

## ABSTRACT

Title of Document: THE ROLE OF DEMOGRAPHIC, PRE-COLLEGE, AND INVOLVEMENT FACTORS ON POSTSECONDARY ACADEMIC PERFORMANCE OF FIRST-GENERATION COLLEGE STUDENTS: FINDINGS FROM A NATIONAL STUDY.

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This study explored whether factors, such as demographic characteristics, pre-college academic achievement (measured by self-reported high school grade point average), and college involvement have an influence on the postsecondary academic achievement of first-generation college students as measured by self-reported college grade point average. This study addressed first-generation college students who attend a four-year institution. This exploration used Astin's (1970; 1993) *inputs-environments-outcomes* model as a theoretical framework and utilized multiple regression for statistical analysis. The findings showed that the four blocks in the study explained approximately 12.4% of the variance of postsecondary academic achievement. Specifically, demographic characteristics and pre-college academic achievement explained the majority of the variance of postsecondary academic achievement. This study's findings cautiously offer practical implications for higher education administrators and researchers.

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FACTORS ON POSTSECONDARY ACADEMIC PERFORMANCE OF  
FIRST-GENERATION COLLEGE STUDENTS: FINDINGS FROM A  
NATIONAL STUDY.

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## DEDICATION

My thesis is dedicated to both of my parents, Ms. Wilma G. Mitchell, and Mr. Albert W. Robinson (1929-2007). My mother has been my rock and support for me through graduate school, and I could not have completed this program without her love and care. My father passed away on the eve of Thanksgiving 2007, and that was the most difficult experience of my graduate experience and life. He was a beautiful man: loving, supportive, and always wanted me to have the best in life. I thank him for everything he has given me in life, and I hope that from the heavens he is watching over me and is proud of my achievements in both this thesis and graduate school. God's warm blessings and love to you both forever.

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## CHAPTER ONE

### INTRODUCTION

"Obtaining a college degree and the associated personal, social, and economic benefits--has long been a major part of the American Dream" (Terenzini, Springer, Yaeger, Pascarella & Nora, 1995, p. 5). A college student's primary reason for attending an institution of higher education is to earn an academic degree and to prepare for future opportunities. Earning a college degree yields many benefits for students and the communities in which they are a member (Choy, 2001). Pike and Kuh (2005) stated that "the baccalaureate degree is an avenue of upward social mobility, representing the single most important rung in the educational-attainment ladder in terms of economic benefits" (p. 276). An important component of the purpose of higher education administrators is to help college students successfully complete their academic experience.

While the literature pertaining to higher education has addressed the needs of the college student both inside and outside the classroom, college students specifically need support and attention in regard to degree attainment. Colleges and universities are diverse communities that geographically bring together many students from various groups. One group this includes is the first-generation college student, typically described as a student whose parents have never attended college. First-generation college students have been included in much discussion in higher education. In particular, a substantial amount of literature addresses the numerous

differences between first-generation college students and the typical college student. Research has suggested that first-generation college students represents roughly one-quarter of the amount of all graduating high school students, have backgrounds and family experiences that are uniquely different than students not who are not first-generation, and have specific purposes and motivations for attending college that need to be addressed (Gibbons & Shoffner, 2004). Additionally, in comparison to non-first-generation college students, first-generation students are least likely to stay in college and graduate, however there is little information regarding their experiences in college, and how those experiences compare and contrast with those who are not first-generation (Pike & Kuh, 2005).

This chapter explores the various issues of first-generation college students, defines the term first-generation, provides a brief explanation of the problem statement and research question, and briefly discusses the purpose, methodology, and significance of this study.

#### Definitions of First-Generation

Within the field of higher education, first-generation students are defined in a multitude of ways. Terenzini et al. (1995) defined a first-generation student as one who is the first in his or her family to attend an institution of higher education. Pascarella, Wolniak, Pierson, and Terenzini (2003) defined 'first-generation' similarly to Terenzini et al, focusing on the first-generation student whose parents did not attend college. Zhang and

Chan (2007) provided a different definition of a first-generation college student as:

A student from a family in which neither parent (whether natural or adoptive) received a baccalaureate degree or a student who, prior to the age of 18, regularly resided with and received support from only one natural or adoptive parent and whose supporting parent did not receive a baccalaureate degree. (p. 35)

There is some incongruence in the literature regarding a uniform definition of first-generation. For the purposes of this study, however, a first-generation college student was defined as an individual whose parent(s) or guardian(s) did not attend any institution of higher education.

#### Characteristics and Experiences of First-Generation College Students

Ishitani (2003) noted that first-generation college students are a group that little is known about. Among the most researched areas of interest on first-generation college students are demographic characteristics, secondary school preparation, the transition from secondary education to postsecondary education, and persistence (Pascarella, Pierson, Wolniak, & Terenzini, 2004).

#### *Characteristics of the Student Population*

Many studies regarding first-generation college students have attempted to identify characteristics of this group. Terenzini et al. (1995) found that “First-generation students were more likely to: come from low income families; be Hispanic; have weaker reading, math, and critical thinking skills; have lower degree aspirations; and have less involvement with peers

and teachers in high school” (p. 1). Further, Inman and Mayes (1995) determined that when compared to non-first-generation college students, first-generation students are likely to be female, older, and have more financial dependents in their household. Research by Nuñez and Cuccaro-Alamin (1998) produced the following findings about first-generation college students that supported and expanded previous literature:

First-generation students were more likely to be older, have lower incomes, be married and have dependents than their non-first generation peers...more likely to enroll in postsecondary education part-time, and to attend public 2-year institutions; private, for-profit institutions; and other less-than-4-year institutions than their non-first-generation counterparts. (p. iii)

First-generation college students typically face many issues in their adjustment to postsecondary education and at times the experiences of culture, climate, and various social differences. Issues such as leaving their home, friends, and community prove to be a challenge and an area of struggle for this student population. Cushman (2007) stated that “differences in income, social styles, and even speech patterns cause many first-generation students to feel like outsiders” (p. 45). Even though the multiple characteristics of first-generation college students are present in the literature regarding this student population, most findings are derived from comparisons between first-generation and non-first-generation students. As a result, there

are few studies that utilize other methods of describing this student population.

### *Transition from Secondary to Postsecondary Education*

The first-generation college student population faces numerous challenges in secondary and postsecondary education. One of the most difficult issues for this student population is the transition from life in high school to college. According to Terenzini et al., (1995), first-generation students are the first members of their family to go to college. As a result, it may be difficult for these students to receive the necessary knowledge, support, and preparation needed from their friends, family, and support networks to adjust and be successful in a postsecondary environment. Hsiao (1992) stated that “going to college...marks a significant separation from the past for those who are the first in their families to do so” (p. 2) and that parents and siblings do not know how to best provide support, or at times may even refuse to provide support, to this student population. Riehl (1994) acknowledged the difficult relationship first-generation college students share with their friends and family and mentioned that first-generation college students are at a severe academic disadvantage in that they do not have the resource of parental figures who are college educated that in turn can assist and prepare these students through the entire college process. In addition, first-generation college students are disadvantaged because they lack the understanding of the expectations of the college environment.

Choy (2001) addressed the experiences of first-generation college students in secondary education and presented the results in a series of recent NCES [National Center for Education Statistics] studies. Choy's study stated that "The likelihood of enrolling in postsecondary education is strongly related to parents' education even when other factors are taken into account" (p. 7). Findings revealed a 22% gap in planning to attend a four-year institution when comparing first-generation college students and students whose parents reported receiving at least a bachelor's degree. Choy also discovered that students who identified as non-first-generation matriculated into four-year institutions 42% more than first-generation college students. Additionally, Choy found that in comparison to non-first-generation college students, first-generation students are less academically prepared for four-year colleges, received less assistance from their parents in the college admissions process, and are least likely to receive help from their respective schools in the college admissions process.. Choy suggested that an area that requires further exploration is the significant effect parental educational level has on first-generation college students' access and persistence to higher education.

### *Persistence*

Another difficulty of the first-generation college student population is persistence in higher education. Ishitani (2003) completed a student attrition behavior study that looked at first-generation college students, measuring the chance they would depart from an institution of higher education. Ishitani

found that first-generation college students were more at risk for departure than non-first-generation college students. Based on these results, Ishitani observed that college access for first-generation college students is not the only factor in predicting their academic success

Martinez, Sher, Krull, and Wood (2009) found that college GPA was a mediating effect between first-generation status and attrition. Their results suggest that when addressing the issue of attrition of first-generation college students, educational interventions need to focus on increasing the college GPA that makes an important contribution to persistence.

### *Motivation to Attend College*

Another difficulty that the first-generation college student population faces is their perception of the college experience. Colleges and universities provide students with various experiences within and beyond the classroom environment. Brockbank and McGill (2007) stated that "Higher educational institutions aspire to create the conditions for learning, and a growing number of academic staff, policy makers and writers are now more explicit about the purpose of the institutions in promoting learning that is not merely instrumental" (p. 3). First-generation college students, however, view college primarily as a means to obtain a degree to gain employment (Ishitani, 2003). Ishitani additionally stated that, "Although going to college may be viewed as a rite of passage for many students, as a college degree becomes a prerequisite for jobs with higher salaries, first-generation students often face unique challenges in their pursuit of a college degree" (p. 434).

### *Engaging with the Postsecondary College Environment*

The college environment poses physical, mental, social, and cultural challenges for the first-generation college student. Through a qualitative study, Cushman (2007) identified the following issues that many first-generation college students encounter: (a) intimidation from non-first-generation college students, (b) lifestyle changes, (c) difficult social interactions, (d) time limitations from holding a part/full-time job in addition to being a student, (e) need to develop a social network, (f) need for a “guiding” hand/support from university officials, and (g) change in cultural environment.

Integrating with the college environment is also a significant difficulty for first-generation college students. As mentioned previously, first-generation college students face a difficult transition from a secondary to postsecondary environment (Hsiao, 1992; Riehl, 1994). Integration is also influenced by scarcity of time since first-generation college students tend to work more hours than students who do not identify as first-generation (Inman & Mayes, 1999). Terenzini et al. (1995) stated that first-generation college students study less than non-first-generation college students, most likely because they tend to work more hours at an off-campus job. As a result, possible reasons for the difficulties first-generation students face in engaging into the collegiate environment and feeling connected to the campus may include being employed and the perception of college solely as a means to gain better access to jobs and opportunities.

### *Academic Success*

The first-generation college student's academic success in the postsecondary environment is also a critical issue. Regarding the academic struggles of this student population, Riehl (1994) completed a study that discovered that first-generation college students "had significantly lower grade point average expectations, lower academic degree aspirations, a higher frequency of first-semester dropouts, and a lower second-year return rate" in comparison to students who do not identify as first-generation (p. 17). In addition, Warburton, Bugarin, and Nuñez (2001) found that first-generation college students did not take rigorous courses in high school and also did not take as many college entrance examinations, as compared to non-first-generation college students.

The literature also showed that student involvement and engagement (e.g., Astin, 1993; Kuh, 1995) have positive outcomes for academic achievement. Ultimately, the academic success of first-generation college students is an area of concern, and higher education administrators need to address the areas of academic support and involvement to aid in the collegiate success of first-generation college students.

### *Problem Statement*

Pascarella et al. (2004) stated that the current body of research regarding the first-generation college student population falls into three primary categories. The first category includes literature regarding the comparison between first-generation college students and non-first-

generation college students on topics such as demographic characteristics and secondary school preparation (e.g., Nuñez & Cuccaro-Alamin, 1998). The second category is centered upon first-generation college students' transition from secondary education to postsecondary education (e.g., Hsiao, 1992; Riehl, 1994). The third category examines first-generation college students' persistence in higher education (e.g., Bartels, 1997; Thayer, 2000).

As many of the authors noted here have placed significant focus on specific issues related to first-generation college students, few have concentrated on the multiple dimensions of this population. As a result, there exists a gap in the literature and research examining the characteristics and varied experiences of first-generation college students. To address this void in the literature, more integrative studies are needed that focus on the multiple characteristics and experiences of this student population.

