
Race/Ethnicity	0.01	0.05	0.999
Sex	-0.30	0.04	0.000
Constant	0.65	0.66	0.325
Adjusted R^2 = .239			
N = 1,623			

First-year seminar completion predicted significantly higher first-year GPA values for the 2006 cohort ($\beta = 0.20$, $p < .001$). The results of the regression indicate that the independent variables listed in Table 5 explain 23.9 percent of the variance in First-Year GPA (Adjusted $R^2 = 0.239$).

2006 Logit Regressions

Logit regressions were run on the 2006 full-time, first-time undergraduate cohort. As indicated in Table 6, the association between first-year seminar completion and one-year retention was positive for the 2006 cohort. First-year seminar completion was also associated with increased likelihood of graduation within six years.

Table 6: Logit Regressions (2006)

	Dependent Variables		
Independent Variables	Returning Student	Graduated 4 Years	Graduated 6 Years
First-Year Seminar	0.37***	0.14	0.29**
	(0.11)	(0.13)	(0.11)
SAT Score	0.01*	0.01	0.01**
	(0.01)	(0.01)	(0.01)
High School Rank	0.01***	0.02	0.02***
	(0.01)	(0.01)	(0.01)
Family Income	0.11**	0.23***	0.22***
	(0.04)	(0.05)	(0.04)
First Generation	-0.25	-0.30	-0.3*
	(0.16)	(0.20)	(0.16)
Age	-0.05	-0.01	-0.08
	(0.09)	(0.11)	(0.09)
Race/Ethnicity	0.44***	0.08	0.14
	(0.13)	(0.15)	(0.13)
Sex	-0.02	-0.74***	-0.42***
	(0.11)	(0.14)	(0.11)
Constant	-0.08	-4.49*	-1.52
	(1.76)	(2.17)	(1.81)
Pseudo R^2	0.03	0.08	0.06
Log Likelihood	-1010.51	-820.13	-1051.83
N	1,623	1,623	1,623

Note: standard errors in parenthesis.
*p<.05, **p<.01, ***p<.001

Both SAT scores and high school rank were positively linked with one-year retention and graduation within six years. Family income was also positively associated with all three student success outcomes. First-generation status was negatively associated

with one-year retention, graduation within four years, and graduation within six years, though only the coefficient for the "Graduated 6 Years" was statistically significant.

Being non-White was associated with increased one-year retention. Lastly, female students were more likely to graduate within four years and graduate within six years, while male students were less likely to achieve these outcomes.

2007 OLS Regressions

The OLS regression on the 2007 cohort predicted that having higher SAT Scores, higher High School Rank, higher Family Income, and being female affected First-Year GPA positively, while being a male student affected First-Year GPA negatively. While Age affected First-Year GPA positively, and Race/Ethnicity (being non-White) affected it negatively, neither was statistically significant. Being a first-generation student affected First-Year GPA negatively, although the coefficient was not statistically significant. The 2007 OLS results are summarized in Table 7.

Table 7: OLS Regression - First-Year GPA (2007)

	β	S.E.	Sig
First-Year Seminar	0.04	0.04	0.380
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.07	0.02	0.000
First Generation	-0.07	0.06	0.259
Age	0.02	0.04	0.628
Race/Ethnicity	-0.04	0.05	0.444
Sex	-0.21	0.04	0.000
Constant	-0.61	0.73	0.402
Adjusted $R^2 = 0.218$			
N = 1,605			

First-Year Seminar completion did not predict significantly higher first-year GPA values for the 2007 cohort. The results of the regression indicate that the independent variables listed in Table 7 explain 21.8 percent of the variance in First-Year GPA (Adjusted $R^2 = 0.218$).

2007 Logit Regressions

Logit regressions were run on the 2007 full-time, first-time undergraduate cohort. As indicated in Table 8, the association between first-year seminar completion and one-year retention was positive. The results on the four-year and six-year graduation dependent variables were weaker for the 2007 cohort. First-year seminar completion was associated with increased likelihood of graduation within four years and increased likelihood of graduation within six years, but neither coefficient was statistically significant.

SAT scores were positively associated with one-year retention and graduation within four years for the 2007 cohort. High school rank was positively associated with all three student success outcomes, and family income was also positively associated with graduation within four years and graduation within six years. First-generation status was negatively associated with one-year retention, graduation within four years, and graduation within six years, although none of the coefficients were statistically significant. Being non-White was associated with increased one-year retention, and being male was negatively associated with graduation within four years.

Table 8: Logit Regressions (2007)

	Dependent Variables		
Independent Variables	Returning Student	Graduated 4 Years	Graduated 6 Years
First-Year Seminar	0.45***	0.13	0.21
	(0.11)	(0.14)	(0.11)
SAT Score	0.01***	0.01***	0.01
	(0.01)	(0.01)	(0.01)
High School Rank	0.01***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)
Family Income	0.07	0.19***	0.18***
	(0.04)	(0.05)	(0.04)
First Generation	-0.05	-0.15	-0.23
	(0.15)	(0.19)	(0.15)
Age	0.06	-0.04	-0.09
	(0.10)	(0.12)	(0.10)
Race/Ethnicity	0.47***	0.10	0.20
	(0.13)	(0.15)	(0.13)
Sex	0.06	-0.49***	-0.17
	(0.11)	(0.14)	(0.11)
Constant	-3.50	-4.73*	-1.27
	(1.84)	(2.26)	(1.85)
Pseudo R^2	0.03	0.08	0.05
Log Likelihood	-1019.63	-793.59	-1043.90
N	1,605	1,605	1,605

Note: standard errors in parenthesis.
*p<.05, **p<.01, ***p<.001

2008 OLS Regressions

The OLS regression on the 2008 cohort predicted that completing the First-Year Seminar, having higher SAT Scores, higher High School Rank, higher Family Income, and being female affected First-Year GPA positively, while being a male student affected

First-Year GPA negatively. Age affected First-Year GPA positively, and Race/Ethnicity (being non-White) affected it negatively. However, neither coefficient was statistically significant. Being a first-generation student affected First-Year GPA negatively, although the coefficient was not statistically significant. The 2008 OLS results are summarized in Table 9.

Table 9: OLS Regression - First-Year GPA (2008)

	β	S.E.	Sig
First-Year Seminar	0.18	0.04	0.000
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.09	0.02	0.000
First Generation	-0.09	0.05	0.084
Age	0.06	0.03	0.025
Race/Ethnicity	-0.05	0.04	0.240
Sex	-0.19	0.04	0.000
Constant	-1.07	0.53	0.042
Adjusted $R^2 = 0.220$			
N = 1,741			

First-year seminar completion significantly predicted higher first-year GPA values ($\beta = .18$, $p < .001$). The results of the regression indicate that the independent variables listed in Table 9 explain 22 percent of the variance in First-Year GPA (Adjusted $R^2 = 0.220$).

2008 Logit Regressions

Logit regressions were run on the 2008 full-time, first-time undergraduate cohort. As indicated in Table 10, the association between first-year seminar completion and one-

year retention was positive, as was the association between first-year seminar completion and graduation within six years, but neither of these variables was statistically significant. For the 2008 cohort, the association between first-year seminar completion and graduation within four years was actually negative.

Table 10: Logit Regressions (2008)

	Dependent Variables		
Independent Variables	Returning Student	Graduated 4 Years	Graduated 6 Years
First-Year Seminar	0.11	-0.07	0.20
	(0.11)	(0.13)	(0.11)
SAT Score	0.01**	0.01***	0.01**
	(0.01)	(0.01)	(0.01)
High School Rank	0.01***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)
Family Income	0.06	0.13*	0.12*
	(0.04)	(0.05)	(0.04)
First Generation	-0.08	-0.31	-0.21
	(0.14)	(0.18)	(0.14)
Age	0.02	-0.10	-0.05
	(0.07)	(0.10)	(0.08)
Race/Ethnicity	0.18	-0.21	-0.38***
	(0.12)	(0.14)	(0.12)
Sex	-0.15	-0.88***	-0.42***
	(0.11)	(0.14)	(0.11)
Constant	-1.95	-3.47	-1.81
	(1.41)	(1.97)	(1.49)
Pseudo R^2	0.02	0.11	0.08
Log Likelihood	-1090.47	-844.59	-1104.12
N	1,741	1,741	1,741

Note: standard errors in parenthesis.
*p<.05, **p<.01, ***p<.001

Both SAT scores and high school rank were positively associated with one-year retention, graduation within four years, and graduation within six years. Family income was also positively associated with graduation within four years and graduation within six years. First-generation status was negatively associated with one-year retention, graduation within four years, and graduation within six years, although none of the coefficients were statistically significant. Being non-White was negatively associated with graduation within six years, and being male was negatively associated with graduation within four years and graduation within six years.