There are many authors whose research describes demographic characteristics of first-generation college students (Chen, 2005; Nuñez & Cuccaro-Alamin, 1998; Terenzini et al., 1995). All these studies have limitations because the demographic characteristics, secondary-school preparation and success, transition, and the postsecondary academic success of first-generation college students have not been studied together in one integrative and comprehensive model. By studying them together in one model, researchers could be more precise regarding which factors in particular influence college success for this student population. While it is important for professionals in higher education to know about the

characteristics of this student population, there are very few studies that measure whether there is a relationship between certain demographic characteristics and postsecondary academic achievement.

Contrary to the abundance of research regarding the characteristics of first-generation college students, there has been limited research on the involvement of this student population. Pike and Kuh (2005) stated that “Although first-generation college students are less likely to persist and graduate, surprisingly little is known about their college experiences and the ways those experiences compare to the experiences of students who have college-educated parents” (p. 276). As a result, there needs to be more research that explores the various ways in which first-generation college students are involved in the college community and how it contributes to their academic success.

#### Purpose of the Study and Research Question

The purpose of this study was to investigate select factors that contributed to the overall academic success of first-generation college students in higher education in the United States. The research question was:

- How much variance of the postsecondary academic achievement of first-generation college students is explained by demographic, pre-college academic achievement, and college involvement factors?

This study focused on first-generation college students who attended four-year institutions. Students at four-year institutions were the target sample for this study because the majority of the literature regarding first-generation

college students focused more on the secondary school and the community college environment leaving a bigger gap in understanding the four year college experience. (Bui, 2002; Chen, 2005; Choy, 2001; Pascarella et al., 2004).

## Overview of Research Methodology

### *Theoretical Framework for the Study*

This study focused on the demographic characteristics, pre-college academic achievement, and involvement of first-generation college students and their relationship to postsecondary academic achievement. Hierarchical linear regression was used to show relationships that existed between independent variables (i.e., demographic characteristics, pre-college academic achievement, college involvement) and the dependent variable (i.e., postsecondary academic achievement as measured by college grades). This study was informed by Astin's (1970; 1991) *inputs-environments-outcomes* (I-E-O) college impact model as a theoretical framework. An explanation of Astin's I-E-O model will be provided in the review of the literature in Chapter Two.

### *Multi-Institutional Study of Leadership*

While there are many datasets in existence that include data on first-generation college students, this ex post facto study utilized data collected from the Multi-Institutional Study of Leadership (MSL). The MSL is the largest national dataset that addresses leadership development and leadership outcomes of college students (Dugan & Komives, 2007). A research team

from the University of Maryland collected data in Spring 2006 from a variety of institutions in the U.S. The final random sample represented 50,378 students at 52 different institutions. The MSL was used as a dataset for this study for four primary reasons: (1) it collected data for all of the factors in this study by means of single items of discrete behavior (2) it used Astin's (1970, 1991) I-E-O model as a theoretical framework for the study therefore contained pre-college variables, (3) the MSL dataset included a large number of first-generation respondents, and (4) the survey instrument included comprehensive questions regarding the involvement of college students. The MSL is described further in Chapter Three.

#### *Statistical Methodology*

To investigate the research question, hierarchical multiple regression analysis was utilized to determine which factors (i.e., demographic, pre-college academic achievement, college involvement) contributed to a significant change in variance of postsecondary academic achievement. These factors were chosen and tested based on their importance in the existing body of literature regarding the first-generation college student population. More information regarding the statistical methodology for this proposed study is presented in Chapter Three.

#### *Significance of Study*

According to Hellman and Harbeck (1997), limited empirical studies regarding first-generation college students exist. As the current body of literature regarding the first-generation college student population is limited,

this study contributed and supplemented the existing research and literature in several ways.

Studies have been inconsistent with the finding of whether first-generation college students are different in academic and social dimensions, in comparison to non-first-generation college students (Ishitani, 2003). Prospero and Vohra-Gupta (2007) suggested that the involvement of first-generation college students could lead to better retention and academic success of this student population. This study provided information regarding both the on-campus and off-campus involvement of first-generation college students and its relationship to their overall academic success in higher education, as measured by grade point average.

This study explored various demographic characteristics (age, gender, ethnicity, socioeconomic status), high school grade point average, off-campus involvement, and on-campus involvement factors of first-generation college students, and their relationship to postsecondary academic achievement. There is a lack of research regarding the personal and academic factors of the first-generation college student population and how it can positively or negatively contribute to their overall success. Further research needed to be conducted on this population to examine their degree of academic success, taking into consideration demographic characteristics such as age, ethnicity, gender, and socioeconomic status, as well as their involvement in the collegiate experience (Riehl, 1994; Terenzini et al, 1995).

This study analyzed first-generation college students who attend four-year institutions. Regarding the rationale behind analyzing these types of students, Bui (2002) stated, “Research...has shown that first-generation students have a better chance of earning a bachelor’s degree if they start postsecondary education at a four-year college rather than a two-year college” (p. 2). Bui also said that there is little research regarding the experience and characteristics of first-generation college students that attend four-year colleges and universities. By focusing on first-generation college students who attend four-year institutions, this study sought to address a void in the literature.

Finally, this study provided numerous implications for both theory and practice within student affairs and higher education administration. By determining which demographic, pre-college and involvement factors influenced the postsecondary academic achievement of first-generation college students, administrators and professors that serve students can focus their efforts on improving the experiences for this student population. In addition, by knowing which factors explain the variance of postsecondary academic achievement, administrators and professors will have the ability to focus their efforts on addressing the factors that serve as strong predictors of academic success, or generate initiatives and programs to further explore the characteristics of first-generation college students. This study also provided descriptive statistics pertaining to the dataset used. University professors and administrators have the ability use this information in order to gain a better

understanding of the current first-generation college student population at four-year institutions and better inform their individual efforts at their respective institution.

Finally, the findings of this study contribute to the work of student affairs administrators and educators who work at four-year institutions. Even though this study pertains to first-generation college students who attend a four-year college or university, there is a wealth of information in this study, specifically regarding information regarding the various characteristics of first-generation college, that administrators and educators who work at other types of institutions can apply to their current practices.

#### Definition of Key Terms

1. *First-Generation College Student*: For the purposes of this study, a first-generation college student was defined as a college student whose primary caretakers (parents or guardians) did not attend any institution of higher education.
2. *Non-First-Generation College Student*: This term described any college student whose parents or guardians attended college or earned a college degree.
3. *Pre-College Academic Achievement*: Pre-college academic achievement for this study was determined by the respondent's self-reported high school Grade Point Average (GPA).

4. *Postsecondary Academic Achievement*: Postsecondary academic achievement for this study was determined by the participants' self-reported cumulative college GPA at time they took the MSL survey.
5. *On-Campus Environments*: For the purposes of this study, on-campus environments are defined as locations that are geographically part of an institution's campus or offered as campus programs or services. The following are examples of on-campus environments: student union, academic buildings, library, dining hall, and residence hall.
6. *Off-Campus Environments*: For the purposes of this study, off-campus environments are defined as locations that are *not* geographically part of an institution's campus or offered as campus programs or services. The following are examples of off-campus environments: community center, public library, off-campus residence, and off-campus workplace.
7. *Involvement*: For the purposes of this study, the definition of involvement provided by Astin (1993) was utilized: "the amount of physical and psychological time and energy the student invests in the education process" (p. 2).

### Conclusion

This chapter provided an introduction to the first-generation college student population, its various descriptors and issues, and the purpose of this study, which was to determine how much variance of the postsecondary

academic achievement of first-generation college students was explained by demographic, pre-college academic achievement, and involvement factors. In addition, information was provided on the theoretical framework for the study and the MSL. This section concluded with an overview of the study's methodology, and the significance of the study. Chapter Two provides a comprehensive and detailed exploration of the literature and research relevant to this study.

## CHAPTER TWO

### REVIEW OF THE LITERATURE

Literature focusing on first-generation college students included several themes relating to the influence of demographic, pre-college and involvement factors on their postsecondary academic achievement. There are a few studies regarding the college experience of first-generation college students that overlap in regard to the variables and factors studied. Thus, it can prove to be difficult to categorize studies. Thus, it is important to note that this review of literature may include references of the same study in two or more sections; however a report of the entire study will only appear in the section that it is most relevant.

This chapter will first provide literature regarding the theoretical framework of this study, Astin's (1999) involvement theory. The next section of this chapter will briefly present a general overview of the literature regarding first-generation college students. This chapter will then primarily focus on literature pertaining to first-generation college students and their college experience. Literature pertaining to first-generation college students and the dependent variable of this study, postsecondary academic achievement, will be provided. The next section of this chapter will present literature regarding the independent variables of this study: demographic characteristics, pre-college, and involvement factors regarding first-generation college students. This review of the literature is integrative in nature and will

incorporate discussion of the commonalities and links among related studies and theories and briefly discuss the limitations of each of the studies.

### Theoretical Framework of Study

#### *Theory of Involvement*

Astin (1999) noted that within the literature of higher education, different authors described variables and concepts in varying ways, and terminology was frequently invented. In reality, however, these authors were often addressing the same variables and concepts. Astin also used an example of the college student being a black box to defend his rationale for developing an involvement model. This black box had two ends, one representing educational programs and policies and the other representing student output (e.g., cumulative GPA and degree earned). Astin argued that "it seemed something was missing: some mediating mechanism that would explain how these educational programs and policies are translated into student achievement and development" (pp. 519-520).

Astin (1999) stated that he created a developmental theory to end the confusion and inconsistencies that occur when authors discuss topics that could be best defined as involvement. Furthermore, Astin commented that his student development theory was appealing to him for three core reasons: (1) its simplicity in comparison to other models, (2) its ability to address the influences the environment can have on student development, and (3) its ability to be used and practiced by both student affairs practitioners and other educators.

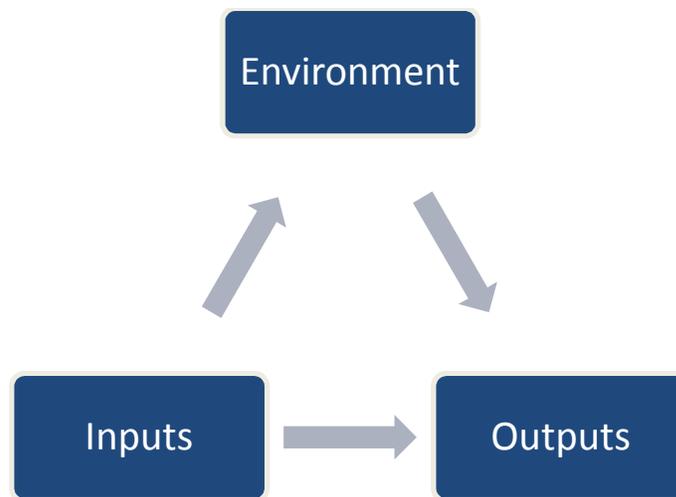
Astin (1999) described involvement as "a construct that should not be either mysterious or esoteric ... student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience" (p. 518). He defined an involved student as "one who ... devotes considerable energy to studying, spends much time on campus, participates actively in student organizations, and interacts frequently with faculty members and other students" (p. 518). He then provided five postulates that define and describe involvement: (1) the definition of involvement, as provided above, (2) involvement is continuous, and students can show different levels of involvement at different times, (3) involvement is both qualitative and quantitative, (4) there is a direct relationship between student involvement, student learning, and personal development, and (5) there is a relationship between the effectiveness of educational policies and practices and student involvement.

Astin (1993) consistently defined involvement as "the amount of physical and psychological time and energy the student invests" in what he called the "education process" (p. 2) or the "academic experience" (1999, p.2). Astin did not specifically define his concept of "education process" or "academic experiences" but referred to a flexible concept that included all aspects of collegiate life within and beyond the classroom. Astin also stated that there are many ways in which a student can be involved in the college process, and that involvement in the college environment can have positive effects on many aspects of student development and learning.

### *I-E-O Model*

Astin (1970; 1991) operationalized his involvement theory with the *inputs-environments-outputs* (I-E-O) model. The I-E-O model generally states that environment can have a significant effect on individual development. A graphic representation of the model can be found in figure 1.

Figure 1: Rendered graphic representation of the I-E-O model



Astin (1970; 1993) indicated that the model can be used to measure how students grow or change in the college environment, under the impact of one or more different environmental experiences. In defining the terminology used within the model, Astin (1970) first stated that outputs "refer to those aspects of the student's development that the college either does influence or attempts to influence ... Specifically ... outputs refers to measures of the students' achievements, knowledge, skills, values, attitudes, aspirations, interests, and daily activities" (p. 2). For example, college academic

achievement as measured by GPA was the outcome measured in this study. Inputs are then described as "the talents, skills, aspirations, and other potentials for growth and learning that the new student brings with them [sic] to college ... Inputs can affect outputs either directly or by interaction with environmental variables" (p. 3). For example, in this study inputs included demographic characteristics about students as well as pre-college levels of achievement. Finally, Astin described the college environment as "aspects of the higher educational institution that are capable of affecting the student ... [which] include administrative policies and practices, curriculum, physical plant and facilities, teaching practices, peer associations, and other characteristics of the college environment" (p. 3). Environmental factors in this study included campus involvement, work, and extended Astin's definition to also include off-campus involvement.

#### General Literature of First-Generation College Students

When examining the literature regarding first-generation college students, college access as well as retention and persistence emerge as two well-researched themes. First-generation college students tend to have difficulty accessing higher education for a variety of reasons. The literature pertaining to this topic suggested the following as common reasons: (1) parents do not have the college experience to assist their first-generation children in the various aspects of applying to college (e.g. financial aid, application process), (2) first-generation students are not prepared for the academic rigor of college, due to their high school preparation, (3) students

demonstrate low achievement scores on college admissions tests, in comparison to non-first-generation college students, and (4) first-generation college students chose other educational or work opportunities (e.g. community college, vocational/trade school, military) than attending a four-year college (Adelman, 1999; Choy, 2001; Striplin, 1999; Thayer, 2000; Tym, McMillion, & Webster, 2004).

For the first-generation college student population, persistence in college is an issue that is well discussed in literature. Research has shown that first-generation college students tended to persist at lower rates than non-first-generation college students in both the four-year public and private school environments (Nunez & Cuccaro-Alamin, 1998; Sherlin, 2002). When attempting to understand this phenomenon, researchers commonly referred to Tinto's (1993) classic retention theories. Tinto suggested that the key to retention lies in the types of meaningful relationships and positive experiences students have in the college environment. The more meaningful relationships and positive experiences students have, the more likely they are to persist in the college environment.

The actual college experience of first-generation college students, along with their involvement in the college environment, and factors for academic success are sparsely researched areas. The purpose of the remainder of this literature review is to both present and highlight literature pertaining to the overall college experience of first-generation college students. In particular, the demographic characteristics, involvement, and

postsecondary academic success of first-generation college students will be discussed. While this literature review does not go into detail regarding all aspects of first-generation college students, college access and persistence are issues that are very critical to the understanding of the experiences of first-generation college students and their development in the college environment.

#### Postsecondary Academic Factors and First-Generation College Students

The following section is a review of studies pertaining to the postsecondary academic factors for first-generation college students. High school GPA along with other pre-college factors (e.g., ACT score, SAT score, class rank, leadership experience) have proven to be predictors of college academic achievement (Astin, 1997; Hoffman & Lowitzki, 2005; Mattson, 2007; Noble & Sawyer, 2002). While information was provided in Chapter One regarding general information about this student population, this section attempts to provide a timeline of the literature regarding first-generation college students and their academic experiences in college.

#### *Academic Achievement*

To examine why first-generation college students were not as academically successful compared with non-first-generation college students, Terenzini et al. (1995) completed a longitudinal study included within the National Study of Student Learning (NSSL). The study compared first-generation college students to non-first-generation college students at 23 different institutions on pre-college characteristics and aspects of their college

experience (e.g., hours studying perception of faculty members). Terenzini et al. studied 825 participants who identified themselves as first-generation and 1,860 who identified themselves as non-first-generation student. Participants provided demographic information, academic proficiency, and information regarding first-year experiences in college. Terenzini et al. noted that the first-generation college students “reported fewer hours studying, probably because they continued to spend more hours working off-campus [and were] less likely to perceive faculty members as concerned with students’ development and teaching” than non-first-generation college students (p. 13). Many of these findings were similar to the findings of Riehl (1994), particularly lower GPA and academic degree aspirations.

The Terenzini, et al. (1995) study contributed to the literature regarding first-generation college students through reported findings on students’ social experiences and behaviors on campus. However, one of the greatest limitations to this study was that the 23 institutions included in the sample were not sampled randomly. The authors noted that the sample may not be a strong representation of colleges and universities on the national level. In addition, the sample of students was not completely randomized. Due to the large time commitment of the study, students who could not fully commit to the study were not represented in the sample.

More recently Strayhorn (2006) completed a study that was very similar in nature to the Terenzini et al. (1995) study. Strayhorn examined various factors that have an influence on the academic achievement of first-

generation college students in college. Strayhorn observed that current research regarding the academic achievement of first-generation students has been inconsistent at times; while “some studies suggest that FGs [first-generations] are more likely to drop out of college after their first semester (Riehl, 1994). Others report no statistically significant differences in students’ commitment to academic goals (York-Anderson & Bowman, 1991)” (p. 84). Specifically, the research question for Strayhorn’s study was “What influence do background, precollege, and college characteristics have on academic achievement for first-generation and non-FGs [first-generations]?” (p. 84).

Using a theoretical model based from a college impact model developed by Terenzini, Springer, Yaeger, Pascarella, and Nora (1995), Strayhorn’s study utilized data from the 1993/1997 Baccalaureate and Beyond Longitudinal Study (B&B: 93/97) conducted by the National Center for Education Statistics. The sample contained a predominantly female sample of over one million students with a mean age of 18.57,. The dependent variable for the study was college GPA. The independent variables for the study represented various demographic characteristics, pre-college characteristics, and in particular first-generation status. Regarding demographic characteristics, only 5% of the variance of college GPA can be explained. When pre-college factors (e.g., time between high school and college, attendance at a two-year institution, ACT score, and SAT score) were considered into the model, an additional 17% of the variance of college GPA

was explained. Finally, when first-generation status was entered into the model, there was a very small effect size on college GPA.

Strayhorn (2006) stressed that college GPA is a “function of the linear combination of independent variables from all three sequential models (background traits, precollege and college experiences, and first-generation status” (p. 97). While this study provided important results, it still remains that when studying the factors that influence the academic achievement of first-generation college students, pre-college characteristics, such as high school GPA and standardized test scores are the most favorable determinants. When considering these findings as well as findings in other studies that showed that first-generation college students’ academic performance is weaker than that of non-first-generation college students (e.g. Riehl, 1994; Terenzini et al., 1995; Warburton et al., 2001), it is evident that significant attention should be devoted to assisting first-generation in their pre-college academic achievement. In addition, one area the Strayhorn did not address in his study was involvement in the college environment. There is research that supports the fact that one’s involvement in the college environment has positive student outcomes, therefore involvement is an area that still needs to be explored and was addressed in this study.

Dennis, Phinney, and Chuateco (2005) completed a one-campus study that addressed the void of literature that focuses on the additional challenges that first-generation college students from non-white ethnic backgrounds face. In particular, the aim of the study was to investigate “the extent to which

personal characteristics of [first-generation, non-white ethnic college] students, specifically their motivations to attend college, and contextual factors, namely, the availability of social support from family and peers, influence college outcomes (e.g., college GPA) over and above the effects of these background characteristics” (p. 224).

A sample of 100 students was used for this study; 84 were identified as Latino and 16 Asian. The students were enrolled at an urban commuter university located on the west coast of the United States. The sampling of students for this study was representative of the ethnic student population that attended this institution. The researchers developed a longitudinal study that addressed motivation, parental support, and peer support of college students. The longitudinal survey collected data including high school GPA, ethnicity, gender, socioeconomic status, social support, parental support, career motivation, and peer support.

Dennis, et al. (2005) determined that the only significant determinants of cumulative college GPA were high school GPA and the amount of support students received from peers. One of the biggest limitations in this study was the lack of students that represent more ethnic backgrounds. This study only provided results pertaining to Latino and Asian students and cannot be generalized to students of other racial/ethnic backgrounds. First-generation college students of various ethnic backgrounds need to be analyzed to provide more information regarding the academic success of ethnic first-generation college students.

Warburton et al. (2001) examined the presence of significant differences between first-generation college students and non-first-generation college students' postsecondary GPAs, persistence, and number of remedial courses taken. Warburton et al. used data from the 1995-1996 Beginning Postsecondary Students Longitudinal Study, which was also part of the National Postsecondary Student Aid Study (NPSAS). Drawing upon 830 institutions from across the nation, the NPSAS sampled 44,500 undergraduates, 8,700 graduates, and 2,500 students described as *firstprofessional* (author provided no definition of this term, but most likely refers to students who have completed their undergraduate experience and are in their first professional job). Warburton et al. ascertained that "postsecondary enrollment and academic achievement confirmed previous research showing differential behaviors between first-generation students and their peers whose parents were college educated" (p. 9). Specifically, first-generation college students had lower first-year GPAs (2.6) than non-first-generation college students, and were more likely to take a remedial course during their first year in college. Further, Warburton et al. noted that "Of the students who attended 4-year institutions, first-generation students were much more likely to attend public comprehensive institutions instead of research universities than those with at least one parent who had a bachelor's degree (41 percent vs. 26 percent)" (p. 4) .

Regarding limitations, Warburton et al. (2001) did not define *firstprofessional*, nor did the researchers address what sampling techniques

were used in their work or by the NPSAS. The lack of descriptive information in the methodology made it difficult to understand the significance of the data and results. Warburton et al. also failed to report the limitations of their study. While Warburton et al.'s findings supported findings previously stated in the review of the literature (Riehl, 1994; Terenzini, 1995; Grayson, 1997), the findings did not take into account another academic factors related to first-generation college students, such as academic discipline and types of courses taken.

In a study of first-generation college students in postsecondary education, Chen (2005) found that non-first-generation college students performed better than first-generation students in the first year of college, and posed higher grade point averages. In comparison to non-first-generation college students, first-generation students took more remedial courses, had greater difficulty in selecting an undergraduate major, earned fewer credits, and were not well-represented in mathematics and science courses. Chen also found that first-generation college students performed weaker academically than non-first-generation college students in certain academic disciplines. Specifically, first-generation college students underperformed in the fields of mathematics, science, computer science, foreign languages, and history. These results suggested that first-generation college students who were in these academic disciplines were less successful academically than other first-generation students who were in other fields. Previous research showed that one of the main motivations for first-generation college students

attending college was to gain access to better career options (Brockbank & McGill, 2007; Ishitani, 2003). Perhaps, first-generation students who were in academic fields that have more direct connections to employment opportunities performed better academically. This study suggested that further research needs to focus on the relationship between the academic disciplines of first-generation college students and their overall academic success.

### Demographic Characteristics

A variety of studies focused on a common set of demographic characteristics of first-year students, including race/ethnic background, academic achievement, and rationale for attending an institution of higher education. Terenzini et al. (1995) completed a study that looked at the difference in pre-college characteristics and the college experience of first-generation college students and non-first-generation college students. In this study 825 first-generation college students were compared to 1,860 traditional students at 23 different colleges nationwide (p. 1). Findings of the study revealed that first-generation students were more likely to “come from low income families; be Hispanic; have weaker reading, math, and critical thinking skills; have lower degree aspirations; and have less involvement with peers and teachers in high school” (p. 1).

Astin (1993) studied the relationship between the impact of college and the outcomes of college students. He used a national sample of approximately 25,000 students at more than 200 four-year institutions with

data derived from student questionnaires completed in both 1985 and 1989. Astin's (1993) findings were quite significant, such that he determined that various student demographics, such as ethnicity, gender, and socioeconomic status were closely related to many student outcomes.