2009 OLS Regressions

For the 2009 cohort, the OLS regression predicted that completing the First-Year Seminar, having higher SAT Scores, higher High School Rank, higher Family Income, and being female affected First-Year GPA positively, while being a First-generation or Male student affected First-Year GPA negatively. Table 11 summarizes the OLS results.

Table 11: OLS Regression - First-Year GPA (2009)

	β	**S.E.**	**Sig**
First-Year Seminar	0.10	0.04	0.013
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.10	0.16	0.000
First Generation	-0.13	0.05	0.013
Age	0.13	0.03	0.672
Race/Ethnicity	0.01	0.04	0.828
Sex	-0.34	0.04	0.000
Constant	-0.26	0.60	0.659
Adjusted $R^2 = 0.220$			
N = 1,829			

First-year seminar completion significantly predicted higher first-year GPA values ($\beta = .10$, $p < .05$). The results of the regression indicate that the independent variables listed in Table 11 explain 22 percent of the variance in First-Year GPA (Adjusted $R^2 = 0.220$).

2009 Logit Regressions

As indicated in Table 12, the association between first-year seminar completion and one-year retention was positive for the 2009 cohort. As with the 2008 cohort, the association between first-year seminar completion and graduation within four years was actually negative.

Both SAT scores and high school rank were positively associated with one-year retention, graduation within four years, and graduation within six years. Family income was also positively associated with graduation within four years and graduation within six years. First-generation status was negatively associated with one-year retention and graduation within six years. Being non-White was associated with increased one-year retention, and being female was positively associated with all three student success outcomes. Female students were more likely to return after one year, graduate within four years, and graduate within six years, while male students were less likely to achieve these outcomes.

Table 12: Logit Regressions (2009)

	Dependent Variables		
Independent Variables	Returning Student	Graduated 4 Years	Graduated 6 Years
First-Year Seminar	0.24*	-0.06	0.16
	(0.11)	(0.13)	(0.11)
SAT Score	0.01***	0.01***	0.01***
	(0.01)	(.01)	(0.01)
High School Rank	0.01***	0.02***	0.12***
	(0.01)	(0.01)	(0.01)
Family Income	0.07	0.19***	0.18***
	(0.04)	(0.05)	(0.04)
First Generation	-0.55***	-0.32	-0.29*
	(0.13)	(0.18)	(0.14)
Age	0.01	0.05	0.11
	(0.08)	(0.09)	(0.08)
Race/Ethnicity	0.31**	-0.25	0.01
	(0.12)	(0.14)	(0.12)
Sex	-0.27**	-0.84***	-0.48***
	(0.11)	(0.14)	(0.11)
Constant	-2.54	-6.68***	-6.27***
	(1.59)	(1.80)	(1.61)
Pseudo R^2	0.04	0.12	0.08
Log Likelihood	-1120.44	-865.27	-1149.28
N	1,829	1,829	1,829

Note: standard errors in parenthesis.
*p<.05, **p<.01, ***p<.001

Predicted GPA Outcomes

Predicted outcomes were generated on the OLS regression results. The predicted outcomes control for the effect of being a first-generation student on first-year GPA by keeping that variable constant at one (1 = student was first-generation), while varying

the first-year seminar variable from zero (0 = did not take the first-year seminar) to one (1 = did take the first-year seminar). All other variables were held at their mean value. The results are summarized in Table 13.

Table 13: Predicted First-Year GPA of First-Year Seminar & First Generation

	Min	Max	Change
Cumulative	2.21	2.35	0.14
2006 Cohort	2.18	2.38	0.20
2007 Cohort	2.24	2.28	0.04
2008 Cohort	2.20	2.38	0.18
2009 Cohort	2.24	2.34	0.10

For the Cumulative dataset, the predicted GPA for first-generation students who completed the first-year seminar was .14 points higher than the predicted GPA for first-generation students who did not complete the seminar course. Predicted probabilities were also generated on each annual cohort. While the results are small (difference scores ranging from .04 to .20) they are all in the hypothesized direction, and all are statistically significant.