Nuñez and Cuccaro-Alamin (1998) sought to "examine the post-secondary experiences and outcomes of first-generation relative to their peers" (p. iii). Data for this study was obtained from the 1989-1990 Beginning Postsecondary Students Longitudinal Study (BPS) and the 1993 Baccalaureate and Beyond Longitudinal Study (B&B). Nuñez and Cuccaro-Alamin produced findings of first-generation college students that were similar to other researchers (Inman & Mayes, 1999; Riehl, 1994; Terenzini et al., 1995): first-generation college students (1) were older, (2) had lower socioeconomic status, (3) were more likely to be married and have dependents, (4) went to school part-time, and (5) chose to attend a community/two-year college, instead of a four-year institution. This study controlled for many demographic characteristics, however still showed that having first-generation status had a negative effect on persistence. The findings in this study were partially congruent with Inman and Mayes (1999). Specifically, both studies stated that first-generation college students tend to be older and have more dependents than non-first-generation college students. Nuñez and Cuccaro-Alamin also found that first-generation college students had a lower income in comparison to non-first-generation students. As such, there is the potential for a connection between this finding and

Inman and Mayes' finding regarding first-generation students supporting more dependents financially.

Inman and Mayes (1999) addressed the many characteristics of first-generation community college students in order to better understand how to support this student population. Although the present study excluded students in community colleges, findings in this sector are of interest to understanding this general population of first-generation students. With a sample of 5,057 first-year college students who attended a school in the University of Kentucky Community College System, 4,620 (91.4%) of the sample were identified as first-generation. Similar to other studies, Inman and Mayes determined that when compared to non-first-generation college students, first-generation students are likely to be female; older; have more financial dependents in their household; work more; and were more concerned with increasing their self-confidence, self-efficacy and self-esteem.

Overall, Inman and Mayes (1999) concluded that first-generation college students encounter many challenges that other students do not have to manage. While this study provided solid findings and insight, there was no information provided regarding the survey instrument's reliability and validity. In addition, the sample was not representative of first-generation college students as this study drew upon participants from community colleges.

Chen (2005) also completed a study that attempted to highlight the demographic characteristics between first-generation and non-first-generation college students. Chen used data from the Postsecondary Education

Transcript Study (PETS) of the National Education Longitudinal Study of 1988, focusing specifically on senior high school students who had enrolled in college between 1992 and 2000. The final sample was comprised of about 7,400 students who attended U.S. high schools and were both first-generation and non-first-generation, as determined by the following definition, "First-generation students are defined as those from families where neither parent attained any education beyond high school" (p. 2). Roughly 28% or 2,072 students in the final sample identified as first-generation.

Chen stated that "Compared with their peers whose parents were college graduates, first-generation students were more likely to be Black or Hispanics and to come from low-income families" (p. iv). Chen also noted that due to their academic unpreparedness, as evident within their high school coursework and standardized testing scores, first-generation college students tended to delay their transition into postsecondary education, choose to attend community college, and attended college part-time. These results were similar to the findings of Nuñez and Cucarro-Alamin (1998). Unlike previous research, however, Chen, provides new information regarding the ethnicities of this student population. While Terenzini et al. (1995) reported that first-generation students tend to be of Hispanic origin, Chen stated that both Hispanic and Black students make up the majority of this population. Perhaps this is because the population of first-generation college students changed in the ten year period between 1995 and 2005.

## Pre-College Factors

Secondary school educational experiences and academic achievement affected postsecondary decisions and experiences of first-generation students. High school grade point average, high school performance, academic self-efficacy, in addition to other pre-college factors, are noted within the literature as considerable contributors to the first-generation college student's academic success. General research in higher education supports the finding that first-generation college students perform weaker academically than non-first-generation college students. A primary issue faced by many first-generation students was adjustment to higher education and the changes that arise because of the new environment, academic challenges, and social atmosphere.

### *High School Academic Performance, Expectation, and Self-Efficacy of Academic Achievement*

Riehl (1994) examined aspects of the first-generation college student experience such as academic preparation, aspirations, and overall college performance. His study compared first-generation, first-year students, and non-first-generation, first-year students. A sample of 2,190 first-year students was derived from the Fall 1992 New Student Advisement and Registration Program (NSARP) at Indiana State University, a large research university. Through descriptive statistics, and a Chi-square goodness-of-fit test, Riehl found that "first-generation students had significantly lower grade point average expectations [(prediction of first-semester college GPA)], lower

academic degree aspirations, a higher frequency of first-semester dropouts, and a lower second-year return rate” (p. 17). In reference to high school GPA, Riehl’s descriptive statistics revealed that first-generation college students had lower high school GPAs than non-first-generation college students. Although first-generation college students had significantly lower grade point average expectations than non-first-generation college students, Riehl stressed that “relatively little has been written about the special academic and personal characteristics of first-generation college students in the U.S. and how these characteristics affect their success in college” (p. 15). One limitation of this study was that no information regarding the reliability of the survey instrument was provided. In addition, the study used participants at only one institution and was therefore not representative of the first-generation college student population.

Warburton et al. (2001) analyzed the difference in high school preparation of first-generation college students and non-first-generation college students reporting that “first-generation status was shown to have a negative association with students’ academic preparation and persistence [in college]” (p. 3). In addition, Riehl (1994) ascertained that “First-generation students had lower...high school grade point averages, [and that] predicted first-semester grades and academic degree aspirations were both lower” (p. 14). The sum of these findings suggested that there was a significant link between the high school academic achievement of first-generation students and postsecondary academic achievement. Moreover, the findings denoted

that further research was needed to explore how to best prepare first-generation college students for the academic rigors of higher education.

Another aspect of first-generation college student academic achievement that is sparsely researched is these students' academic self-efficacy. Hellman and Harbeck (1997) performed a study to determine if first-generation college students exhibited lower levels of self-efficacy regarding academic achievement in comparison to non-first-generation college students. According to the findings of their study, Hellman and Harbeck discovered that "the first-generation student may have lower self-perceptions of academic ability than second-generation students" (p. 167). As a result, Hellman and Harbeck suggested that first-generation college students feel academically inadequate when they compare themselves to non-first-generation college students. Currently, little research has been performed exploring the relationship between the self-efficacy of first-generation college students and their academic achievement.

### College Involvement

A common thread within the higher education literature is the focus on studying involvement and its contribution to college persistence and success (Astin, 1993; Kuh, 1995). However, the involvement of first-generation college students is not a theme commonly found within the literature. Pike and Kuh (2005) stated that "Although first-generation college students are less likely to persist and graduate, surprisingly little is known about their college

experiences and the ways those experiences compare to the experiences of students who have college-educated parents” (p. 276).

### *General Involvement*

As early as 1970, Astin developed a student involvement model that would better explain the impact college has on students, specifically the impact college has on the cognitive development and outcomes of college students. Astin articulated two main reasons for the importance of creating a college impact model: (1) he thought many previous studies regarding college impact were flawed in research and design, and (2) many previous studies were difficult to understand and interpret. Also, Astin noted that the literature regarding the impact of college on students typically had GPAs as the chief outcome. Astin continued this work in 1991 with a longitudinal study wherein he observed how the college environment affected other student outcomes. The study utilized a national sample of approximately 25,000 students at more than 200 four-year institutions. The data was derived from student questionnaires completed in both 1985 and 1989, and included information regarding academic achievement, retention, and graduate/ professional admission performance (Astin, 1993).

Astin’s (1993) concluded that “The single most powerful source of influence on the undergraduate student’s academic and personal development is the peer group...the amount of interaction among peers has far-reaching effects on nearly all areas of student learning and development” (p. 3). He determined that in addition to the peer group, the student-faculty

relationship was positively related to student development. Astin also determined that various student demographics, such as being White or having a high socioeconomic status were closely related to many positive student outcomes. The study was statistically significant due to its large sample size and large representation of participating institutions. His study also served as a great contribution to the literature due to the fact that it analyzed over 400 different factors related to student involvement. Unfortunately, his study did not explore was the involvement of first-generation college students.

Astin's (1970, 1993, 1999) body of work focused on the campus environment and student involvement in that environment. As noted previously, Astin (1999) defined involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 518). Kuh (1995) extended Astin's work by asserting that "the more time and energy students expend in educationally purposeful activities, the more they benefit" (p. 125). Kuh expanded this definition to include various tenets that describe different types of student and campus involvement and what were educationally purposeful activities. The first tenet was: "Involvement is the expenditure of psychological and physical energy in some kind of activity, whether specific (for example, organizing a blood drive, singing in an ensemble) or highly general (for example, attending a concert, going to the library)" (p. 125). The second tenet declared that, "Different students invest varying amounts of energy in different activities" (p. 125). Kuh's final tenet

stated that "Involvement has quantitative and qualitative features. Measures of involvement could include something as simple as the number of organizations to which one belongs, or the number of times a student uses the library" (p. 125).

What Astin (1993) described as involvement, Kuh (1995) later defined as student engagement referring to it as "how much time and effort students put into their studies and other educationally purposeful activities ... [and] how the institution gets students to participate in activities that lead to student success" (Schroeder, 2003, p. 10). As previously mentioned in Chapter One, this study utilizes Astin's (1993) definition of involvement.

Astin's (1993) definition of involvement and Kuh's definition of engagement are nearly identical in that they both address the investment of time and energy by a student towards purposeful activities. The only difference in the definitions of involvement and engagement is that engagement identifies student success as the ultimate goal, whereas the element of student success is absent in Astin's definition of involvement. Even though this term is missing from the definition of involvement, Astin articulated that involvement is strongly related to student success, thus making the definitions of involvement and engagement nearly identical. This study also included a limited amount of literature regarding first-generation student engagement, because there existed literature that either used the term engagement, or interchanged the terms involvement and engagement.

Kuh (1995) developed a study that attempted to determine the out-of-class experiences of senior college students that were associated with learning and personal development. Kuh's rationale for this exploratory study was that although "out-of-class experiences influence student learning and personal development ... little is known about which out-of-class activities ... are linked with what outcomes" (p. 125). In Kuh's qualitative study, 12 institutions were represented, with 149 students in the final sample. The participants engaged in individual interviews that included open response questions addressing the purpose of the study. Through analysis of the interview transcripts of the sample participants, Kuh stated four tentative conclusions: (1) there are many out-of-class experiences that have the ability to positively influence college outcomes, (2) students positively benefit from out-of-class experiences regardless of their gender or ethnicity, (3) the outcomes of out-of-class experiences differed by institutional type, and (4) the context of the institution has an effect on student development (pp. 146-147). Kuh (1995) noted as a limitation to the study that different institutions had varying numbers of respondents. While this study focused on the positive outcomes of out-of-class experiences for students, the importance of the negative outcomes was overlooked. Kuh's study also did not include information regarding the specific experiences and outcomes of first-generation college students. The findings of Kuh (1995) were similar to Astin's in that the personal development within the peer group would be defined as involvement. Overall, Kuh's study provided strong support for the

conjecture that the out-of-class involvement experiences in college are important to the overall development of college students.

With the exception of a few studies, one of the gaps in the literature on experiences of first-generation college students is the relationship between student involvement and academic achievement. Grayson (1997) studied the involvement and academic achievement of first-generation college students. Grayson used a mailed survey to study the relationship between involvement and academic achievement, as defined by GPA, of first-year college students. The sample included 1,849 full-time, first-year college students at York University, a Canadian four-year public research institution. In the study, Grayson included academic and social involvement as dimensions that could explain the variance of college GPA. Academic involvement was defined as “out-of-class contacts with faculty [or] teaching assistants...number of nonrequired [sic] activities ... frequency of weekly class/tutorial/lab attendance, and number of monthly visits to the library” (p. 663). Social involvement was defined as:

Number of clubs and/or organizations belonged to...number of cultural activities participated in...number of hours spent on campus per week... number of times campus services [e.g., writing center] were used ... number of new friends made ... hours per week spent with new friends, and number of monthly visits to campus pubs; and participation in sports and exercise activities. (pp. 663-664)

The study revealed that academic involvement, in particular classroom involvement, was statistically significant and explained 2.4% of the variance of college GPA. Social involvement had a statistically significant negative relationship with College GPA. Grayson noted that, “while first-generation students experience a slight disadvantage in terms of GPA and are somewhat less involved than traditional students in certain activities that contribute to GPA, they are also less involved in activities that detract from GPA” (p. 673)

This study was one of the initial studies to analyze first-generation college students’ attendance in Canadian institutions. Despite its valuable findings, this study may not be representative of the first-generation college student population in the U.S., due to cultural expectations and educational differences between countries. In addition, Grayson (1997) failed to provide detailed information regarding the survey instrument, such as its origin, how it was developed, and any tests for reliability and validity.