Cumulative Predicted Probabilities

Predicted probabilities were also generated on the logit regression outcomes. Two independent predicted probabilities were run to create a baseline of the effects of completing the first-year seminar and being a first-generation student on the probability of retention (returning after first year). The baseline results show that completing the

first-year seminar increases the probability of retention by 6.6 percent, while being a first-generation student decreases the probability of retention by 5.6 percent.

The following predicted probabilities control for the effect of being a first-generation student on returning after first year, graduating in four years, and graduating in six years by keeping that variable constant at one (1 = student was first-generation), while varying the first-year seminar variable from zero (0 = did not take the first-year seminar) to one (1 = did take the first-year seminar). All other variables were held at their mean value.

Table 14: Predicted Probabilities of First-Year Seminar & First-generation (Cumulative)

	Min	Max	Change
Return 1st Year	56.4%	63.3%	6.9%
Graduate in Four Years	16.7%	17.2%	0.5%
Graduate in Six Years	34.9%	39.6%	4.7%

The probability of a first-generation student returning having not completed the seminar course was 56.4 percent, and the probability of a first-generation student returning having completed the course was 63.3 percent. This means that the predicted probability of a first-generation student returning after their first year was 6.9 percent higher for students who complete the first-year seminar, holding all other independent variables at their means. Similarly, the predicted probability of a first-generation student graduating within six years was 4.7 percent higher for students who complete the first-year seminar, holding all other independent variables at their means. The four-year

graduation rate was also slightly higher (.5 percent) higher for first-generation students who completed the first-year seminar compared to first-generation students who did not complete the seminar course. These results are summarized in Table 14.

For comparison purposes, predicted probabilities were generated for continuing-generation students. The difference scores were compared to test hypothesis H_5, which stated that effects of completing a first-year seminar course on retention and graduation rates will be greater for first-generation college students compared to continuing-generation college students. For the Return 1st Year variable, the difference score (measuring the effect of the first-year seminar) was .40 percent greater for first-generation students compared to continuing-generation students. For the Graduate in Four Years variable, the difference score was .10 percent lower for first-generation students, and for the Graduate in Six Years variable, the difference score was .20 percent lower for first-generation students.

Interaction Term

The Generational Status/First-Year Seminar Interaction variable was added to all 15 models (OLS regressions, logit regressions, and predictive probabilities for five cohorts) to test hypothesis H_5, which stated that effects of completing a first-year seminar course on grade point averages, retention, and graduation rates will be greater for first-generation college students compared to continuing-generation college students. The results were not statistically significant for 13 of the 15 models. The two significant results, Cumulative OLS regressions and 2008 OLS regressions, are likely statistical

anomalies (See Appendix C for interaction term results). These findings reinforce the previously discussed predictive probabilities. Although not statistically significant, the results of the interaction term are valuable because they facilitate evaluation of the hypotheses.

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

This study was designed to examine the effectiveness of first-year seminars in increasing the academic success of first-generation college students. Measures of effectiveness included first-year grade point averages, one-year retention, graduation within four years, and graduation within six years. The study sought to answer the following research questions:

1. How do the first-year grade point averages of first-generation college students who complete a first-year seminar differ from those of first-generation students who do not complete the seminar?
2. How does the first to second-year retention of first-generation college students who complete a first-year seminar differ from that of first-generation students who do not complete the seminar?
3. How do the graduation rates of first-generation college students who complete a first-year seminar differ from those of first-generation students who do not complete the seminar?
4. Do the effects (or non-effects) of completing a first-year seminar course on grade point averages, retention, and graduation rates differ between first-generation and continuing-generation college students?

The institution studied is a comprehensive public university in a rural setting enrolling approximately 13,000 students. The study population included all full-time, first-time undergraduates in fall terms 2006, 2007, 2008, and 2009. After excluding cases with incomplete data, the final study population included 6,798 students. Using Barefoot and Fidler's (1992) first-year seminar types, the seminar program at the study institution is classified as a *hybrid* program.