#### *Off-Campus Involvement*

The amount of time spent off campus is an issue of relevance for first-generation college students. Terenzini et al. (1995) discovered that many first-generation college students have off-campus jobs and tend to live off-campus, thus disconnecting them from the collegiate community. The National Center for Education Statistics (NCES, 1998) supported Terenzini et al. in that first-generation college students tend to both live and work off-campus, and work full-time as opposed to part-time. McConnell (2000) adds that first-generation college students tend to work an average of 35 hours per

week at an off-campus job in order to support themselves and others in their household.

Donovan and Johnson (2005) completed a qualitative study that explored the experiences of first-generation, multiethnic undergraduate students. The researchers obtained a sample from two public four-year institutions in the Rocky Mountain region of the United States. Donovan and Johnson noted that the sample of first-generation college students was involved in activities outside the classroom (i.e., work, clubs, organizations, off-campus commitments). The researchers noted in the limitations of their study that out-of-class involvement could help explain why multiethnic, first-generation college students in the sample reported that they had little difficulty succeeding during college. The study did not contain a specific method to measure off-campus involvement, or the relationship between off-campus involvement and academic success. While this qualitative study contributed to the literature on first-generation college students, qualitative studies are not intended to be generalized, and the sample was not representative of all students within this population.

#### *On-Campus Involvement*

Lundberg, Schreiner, Hovaguimian, and Miller (2007) studied the relationships between status as a first-generation college student, involvement, and learning. Lundberg et al. developed a set of variables to represent involvement that included, but were not limited to, the use of campus facilities, such as the library and activities related to academic

involvement. Overall findings suggested a negative relationship between identifying as a first-generation college student and student involvement. Using Astin's (1970; 1991) I-E-O model as a theoretical framework, this study utilized data from the College Student Experiences Questionnaire (CSEQ). The stratified random sample yielded 4,501 undergraduates from four-year institutions. As the majority of the students represented in the CSEQ were White, stratified sampling was used to obtain significant representation of students of color. Using multiple regression, Lundberg et al. determined that, in particular, "First-generation students are less involved in course learning, fine arts experiences, science/quantitative experiences, and involvement with other students who are different" (p. 73).

The study by Lundberg et al. (2007) was important in that it determined that "Students of color and first-generation students share some common experiences and face some common obstacles, but their involvement on campus and its contribution to their learning includes dynamics that are distinct to popular [non-first-generation] groups" (p. 73). Lundberg et al. noted that the biggest limitation of the study was the use of a stratified random sample. An additional limitation noted by the researchers was CSEQ's methodology of using a non-random sample.

Inkelas, Daver, Vogt, and Leonard (2007) conducted a within-group study that analyzed the impact of living-learning programs on first-generation college students. In particular, Inkelas et al. attempted to determine whether first-generation college students who participated in living-learning

communities exhibited higher levels of academic and social transition compared to first-generation college students who did not participate in a living-learning community. The study utilized a sample of 1,335 first-generation college students from 33 four-year institutions who were participants in the National Study of Living Learning Programs (NSLLP). Living learning programs serve as a specific type of involvement, as its programmatic structure aligns with Astin's (1993; 1999) definition of involvement (Inkelas et al.). Inkelas et al., along with previous work by Inkelas (Inkelas & Associates, 2004), defined a living-learning community as the following:

L/L [living-learning] communities are characterized by programs in which students live together in the same on campus residence location, share academic experiences, have access to resources provided directly to them within the residence hall, and engage in residence hall activities that reinforce their L/L program's theme. (p. 408)

Inkelas et al. found that "first-generation college students in L/L [living-learning] programs had statistically significantly higher estimates of ease with academic and social transitions to college compared to first-generation college students who were not participants in a L/L program" (p. 423). Unfortunately, this literature review affirmed that first-generation college students tend to live off-campus. This study showed that if first-generation students were to live on-campus and participate in L/L programs, they may

exhibit more signs of postsecondary academic success, than if they lived off-campus.

A recurring theme in the literature on first-generation college students is concurrent employment. Even though the definition of employment does not directly relate to Astin's definition of involvement, numerous studies have reported that being employed is a common characteristic of first-generation college students and it must be recognized, and that the more hours a first-generation college student worked, the lower their GPA (Nuñez & Cuccaro-Alamin, 1998; McConnell, 2000; Riehl, 1994; Terenzini et al., 1995). Warburton et al, (2001) determined that "More than one-quarter (27 percent) of first-generation students [who] attended part time in the 1997–98 academic year ... were much more likely to work full time compared to students whose parents had a college degree" (p. 4), a finding similar to the work of Terenzini et al. (1995).

The work of Pike and Kuh (2005) addressed the importance of understanding the needs of first-generation college students. Pike and Kuh focused on the following question: Why are first-generation college students not involved in their college environment? The researchers discovered that "first-generation students were less engaged overall and less likely to successfully integrate diverse college experiences; they perceived the college environment as less supportive and reported making less progress in their learning and intellectual development" (p. 289). Wilkins and Doyle (2002) studied the differences in engagement of college students who were

participants in a TRIO program, and students who were not in a TRIO program. TRIO programs purposefully target and support first-generation and low-income college students to help them succeed in college. Specifically, the main purpose of the study was to “assess the impact of good educational practices on the educational and personal development of first-generation and low-income students (TRIO eligible students)” (p. 9). The researchers gathered data from the 2001 National Survey of Student Engagement (NSSE), a survey that measures students’ participation in educationally purposeful activities and how they are related to college outcomes.. The dataset included over 175,000 first-year students who attend more than 300 four-year colleges and universities.

The first of Wilkins and Boyle's (2002) findings was that "their [first-generation college students] engagement in such educational practices (i.e., involvement in active/collaborative learning activities and interacting with faculty) was positively related to their cognitive and affective growth during college" (p. 14). The second major finding was that "low income, first generation students tend to benefit more from educational practices that involve them in activities such as class presentations or participation in class discussions, as well as activities that engage them in a collaborative learning process" (pp. 14-15).The researchers noted in their limitations that only four-year urban institutions were a part of the study. As such, their study cannot be generalized to other institutional types.

Pike and Kuh (2005) completed a study that analyzed the levels of engagement and intellectual development of first-generation and second-generation college students (second-generation college students could also be referred to as non-first-generation college students). Using Astin's (1970) I-E-O model as a theoretical framework, data from the College Student Experiences Questionnaire (CSEQ) was used to develop a stratified random sample of about 3,000 undergraduate students. Through descriptive statistics, and the Chi-square goodness-of-fit test, Pike and Kuh found that "first-generation students were less engaged overall and less likely to successfully integrate diverse college experiences; they perceived the college environment as less supportive and reported making less progress in their learning and intellectual development" (p. 289). Pike and Kuh supported their findings by indicating that prior studies regarding engagement of first-generation college students attribute "lower levels of academic and social engagement and learning and intellectual development to the immutable characteristic of being born to parents who did not go to college" (p. 290).

Limitations of the study, as noted by Pike and Kuh (2005), include that the first-generation students included in this study may not be a true representation of the population because participants were drawn from a stratified random sample. Also, this study pooled all responses from students of color, thus limiting the possibility to determine significant findings for specific racial and ethnic groups. This study was important to the body of literature focusing on the first-generation college student population because

it determined that “first-generation college students do not compare favorably with their peers from families where at least one parent graduated from college” (p. 289). As noted in the limitations, a future area of research pertaining to this study is to examine how first-generation college students from different ethnic backgrounds compare to each other and to non-first-generation college students of similar backgrounds.

### Conclusion

The literature regarding the first-generation student population strongly suggested that this group has needs and issues that require attention by both student affairs administrators and academic professionals. Core issues in examining first-generation college students included the multiple definitions of the term *first-generation college student*, demographic characteristics of these students, challenges this student population faced before and during matriculation into higher education, retention, and success in higher education.

According to the literature discussed, campus involvement contributes to numerous college outcomes and colleges success yet first-generation students were not as involved in their campus community as were non-first-generation college students.

Various issues were presented in the literature addressing the academic achievement of the first-generation college student population. Pre-college academic preparation emerged centrally related to the academic achievement of first-generation college students in secondary

education,(Riehl, 1994; Chen, 2005). This literature review also supported that first-generation college students struggle academically in a postsecondary environment in comparison to non-first-generation college students (Riehl). Some studies in this literature review depicted specific relationships between variables that are being examined in this study. In particular, the works of Astin (1993), Kuh (1995), Lundberg et al. (2007), Nuñez and Cucarro-Alamin (1998), Riehl (1994), Terenzini et al. (1995), and Terenzini (1995) showed relationships between the independent variables of this study (i.e., demographic characteristics, pre-college factors, involvement) and the dependent variable (i.e., postsecondary academic achievement).

Table 1 provides a table showing the relationships between such variables:

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Table 1: Review of the literature’s findings regarding the dependent and independent variables used in this study

<b>Author (publication year)</b>	<b>Independent Variable</b>	<b>Relationship to Postsecondary Academic Achievement</b>
1) Nuñez and Cucarro-Alamin (1998)	Age	Negative
1) Nuñez and Cucarro-Alamin (1998)	Socioeconomic Status	Negative
2) Astin (1993)	On-Campus Involvement	Positive
3) Kuh (1995)	On-Campus Involvement	Positive
4)Lundberg et al. (2007)	Off-Campus Involvement	Negative

5) Terenzini et al. (1995)	Off-Campus Involvement	Negative
6) Riehl (1994)	Pre-College Academic Achievement	Positive

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As explored through the review of literature of first-generation college students, postsecondary academic achievement, demographic characteristics, pre-college academic achievement and involvement, little is known about the intersections of these facets of the first-generation college student. Further research is needed to determine which demographic, pre-college, and involvement factors influence the postsecondary academic achievement of first-generation college students. Using Astin's (1970; 1991; 1999) involvement theory as a theoretical framework, this study identified such factors and their influence on the postsecondary academic achievement of first-generation college students. The following chapter will further discuss the procedures and methods used to analyze a sample of first-generation college student to determine whether there was a relationship between pre-college factors, levels of involvement, and academic achievement in college.

## CHAPTER THREE

### METHODS

This chapter presents an overview of the proposed research design and methodology. Specifically, it includes a restatement of the research question and hypotheses, context of the research, discussion of the sample, instrumentation, variables, data collection procedures, and data analysis

#### Research Question and Hypotheses

The purpose of this study was to examine the first-generation college student population at four-year public institutions in the U.S. in order to determine which demographic, pre-college academic achievement, and select involvement factors influenced their postsecondary academic achievement. As a result, the following research question was posed: How much variance of the postsecondary academic achievement of first-generation college students is explained by demographic, pre-college academic achievement, and involvement factors? The following *a priori* hypotheses were developed as a result of the findings of the literature regarding the first-generation college student:

1. Age is negatively related to postsecondary academic achievement, as measured by college GPA.
2. Socioeconomic Status is negatively related to postsecondary academic achievement, as measured by college GPA.

3. Pre-College Academic Achievement, as measured by high school GPA, is positively related to postsecondary academic achievement, as measured by college GPA.
4. Off-Campus Experiences are negatively related to postsecondary academic achievement, as measured by college GPA.
5. On-Campus Experiences are positively related to postsecondary academic achievement, as measured by college GPA.

#### Framework of Study and Research Design

This *ex post facto* study analyzed data collected as part of the Multi-institutional Study of Leadership (MSL), a nation-wide survey of college student leaders conducted in the Spring of 2006 that was developed by a research team at the University of Maryland, College Park. The team was comprised of University faculty and students (from the Department of Counseling and Personnel Services in the College of Education), and University student affairs staff members (Komives, Dugan, & Segar, 2009).

The MSL provided a useful database for this study. As previously mentioned in Chapter One, the following were the reasons for using the MSL: (1) it collected data for all of the factors in this study by means of single items of discrete behavior (2) it used Astin's (1970, 1991) I-E-O model as a theoretical framework for the study, and (3) the MSL dataset included a large number of first-generation respondents. Using a dataset that focuses on leadership may pose as a limitation for this study, however, the MSL is a comprehensive study that provides data regarding both the off and on-

campus involvement of college students and provides the ability to better understand the involvement of first-generation college students, an area that has been researched sparsely.

According to Dugan and Komives (2007), the purpose of the Multi-Institutional Study of Leadership was “to examine these exact questions as a means to increase the capacity of both leadership educators and institutions in developing the critical leadership skills in students that are so needed by society” (p. 8).

Theoretically, the MSL was based upon the Social Change Model (SCM) of Leadership Development (Higher Education Research Institute, 1996), framed within Astin’s (1991) college impact model. Astin’s I-E-O (Inputs-Environments-Outcomes) model was developed in order to depict the effects of the college environment on the development of the student. Further discussion of the MSL can be found within the instrumentation section of this chapter.

#### Conceptual Framework of the Study

Similar to the MSL, this study was guided by Astin’s (1991) I-E-O model. The I-E-O Model generally states that an individual’s environment can have a significant impact on his or her development. Astin (1993) described the model as providing a resource to measure how students grow or change in the college environment under the impact of one or more different environmental experiences. Students enter college with a certain level of

development and a certain set of characteristics, such as age, ethnicity, and socioeconomic status that is represented in Astin's (1991) model as *inputs*. The college atmosphere contains many factors that will impact the college student, such as on-campus involvement, and thus is represented in Astin's model as *environment*. As illustrated in Astin's (1991) model, a student's *inputs* and his or her *environment* interact, and the product is a new set of values and characteristics that a student possesses. The new characteristics and developmental processes that a student possesses may be different than what he or she acquired before they entered the college environment. The model represents this change in student development as *outcomes*.

#### Sampling Strategy of the MSL

As noted previously, this study utilized a pre-existing dataset. These data were collected from the MSL. The MSL Research team initially utilized a survey of 65,095 students (comparison and random samples) representing 55 institutions from across the nation, however the final sample represented 50,378 students at 52 different institutions. These adjustments in samples are described in more detail below. The MSL identified and reported two different sampling strategies—a sample of institutions and a sample of students.

#### *Sample of Institutions*

Dugan, Komives, and Segar (2009) described the process used by the MSL research team to recruit institutional partners and, ultimately, student participants. Over 150 institutions indicated an interest in participating in the study. This is therefore a non-random sample. Through purposeful sampling

techniques based on various criteria such as size of campus, diversity of regional representation, and representation of specific types of institutions, 55 institutions were selected. Of the original 55 institutions selected to participate in the study, three institutions were not a part of the final data collection. Of the three institutions, two chose to withdraw from the study, and the other did not comply with the requirements and guidelines set forth by the MSL team so was removed from the data. Finally, 52 institutions were represented in the final study.

### *Sample of Students*

Small campuses (i.e., those with fewer than 4,000 students) used their entire student population as a sample, while simple random samples were developed from the population of institutions with more than 4,000 students. The larger institutions had the opportunity to select an additional 500 students to serve as a comparison sample although those students were not used in the national MSL sample. The size of each random sample was based upon a 95% level of confidence and a 3% margin of error. All participating campuses were oversampled by 70% to obtain a 30% response rate (Dugan, Komives, & Segar, 2009). The MSL survey instrument was sent to a total of 165,701 students. A total of 65,095 students responded, including those in campus comparison samples for a 38% response rate. Only 50,378 students used in national MSL data analysis representing those not in comparison samples,

### *Sample for This Study*

As mentioned previously, first-generation college students were reported to earn more associate degrees than bachelor's degrees and tended to matriculate at more two-year colleges than four-year institutions (Bui, 2002; Chen, 2005; Zhang & Chan, 2007). Due to this finding of more success at two year college, the context of interest to the study were those enrolled at four year colleges in baccalaureate programs so the final sample of this study only represented first-generation college students at four-year institutions. This study focused on first-generation college students at four-year institutions; this stratified sample represents a total of 5,757 students.

As depicted in previous chapters, many studies regarding first-generation college students were comparative in nature and typically looked at group differences between first-generation college students and non-first-generation college students. A within-group study analysis was implemented in this study in order to isolate and focus the effects on first-generation college students. In an attempt to increase the amount of research regarding first-generation college students who attend four-year institutions, only students who attended these institutions were used in the study. To ensure that all students in the sample are first-generation, this study used the following question from the MSL survey depicted in Table 2

to define this characteristic.

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Table 2: First-Generation Status (Question #35 on the MSL Survey Instrument)

**35. What is the HIGHEST level of formal education obtained by any of your parent(s) or guardian(s)?** (Choose one)

- Less than high school diploma or GED (Included in sample)
- High school diploma or GED (Included in sample)
- Some college (Not included in sample)
- Associates degree (Not included in sample)
- Bachelors degree (Not included in sample)
- Masters degree (Not included in sample)
- Doctorate or professional degree (e.g., JD, MD, PhD) (Not included in sample)
- Don't know (Not included in sample)

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To stay consistent with this study's definition of first-generation, those who selected *High school diploma or GED, or Less than high school diploma or GED* were included in the sample. Students who selected *Don't know, Some college, or any of the college degree choices* were not included in the study's final sample.

### Instrumentation

This study did not create an instrument in which to collect data; instead secondary data was collected through the 2006 Multi-Institutional Study of Leadership's instrument. The 37 original questions in the MSL Student Survey were categorized into multiple sections: a section devoted to student demographic questions, a section of questions that pertained to student characteristics prior to college, a section that pertained to the Socially Responsible Leadership Scale (HERI, 1996; Tyree, 1998), and questions that pertained to experiences while in college, such as on-campus and off-campus involvement and college GPA. In addition, several methodological techniques,

scales, and materials were adapted with permission from other sources such as the National Study of Living Learning Program (Inkelas & Associates, 2004).

#### *Pilot Testing of the MSL*

The instrument was refined through pilot testing. The MSL researchers conducted two separate pilot tests (Komives & Dugan, 2005). A total of 14 participants for the first pilot test were selected by members of the MSL team based on their campus involvement and leadership knowledge. The general consensus was that the survey took about 30 minutes to finish. The participant sample also stated that the survey was too long and repeated similar ideas. The sample also suggested minor word changes that were accepted and added into the final draft of the MSL student survey.

The second pilot test was intended to verify that the web-based survey instrument worked properly, as this was the method in which the survey would be administered. In addition, the research team wanted to examine students who did not complete the survey. A random sample of 3,411 students from the University of Maryland, College Park was used as the sample in the pilot test. Of the 3,411 students that received the survey, only 782 students attempted to complete the survey. Of the 782 students who attempted to complete the survey, 12% of them did not finish. While the second pilot test took on average 25-30 minutes to complete, the number of students who did not complete the survey caused the research team to shorten the survey by eliminating items (Komives & Dugan, 2005).

### *Validity and Reliability of the MSL*

The items and scales contained on the MSL were developed and reviewed by expert raters (Komives & Dugan, 2005). While scales such as the one measuring leadership efficacy had tests for validity and reliability, this study was unique in that it used single items from the MSL survey that represented discrete characteristics or behaviors (e.g., age, ethnicity, breadth of on-campus involvement). While research has been devoted to developing methods and procedures for measuring the validity of single items and questionnaires (Aiken, 1980; Carey & Seibert, 1993), the MSL team has not calculated validity for those items.

### *Variables for this Study*

The following is a description of the variables that were used in this study. All variables can be categorized as demographic, input, environment, or outcome. Appendix A contains the name of each variable, its measure (numerical, categorical, etc), the question it is derived from in the MSL instrument, the response choices, how the variable is coded in this study, and the I-E-O variable type (input, environment, output).

### *Demographic Variables*

Only those MSL variables directly related to the research question were used in this study. Age, gender, ethnicity, and economic status are all characteristics that describe the college student. As current literature supports that demographic characteristics such as age, gender, ethnicity, and socioeconomic status could have an impact on postsecondary academic

achievement (Chen, 2005; Nuñez & Cucarro-Alamin, 1998; Terenzini et al., 1995), a block was created in this study to represent all demographic variables. Chapter Four provides descriptive statistics for all variables included in the study.

### *Age*

The MSL survey measured *age* by the use of a text box where respondents entered in a whole number representing their age. This integer was used to represent age in this study.

### *Gender*

The MSL survey measured gender by asking respondents to select one of three options: (a) female, (b) male, or (c) transgender. The final sample of the MSL depicted that only 42 participants of the sample selected *Transgender* as their gender identity. This number was exceptionally low, in comparison with those who indicated *Female* or *Male*; therefore, all respondents who selected *Transgender* were excluded from the study. As a categorical variable, female were dummy coded as 1 and male as 2 in the data analysis.

### *Race/Ethnicity*

Table 3 depicts how the MSL survey measured *race/ethnicity*.

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Table 3: Race/Ethnicity (Question #31 on the MSL Survey Instrument)

**31. Please indicate your racial or ethnic background.** (Mark all that apply)

- White/Caucasian
  - African American/Black
  - American Indian/Alaska Native
  - Asian American/Asian
  - Native Hawaiian/Pacific Islander
  - Mexican American/Chicano
  - Puerto Rican
  - Cuban American
  - Other Latino American
  - Multiracial or multiethnic
  - Race/ethnicity not included above
- 

The nature of this question on the survey instrument allowed respondents the ability to choose more than one racial or ethnic background. To examine each racial/ethnic identity, the racial/ethnic identity groups were categorized and a set of dummy variables were created. All respondents who selected *Mexican American/Chicano*, *Puerto Rican*, *Cuban American*, or *Other Latino American* were coded identically as Latino. The original MSL included *Mexican American/Chicano*, *Puerto Rican*, *Cuban American*, or *Other Latino American* choices because there were Hispanic-Serving Institutions (HSIs) represented in the final institutional sample that were interested in the needs of specific Hispanic/Latino/Spanish origin students. In this study, any respondents who selected more than one race/ethnicity were grouped under the identity *Multiracial or multiethnic*.

## *Socioeconomic Status*

Socioeconomic Status was represented as the aggregate income level of the parent(s) or guardian(s) of a first-generation college student. Table 4 depicts how the MSL survey measured socioeconomic status:

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Table 4: Socioeconomic Status (Question #36 on the MSL Survey Instrument)

**36. What is your best estimate of your parent(s) or guardian(s) combined total income from last year? If you are independent from your parents, indicate your income.**

(Choose one)

- Less than \$12,500 (Coded as 1)
- \$12,500 - \$24,999 (Coded as 2)
- \$25,000 – \$39,999 (Coded as 3)
- \$40,000 – \$54,999 (Coded as 4)
- \$55,000 - \$74,999 (Coded as 5)
- \$75,000 - \$99,999 (Coded as 6)
- \$100,000 - \$149,999 (Coded as 7)
- \$150,000 - \$199,999 (Coded as 8)
- \$200,000 and over (Coded as 9)
- Don't know
- Rather not say

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Respondents who selected the options *Don't know* or *Rather not say* were not included in the final sample for the study.

## *Pre-College Academic Achievement*

Pre-college academic achievement was represented by the self-reported high school grade point average (GPA). As a result, pre-college academic achievement was considered an input variable, and was placed in a new block different than the demographic characteristics.

Table 5 depicts how the MSL survey measured pre-college academic achievement.

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Table 5: High School GPA: Question #25 on the MSL Survey Instrument

**25. What were your average grades in High School?**

(Choose One)

- A or A+ (Coded as 7)
  - A- or B+ (Coded as 6)
  - B (Coded as 5)
  - B- or C+ (Coded as 4)
  - C (Coded as 3)
  - C- or D+ (Coded as 2)
  - D or lower (Coded as 1)
- 

*Environment Variables*

For the purposes of this study, (a) off-campus involvement, and (b) on-campus involvement were both represented as environment in Astin's (1991) I-E-O model. Even though Astin only studied the college experience in the actual college environment, off-campus involvement also was addressed, since involvement outside the college community was a part of the experience of first-generation college students. This study sought to determine if either of these categories had a relationship with postsecondary academic achievement. Therefore, off-campus experiences and on-campus experiences represented two separate and distinct blocks representing environment.