Three methods of analysis were utilized in this research – OLS regressions, logit regressions, and predicted probabilities. All statistical tests were run with STATA Data Analysis and Statistical Software (Version 14).

Findings

Hypothesis H_{01} stated that there is no relationship between completion of the first-year seminar course and first-year GPAs. OLS regressions were used to analyze the relationship between the ratio-level dependent variable First-Year GPA and the independent variable First-Year Seminar. First-year seminar completion significantly predicted higher first-year GPA values ($\beta = .14$, $p < .0001$) for the Cumulative data set. Additionally, first-year seminar completion significantly predicted higher first-year GPA values for the 2006, 2008, and 2009 cohorts ($p < .05$).

Predicted outcomes were generated on the OLS regression results. The predicted outcomes control for the effect of being a first-generation student on first-year GPA by keeping that variable constant at one (1 = student was first-generation), while varying the first-year seminar variable from zero (0 = did not take the first-year seminar) to one

(1 = did take the first-year seminar). All other variables were held at their mean value.

For the Cumulative dataset, the predicted GPA for first-generation students who completed the first-year seminar was .14 points higher than the predicted GPA for first-generation students who did not complete the seminar course. Predicted probabilities were also generated on each annual cohort. Each cohort produced statistically significant results. Consequently, the evidence was sufficient to reject Hypothesis H_{01}.

Hypothesis H_{02} stated that there is no relationship between completing the first-year seminar course and first to second-year retention. Logit regressions were used to analyze the relationship between the dependent variable Returning Student and the independent variable First-Year Seminar. Logit regressions predict the probability of an event occurring (returning), while controlling for the partial effects of the independent control variables (SAT Score, High School Rank, Family Income, First Generation, Age, Race/Ethnicity, and Sex). For the Cumulative data set, the association between first-year seminar completion and one-year retention was significantly positive ($p < .001$). The association between first-year seminar completion and one-year retention was also positive for each of the annual cohorts (although the results for the 2008 cohort were not statistically significant).

Predicted probabilities generated on the logit regression outcomes controlled for the effect of being a first-generation student on returning after first year by keeping that variable constant at one (1 = student was first-generation), while varying the first-year

seminar variable from zero (0 = did not take the first-year seminar) to one (1 = did take the first-year seminar).

The predicted probability of a first-generation student returning after their first year was 6.9 percent higher for students who complete the first-year seminar, holding all other independent variables at their means. These results are sufficient to reject Hypothesis H_{02}. First-year seminar completion significantly affects one-year retention for both the first-generation population and the general population of full-time, first-time undergraduates.

Hypothesis H_{03} stated that there is no relationship between completing the first-year seminar course and four-year graduation rates. Logit regressions were used to analyze the relationship between the dependent variable Graduated 4 Years and the independent variable First-Year Seminar. For the Cumulative data set, the relationship between first-year seminar completion and one-year retention was positive, but not statistically significant. First-year seminar completion was also positively associated with graduation within four years for 2006 and 2007 cohorts, though neither was statistically significant. The relationship between first-year seminar completion and graduation within four years was negative for 2008 and 2009 cohorts.

Predicted probabilities generated on the logit regression outcomes controlled for the effect of being a first-generation student on graduating within four years by keeping that variable constant at one (1 = student was first-generation), while varying the first-year seminar variable from zero (0 = did not take the first-year seminar) to one (1 = did take the first-year seminar). The predicted probability of a first-generation student graduating

within four years was only .5 percent higher for students who complete the first-year seminar, holding all other independent variables at their means. When evaluated in total, the evidence was not sufficient to reject Hypothesis H_{03}.

Hypothesis H_{04} stated that there is no relationship between first-year seminar completion and six-year graduation rates. Logit regressions were used to analyze the relationship between the dependent variable Graduated 6 Years and the independent variable First-Year Seminar. For the Cumulative data set, the association between first-year seminar completion and graduation within six years was significantly positive ($p < .001$), meaning that as participation in the first-year seminar program increased, graduation within six years also increased. The relationship between first-year seminar completion and graduation within six years was positive for all four annual cohorts, although it was only statistically significant for the 2006 cohort.

Predicted probabilities generated on the logit regression outcomes controlled for the effect of being a first-generation student on graduation within six years by keeping that variable constant at one (1 = student was first-generation), while varying the first-year seminar variable from zero (0 = did not take the first-year seminar) to one (1 = did take the first-year seminar).

The predicted probability of a first-generation student graduating within six years was 4.7 percent higher for students who completed the first-year seminar, holding all other independent variables at their means. These results are sufficient to reject Hypothesis H_{04}. First-year seminar completion significantly affects graduation within six years for both

the first-generation population and the general population of full-time, first-time undergraduates.

Hypothesis H_{05} stated that the effects, if any, of completing a first-year seminar course on grade point averages, retention, and graduation rates will not be significantly different for first-generation college students compared to continuing-generation college students. To test this hypothesis, predicted probabilities were generated on the logit regression outcomes and the Generational Status/First-Year Seminar Interaction variable was added to all models.

For comparison purposes, predicted probabilities were generated for first-generation students and continuing-generation students. The first set of predicted probabilities controlled for the effect of being a first-generation student on returning after first year, graduating in four years, and graduating in six years by keeping that variable constant at one (1 = student is first generation), while varying the first-year seminar variable from zero (0 = did not take first-year seminar) to one (1 = did take first-year seminar). The second set of predicted probabilities controlled for the effect of being a first-generation student on returning after first year, graduating in four years, and graduating in six years by keeping that variable constant at zero (0 = student is continuing-generation), while varying the first-year seminar variable from zero (0 = did not take first-year seminar) to one (1 = did take first-year seminar). All other variables were held at their mean value.

The difference scores for each group were then compared. For the Return 1st Year variable, the difference score (measuring the effect of the first-year seminar) was 0.40

percent higher for first-generation students compared to continuing-generation students. For the Graduate in Four Years variable, the difference score was .10 percent lower for first-generation students, and for the Graduate in Six Years variable, the difference score was .20 percent lower for first-generation students. These variances were considered marginal.

Furthermore, the Generational Status/First-Year Seminar Interaction variable was added to all 15 models (OLS regressions, logit regressions, and predictive probabilities for five cohorts). The results were not statistically significant for 13 of the 15 models. These results indicate that null hypothesis H_{05} cannot be rejected; the effects of completing a first-year seminar course on retention and graduation rates are not significantly different for first-generation college students compared to continuing-generation college students.

Conclusions

Several conclusions may be drawn based upon the results of this study. First, full-time, first-time undergraduate students who complete the first-year seminar course have higher first-year GPAs than students who do not complete the first-year seminar. Students who complete the first-year seminar course are also more likely to return to the institution after their first year compared to students who do not complete the first-year seminar. Completion of the first-year seminar does not significantly influence four-year graduation rates. First-year seminar completion does, however, positively affect six-year graduation rates. The effects of completing a first-year seminar course on grade point

averages, retention, and graduation rates are not significantly different for first-generation college students compared to continuing-generation college students.

In short, the first-year seminar effectively increases first-year GPAs, first to second-year retention, and six-year graduation rates. This holds true for both first-generation students and continuing-generation students.

Implications

Because the first-year seminar was found to be an effective intervention for first-generation college students, university administrators may consider subsidizing all or part of the cost of enrollment in the course for first-generation students. While this idea would involve upfront costs, research shows that it is much more cost-effective to retain a current student than to replace them with a new admit (Wellman, Johnson, & Steele, 2012).

Another option for increasing participation in the program is making the first-year seminar a required course for all first-time undergraduates. This change would ensure that every first-time undergraduate received the benefits associated with the first-year seminar program, but are also negative ramifications to consider. Requiring an additional course would increase the financial burden of the students. In addition, the semester credit hour associated with this course would count toward the students' undergraduate funding limit, which restricts the number of credit hours eligible for state funding.

Recommendations for Further Study

Researchers should consider replication studies at other institutions to determine if the results of this study may be generalized to other first-year seminar programs. In addition, further years of data could be added to the current study to clarify or enhance the findings.

Researchers should also consider studying the deterrents to participation in a first-year seminar program. By identifying factors that limit participation, action may be taken to remove these barriers.