*Off-Campus Experiences*

This study included two variables that represented off-campus experiences: working off-campus and involvement in off-campus organizations. The MSL study measured working off-campus first by asking respondents if they currently worked off-campus. If the respondents selected YES, they were then asked to provide the amount of hours that they worked

in a 7-day time period. This number was recorded in a text box. Those who did not work off campus were coded as 0 and all others with the number of hours worked. The MSL measured involvement in off-campus organizations by asking respondents to rate their level of involvement on a Likert scale from one to five. A rating of one represented “never” being involved, and a rating of five represented being involved “much of the time”.

### *On-Campus Experiences*

This study included three variables that represented on-campus experiences: working on-campus, involvement in on-campus organizations and student groups, and breadth of on-campus involvement.

The MSL study measured working on-campus first by asking respondents if they currently worked on-campus. If the respondents selected YES, then they were asked to provide the amount of hours that they worked in a 7-day time period. This number was recorded in a text box. Those who did not work on campus were coded as 0 and all others with the number of hours they worked. The MSL measured involvement in on-campus organizations by asking respondents to rate their level of involvement on a Likert scale from one to five. A rating of one represented “never” being involved, and a rating of five represented being involved “much of the time”. Table 6 depicts how breadth of on-campus involvement was measured.

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Table 6: Breadth of Involvement (Question #14 on the MSL Survey Instrument)

**14. Which of the following kinds of student groups have you been involved with during college?**

(Check all the categories that apply)

1. Academic/ Departmental/ Professional (e.g., Pre-Law Society, an academic fraternity, Engineering Club)
2. Arts/Theater/Music (e.g., Theater group, Marching Band)
3. Campus-wide programming groups (e.g., program board, film series board, a multicultural programming committee)
4. Cultural/ International (e.g., Black Student Union, German Club)
5. Honor Society (e.g., Omicron Delta Kappa [ODK], Mortar Board, Phi Beta Kappa)
6. Living-learning programs (e.g., language house, leadership floors, ecology halls)
7. Leadership (e.g., Peer Leadership Program, Emerging Leaders Program)
8. Media (e.g., Campus Radio, Student Newspaper)
9. Military (e.g., ROTC)
10. New Student Transitions (e.g., admissions ambassador, orientation advisor)
11. Para professional group (e.g., Resident assistants, peer health educators)
12. Political/ Advocacy (e.g., College Democrats, Students Against Sweatshops)
13. Religious (e.g., Campus Crusades for Christ, Hillel)
14. Service (e.g., Circle K, Alpha Phi Omega [APO])
15. Culturally based fraternities and sororities (e.g., National Pan-Hellenic Council (NPHC) groups such as Alpha Phi Alpha Fraternity Inc., or Latino Greek Council groups such as Lambda Theta Alpha)
16. Social fraternities or sororities (e.g. Panhellenic or Interfraternity Council groups such as Sigma Phi Epsilon or Kappa Kappa Gamma)
17. Sports- Intercollegiate or Varsity (e.g., NCAA Hockey, Varsity Soccer)
18. Sports- Club (e.g., Club Volleyball)
19. Sports- Leisure or Intramural (ex: Intramural flag football, Rock Climbing)
20. Special Interest (ex: Comedy Group)
21. Student governance group (ex: Student Government Association, Residence Hall Association, Interfraternity Council)

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Each respondent selected all activities that they participated in from this list.

To depict the concept of breadth of on-campus student involvement, the number of activities in which each student participated was aggregated and a numerical value was assigned based upon how many selections were made.

*Outcome Variables*

Postsecondary academic achievement, as measured by the respondent's self reported GPA in college served as the study's sole dependent variable. GPAs are just one measure of academic achievement,

and part of the achievement is based upon input and environmental factors and conditions. As a result, postsecondary academic achievement served as the only output variable. Table 7 depicts how postsecondary academic achievement was measured.

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Table 7: College GPA (Question #34 on the MSL Survey Instrument)

**34. What is your best estimate of your grades so far in college? [Assume 4.00 = A]**

(Choose One)

- 3.50 – 4.00 (Coded as 5)
  - 3.00 – 3.49 (Coded as 4)
  - 2.50 – 2.99 (Coded as 3)
  - 2.00 – 2.49 (Coded as 2)
  - 1.99 or less (Coded as 1)
  - No college GPA
- 

Sample participants who selected *No college GPA* were eliminated from this study's final sample.

#### Data Collection Procedures

The MSL survey instrument was administered electronically during Spring 2006, with the assistance of Survey Sciences Group (SSG), a survey research firm employed by the research team (Komives & Dugan, 2005). Sampled students were sent an email requesting their participation in the study. Each email was customized by the participating institutions, and some institutions included additional information, such as special incentive programs (e.g., gift cards/certificates) for the completion of the survey. Every email that was distributed contained a hyperlink to a secure website containing the survey. The email also contained a unique, random-generated

Identification number to protect the confidentiality of the student who was completing the survey. After the student provided the appropriate credentials on the survey instrument website, the student was asked to give consent to participate in the study. After the student completed the survey, his or her information was collected by SSG, who was responsible for providing all of the data to the MSL Research Team. Students who did not complete the survey received up to two additional emails (three emails in total) reminding them to complete the survey instrument. The survey itself was completed in an average of twenty minutes.

#### Data Analysis/Implementation

To address the research questions of the current study, multiple regression was used in accordance with Astin's (1991) I-E-O model. In doing so, it was determined whether there was a statistically significant relationship between demographic characteristics, pre-college academic achievement, involvement, and postsecondary academic achievement of first-generation college students. As suggested by Astin, variables were entered in blocks to allow the researcher to determine how much of the variance in students' postsecondary academic achievement is explained by each group of the independent variables. Astin stated that the regression model should order blocks of independent variables based on the degree in which they are distal (distant) to the dependent variable, and that variables that are more proximal (close) to the dependent variable should be the last entered into the model

Table 8 depicts all variables in this study, and the associated blocks in which they are located.

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Table 8: Variables and their associated blocks within the regression

**Block One: Inputs (Demographic Characteristics)**

1. Age
2. Gender
3. Race/Ethnicity
4. Socioeconomic Status

**Block Two: Inputs (Pre-College)**

1. Pre-College Academic Achievement (Self-Reported High School GPA)

**Block Three: Environment (Off-Campus)**

1. Working Off-Campus
2. Off-Campus Involvement

**Block Four: Environment (On-Campus)**

1. Working On-Campus
2. On-Campus Involvement
3. Breadth of Involvement

**Dependent Variable**

1. Postsecondary Academic Achievement (Self-Reported College GPA)
- 

This study's research questions and its related hypotheses were tested simultaneously through the regression model. This study utilized SPSS (Statistical Package for the Social Sciences), Version 16.0 to perform all calculations and statistical analysis. To test the hypotheses, a hierarchical regression analysis was conducted, and SPSS produced a table with the estimated (fitted) values of the beta coefficients of each of the independent variables within each block. The table also displayed the  $R^2$  value for each of

the blocks, and by using hierarchal regression, it was possible to see the  $R^2$  value as each block was added into the model, from most distal to most proximal.

This study was performed in three distinct steps: (a) descriptive statistics, (b) running the regression model, and (c) report of significant findings.

### *Descriptive Statistics*

Basic information was gathered from each of the independent and dependent variables, including measures of central tendency (e.g., mean and standard deviation)

### *The Regression Model*

As noted previously within this chapter, the regression model was constructed by entering each of the variable blocks in the model in order of most distal to most proximal to the dependent variable and corresponding to Astin's (1991) I-E-O model. In the current study, environment variables were entered last into the model in order to see its specific contribution to the variance of postsecondary academic achievement, taking into consideration all input factors. While researchers and administrators cannot change or modify one's demographic characteristics or pre-college factors, the types of involvement, particularly on-campus involvement can be modified to meet the needs of first-generation college students. As a result, this information could be used to inform potential higher education researchers and practitioners of ways in which on-campus experiences contribute best to the postsecondary

academic performance of first-generation college student. As noted in Table 8, the order the blocks were entered into the model was as follows: (a) demographic variables, (b) pre-college academic achievement, (c) off-campus experiences, (d) on-campus experiences. Postsecondary academic achievement was entered as the dependent variable.

Due to power of the large sample in this study (N=5,757), a more conservative p-value was used ( $p < .001$ ).  $R^2$  values for each block,  $R^2$  values for the entire regression, values for the beta coefficients, corresponding significance indicators (e.g., p-values), and F-tests were retrieved from the regression results.

Finally, tests for the violation of the assumptions of the regression model (as noted above) were performed and reported.

#### *Assumptions of Statistical Model*

When performing multiple regression statistical analysis, there are model assumptions that must be addressed: (a) linearity, (b) independence of the error terms, (c) homoskedasticity, and (d) normality of the error distribution (Nau, 2005). In addition, a fifth assumption of non-multicollinearity, must be addressed (Cortina, 1993). All of these assumptions were tested using various procedures and tests included in the SPSS 16.0 package.

#### *Linearity*

In this study, linear multiple regression was used. One assumption made is that the relationships between the dependent and independent

variables are linear in nature (Nau, 2005). This assumption is violated when in actuality the relationship between the dependent and independent variable is not linear (e.g., quadratic, cubic, logarithmic). Upon observation, it was determined that no corrections to the model need to be made regarding this assumption.

#### *Independence of the Error Terms*

Lack of independence of the error term is most prevalent when the representative sample in a population is not random—in particular when students are grouped within institutions. As a result, the errors of students of an institution may be correlated. This assumption was tested in this study by using the Durbin-Watson test, a form of statistical analysis (Nau, 2005). The Durbin-Watson statistic obtained by the regression model was statistically significant, meaning that the model did not violate this assumption.

#### *Homoskedasticity*

Homoskedasticity occurs when variance of the errors of the model around the regression line is the same for all values of the predictor variable. This was tested by utilizing the SPSS package and producing a scatter plot with the X-axis representing the residuals of the model, and the Y-axis representing the predicted values. A violation of homoskedasticity occurs if there are irregular patterns of the residuals about the regression line (Nau, 2005). Upon observation, it was determined that no corrections to the model need to be made regarding this assumption.

### *Normality of the Error Distribution*

This violation can occur when there are many outliers in the study, which distort the fit of the linear model to the data (Nau, 2005). To check this violation, a P-P plot was analyzed. Upon observation, it was determined that this assumption was not violated.

### *Multicollinearity*

Multicollinearity can occur if any of the independent variables are heavily correlated with each other. This could happen if two variables in a study are similar in nature or are redundant. This effect can have a significant effect on the fitting of the linear model to the data. Multicollinearity exists if the variance inflator factor (VIF) for a variable is high (generally considered to be above 10). If multicollinearity exists, one or more affected variables may need to be removed from the regression (Cortina, 1993). Upon observance of the VIFs for the variables in the study none of the values was greater than 10; therefore, the multicollinearity assumption was not violated.

### Conclusion

This chapter provided the quantitative methodology to determine if there exists a relationship between academic achievement and the independent variables for this study, which included demographic characteristics, pre-college academic achievement, off-campus experiences, and on-campus experiences. Chapter Four will discuss the findings of the study.

## CHAPTER FOUR

### RESULTS

The purpose of this study was to examine the first-generation college student population at four-year public institutions in the United States in order to determine which demographic, pre-college academic achievement, and involvement factors influence their postsecondary academic achievement. As a result, the following research question was posed: How much variance of the postsecondary academic achievement of first-generation college students is explained by demographic, pre-college academic achievement, and college involvement factors? This chapter will first discuss the characteristics of the sample of this study. Second, this chapter will provide descriptive statistics of all of the data analyzed, organized by the block used. Third, this chapter will discuss the regression analysis.