While the results of this study indicate that completion of the first-year seminar positively affects certain student-success outcomes, the effects are not significantly different for first-generation college students compared to continuing-generation college students. Further research should examine how the first-year seminar program might better serve first-generation college students. Findings could be utilized to develop programming and curriculum enhancements in order to better serve the first-generation population.

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APPENDICES

APPENDIX A

IRB APPROVAL

Institutional Review Board for the Protection of Human Subjects in Research
P.O. Box 13018, SFA Station • Nacogdoches, Texas 75962-3046
Phone (936) 468-5496 • Fax (936) 468-1573

TO: Lee Payne & Amber Middleton
Government
PO Box 13045
Nacogdoches, TX 75962

RE: Project Title: Studying the Impact of First Year Seminar Completion on First Generation Academic Success
Case # AY2016-1256

TYPE OF RESEARCH: Project Type: Thesis

FROM: Pauline M. Sampson, Chair, IRB-H Pauline M. Sampson

DATE: March 2, 2016

I would like to thank you for submitting your project entitled "Studying the Impact of First Year Seminar Completion on First Generation Academic Success" to the IRB for review. It has been reviewed and has been **Approved**, based on the following review criteria:

> CFR §46.101(b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your project has approval through **March 2, 2017**, should you need additional time to complete the study you will need to apply for an extension prior to that date. The IRB should be notified of any planned changes in the procedures during the approval period, as additional review will be required by the IRB, prior to implementing any changes, except when changes are necessary to eliminate immediate hazards to the research participants. The researcher is also responsible for promptly notifying the IRB of any unanticipated or adverse events involving risk or harm to participants or others as a result of the research.

All future correspondence regarding this project should include the case number **AY2016-1256.**

APPENDIX B

INSTITUTIONAL RESEARCH APPROVAL

STEPHEN F. AUSTIN STATE UNIVERSITY

Office of Institutional Research
P.O. Box 6194, SFA Station • Nacogdoches, Texas 75962-6194
Phone (936) 468-3806 • Fax (936) 468-2642

February 26, 2016

To whom it may concern:

This letter documents my approval for Amber Middleton to utilize select archival data previously collected by my office for the purpose of studying the impact of first-year seminar completion on the academic success of first-generation college students. The data records will not contain personally identifiable information and no subjects will be contacted through the course of the study.

Please contact me if questions arise.

Regards,

Karyn L. Hall
Director of Institutional Research

APPENDIX C

INTERACTION TERM RESULTS

OLS Regression - First Year GPA with Interaction (Cumulative)			
	β	**S.E.**	**Sig**
SFA 101	0.11	0.02	0.000
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.08	0.01	0.000
First Generation	-0.22	0.05	0.000
Age	0.02	0.02	0.234
Race/Ethnicity	-0.02	0.02	0.442
Sex	-0.26	0.02	0.000
Gen/101 Interaction	0.17	0.06	0.002
Constant	-0.42	0.31	0.169
Adjusted $R^2 = 0.223$			
N = 6,798			

OLS Regression - First Year GPA with Interaction (2008)			
	β	**S.E.**	**Sig**
SFA 101	0.12	0.05	0.007
SAT Score	0.01	0.01	0.000
High School Rank	0.01	0.01	0.000
Family Income	0.08	0.02	0.000
First Generation	-0.29	-9	0.002
Age	0.06	0.03	0.021
Race/Ethnicity	-0.05	0.04	0.279
Sex	-0.19	0.04	0.000
Gen/101 Interaction	0.29	0.11	0.009
Constant	-1.05	0.52	0.046
Adjusted $R^2 = 0.227$			
N = 1,741			

VITA

Amber Middleton was born January 1, 1985. After graduating Valedictorian from Alto High School in 2003, she attended Texas A&M University at College Station, Texas where she majored in Information and Operations Management. She received the degree of Bachelor of Business Administration from Texas A&M University in 2006. After being employed in third-party logistics for two years, Amber began working at Stephen F. Austin State University as a Research Analyst in the Office of Institutional Research. In 2012, she entered the Graduate School of Stephen F. Austin State University and received the degree of Master of Interdisciplinary Studies in December of 2016. Amber currently serves as the Associate Director for Institutional Research at Stephen F. Austin State University.

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APA Style Manual, 6th edition

This thesis was typed by Amber Middleton.