#### Sample Characteristics

The sample was obtained from the Multi-Institutional Study of Leadership (MSL) dataset of 50,378 students. For the purposes of this study, the sample had to only represent first-generation college students at four-year institutions. Refer to Chapter Three for more details on how this was achieved. Within the dataset, a total of N=5,757 respondents (11.43%) represented first-generation college students who attended four-year institutions. While the total number of respondents is 5,757, the total number of respondents that answered each question on the MSL survey instrument may have been different. The MSL was developed so that each question was

optional for students to complete. As a result, some statistical analyses, such as the regression, were performed with a value less than 5,757. More detailed information regarding the number of respondents who answered a question or included in specific statistical analyses will be provided in the subsequent sections.

### Descriptive Statistics

For more information about the variables used, and the questions that they corresponded with on the MSL, refer to Chapter Three. Some continuous variables (e.g. age) were also presented with categorical ranges to illustrate the distribution of the students within this characteristic.

#### *Block One: Inputs (Demographic Characteristics)*

##### *Age*

For age, a total of 5,738 students responded to this question. Table 9 indicated that the mean *age* of the sample was 23.35 (SD = 7.38), and the median *age* was 21. The ages of the respondents ranged from 18 (the youngest and the youngest allowable in the study) to 68 (the oldest). Table 9 presented these data in ranges to aid in the interpretation of the findings.

##### *Gender*

For gender, all 5,757 students responded to this question. Table 9 indicated that 64.93% ( $n=3,738$ ) were female and 35.07% ( $n=2,019$ ) were male.

### *Race/Ethnicity*

On the MSL survey instrument, ethnicity was presented to respondents as one single question. As stated in Chapter Three, due to the fact that respondents could have selected more than one option, and that the variable itself is categorical, racial/ethnic groups are comprised only of those for whom that was their only racial/ethnic choice. Respondents who selected more than one race/ethnicity were grouped as Multiracial or multiethnic.

For race/ethnicity, 5,731 students responded. As noted in Table 9, 57.11% ( $n=3,273$ ) of the sample identified only as White/Caucasian, 7.78% ( $n=446$ ) of the sample identified as African American/Black, .45% ( $n=26$ ) of the sample identified as American Indian/Alaska Native, 10.85% ( $n=622$ ) of the sample identified as Asian American/Asian, .31% ( $n=18$ ) of the sample identified as Native Hawaiian/Pacific Islander, 14.13% ( $n=810$ ) of the sample identified as Latino, 2.62% ( $n=150$ ) of the sample indicated that their ethnicity was not included, and 6.74% ( $n=386$ ) of the sample identified as Multiracial/Multiethnic or were placed in this category by having selected two or more other racial/ethnic groups. The group White/Caucasian served as the referent group of the study.

### *Socioeconomic Status*

For *socioeconomic status*, all 5,757 students responded. As noted in Table 9, 11.92% ( $n=686$ ) of the sample had a combined personal or family income of less than \$12,500, 16.48% ( $n=949$ ) of the sample had a combined personal or family income between \$12,500 and \$24,999, 19.32% ( $n=1,112$ )

of the sample had a combined family income between \$25,000 and \$39,999, 15.74% ( $n=906$ ) of the sample had a combined family income between \$40,000 and \$54,999, 16.71% ( $n=962$ ) of the sample had a combined family income between \$55,000 and \$74,999, 9.74% ( $n=561$ ) of the sample had a combined family income between \$75,000 and \$99,999, 6.22% ( $n=358$ ) of the sample had a combined family income between \$100,000 and \$149,999, 1.70% ( $n=98$ ) of the sample had a combined family income between \$150,000 and \$199,999, and 2.17% ( $n=125$ ) of the sample had a combined family income over \$200,000. The mean socioeconomic status was 3.84 with a standard deviation of 1.96 indicating a mean in the range of \$25,000 to \$54,999.

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Table 9: Frequencies of Independent Variables in Block One

<b>Respondent Characteristics</b>	<b>N</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
<b><u>Age</u></b>			
18 - 19 years old	1656	28.86%	28.86%
20 - 21 years old	1795	31.28%	60.14%
22 - 23 years old	911	15.88%	76.02%
24 - 30 years old	678	11.82%	87.84%
31 - 40 years old	391	6.81%	94.65%
Older than 40 years old	307	5.35%	100.00%
<b><u>Gender</u></b>			
Female	3738	64.93%	64.93%
Male	2019	35.07%	100.00%
<b><u>Ethnicity</u></b>			
White/Caucasian	3273	57.11%	57.11%
African American/Black	446	7.78%	64.89%
American Indian/Alaska Native	26	0.45%	65.35%
Asian American/Asian	622	10.85%	76.20%
Native Hawaiian/Pacific	18	0.31%	76.51%

Islander			
Latino	810	14.13%	90.65%
Race Not Included	150	2.62%	93.26%
Multiracial/Multiethnic	386	6.74%	100.00%
<b><u>Socioeconomic Status</u></b>			
Less than \$12,500	686	11.92%	11.92%
\$12,500-\$24,999	949	16.48%	28.40%
\$25,000-\$39,999	1112	19.32%	47.72%
\$40,000-\$54,999	906	15.74%	63.46%
\$55,000-\$74,999	962	16.71%	80.17%
\$75,000-\$99,999	561	9.74%	89.91%
\$100,000-\$149,999	358	6.22%	96.13%
\$150,000-\$199,999	98	1.70%	97.83%
\$200,000 and over	125	2.17%	100.00%

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### *Block Two: Inputs (Pre-College Academic Achievement)*

#### *High School GPA*

For Pre-college academic achievement, measured by high school GPA, 5,754 students responded. As noted in Table 10, 32.15% ( $n=1,850$ ) of the sample indicated their GPA in the A to A+ range, 36.41% ( $n=2,095$ ) of the sample indicated their GPA in the A- to B+ range, 16.93% ( $n=974$ ) of the sample indicated their GPA in the B range, 9.28% ( $n=534$ ) of the sample indicated their GPA in the B- to C+ range, 3.56% ( $n=205$ ) of the sample indicated their GPA in the C range, 1.18% ( $n=68$ ) of the sample indicated their GPA in the C- to D+ range, and .49% ( $n=28$ ) of the sample indicated their GPA as a D or lower. The mean of this variable was 5.79 (SD=1.20), and the median was 6.00. The mean of this variable corresponds to a GPA range of A- to a B. All of the measures of central tendency and dispersion, along with cumulative percentage show that the majority of the sample (85.49%) held GPAs of a B or higher. Refer to Table 10 for the frequencies of the independent variables in the second block of the regression.

Table 10: Frequencies of Independent Variables in Block Two

<b>Respondent Characteristics</b>	<b>categorical code</b>	<b>N</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
<b><u>High School GPA</u></b>				
A or A+	7	1850	32.15%	32.15%
A- or B+	6	2095	36.41%	68.56%
B	5	974	16.93%	85.49%
B- or C+	4	534	9.28%	94.77%
C	3	205	3.56%	98.33%
C- or D+	2	68	1.18%	99.51%
D or lower	1	28	0.49%	100.00%

*Block Three: Environment (Off-Campus Experiences)*

*Working Off-Campus*

For *working off-campus*, all 5,757 students responded. Data were reported in ranges for ease in interpretation. As noted in Table 11, 52.82% ( $n=3,041$ ) of the sample indicated that they did not work any hours off-campus, 7.26% ( $n=418$ ) of the sample indicated that they worked between 1 and 10 hours off-campus, 14.75% ( $n=849$ ) of the sample indicated that they worked between 11 and 20 hours off-campus, 11.59% ( $n=667$ ) of the sample indicated that they worked between 21 and 30 hours off-campus, 10.16% ( $n=585$ ) of the sample indicated that they worked between 31 and 40 hours off-campus, and 3.42% ( $n=197$ ) of the sample indicated that they worked more than 40 hours off-campus. For this variable, the mean was 11.68 hours ( $SD=15.07$ ), and the median was zero hours. The vast difference in mean and median, and the largeness of standard deviation depicts that the range of responses from students was skewed.

### *Off-Campus Involvement*

For off-campus involvement, all 5,757 students responded. As noted in Table 11, 53.66% ( $n=3,089$ ) of the sample indicated that they never participated in any off-campus community organizations, 10.06% ( $n=579$ ) of the sample indicated that they participated one time in off-campus community organizations, 18.79% ( $n=1,082$ ) of the sample indicated that they sometimes participated in off-campus community organizations, 10.20% ( $n=587$ ) of the sample indicated that they participated in off-campus community organizations many times, and 7.30% ( $n=420$ ) of the sample indicated that they participated in off-campus community organizations much of the time. The mean of this variable is 2.07 (SD=1.33), and the median is 1.00. All of the measures of central tendency and dispersion, along with cumulative percentage showed that only more than one-third (36.29%) of the sample reported their off-campus involvement as sometimes or higher. Refer to Table 11 for the frequencies of the independent variables in the third block of the regression.

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Table 11: Frequencies of Independent Variables in Block Three

<b>Respondent Characteristics</b>	<b>N</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
<b><u>Working Off-Campus</u></b>			
0 hours	3041	52.82%	52.82%
1 - 10 hours	418	7.26%	60.08%
11 - 20 hours	849	14.75%	74.83%
21 - 30 hours	667	11.59%	86.41%
31 - 40 hours	585	10.16%	96.58%
More than 40 hours	197	3.42%	100.00%

**Off-Campus Involvement**

Never (1)	3089	53.66%	53.66%
One Time (2)	579	10.06%	63.72%
Sometimes (3)	1082	18.79%	82.51%
Many Times (4)	587	10.20%	92.71%
Much of the Time (5)	420	7.30%	100.00%

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*Block Four: Environment (On-Campus Experiences)*

*Working On-Campus*

For working on-campus, all 5,757 students responded. As noted in Table 12, 73.61% ( $n=4,238$ ) of the sample indicated that they did not work any hours on-campus, 13.95% ( $n=803$ ) of the sample indicated that they worked between 1 and 10 hours on-campus, 9.92% ( $n=571$ ) of the sample indicated that they worked between 11 and 20 hours on-campus, 1.48% ( $n=85$ ) of the sample indicated that they worked between 21 and 30 hours on-campus, .96% ( $n=55$ ) of the sample indicated that they worked between 31 and 40 hours on-campus, and .09% ( $n=5$ ) of the sample indicated that they worked more than 40 hours on-campus. For this variable, the mean was 3.38 hours ( $SD=7.01$ ), meaning that the number of hours worked on-campus varied among the sample. However, since all respondents who did not work on campus reported working zero hours on campus, the distribution was skewed.

*On-Campus Involvement*

For on-campus involvement, 5,756 students responded. As noted in Table 12, 30.52% ( $n=1,757$ ) of the sample indicated that they never participated in any on-campus college organizations, 15.36% ( $n=884$ ) of the

sample indicated that they participated one time in on-campus college organizations, 27.62% ( $n=1590$ ) of the sample indicated that they sometimes participated in on-campus college organizations, 14.73% ( $n=848$ ) of the sample indicated that they participated in on-campus college organizations many times, and 11.76% ( $n=677$ ) of the sample indicated that they participated in on-campus college organizations much of the time. The mean of this variable is 2.62 ( $SD=1.36$ ), and the median is 3.00. The value of the standard deviation is high, considering how this variable was scaled (1-5). Even though the mean suggests that all first-generation college students are involved on campus, the value of the standard deviation shows behaviors of first-generation college students vary in that some are very involved, and some are not at all.

### *Breadth of Involvement*

For breadth of involvement, 5,726 students responded. Ranges are reported for each in interpretation. As noted in Table 12, 25.1% ( $n=1,437$ ) of the sample indicated that they had not participated in any student groups, 19.2% ( $n=1,104$ ) of the sample indicated that they only participated in one student group, 27.45% ( $n=1,572$ ) of the sample indicated that they only participated in 2-3 student groups, 14.09% ( $n=807$ ) of the sample indicated that they participated in 4-5 student groups, 7.61% ( $n=436$ ) of the sample indicated that they participated in 6-7 student groups, and 6.46% ( $n=370$ ) of the sample indicated that they participated in 8 or more student groups. The mean of this variable is 2.66 ( $SD=2.97$ ); the median is 2.00. The vast

difference in mean and median, and the large standard deviation depicts that the range of responses from students was quite varied. Refer to Table 12 for the frequencies of the independent variables in the fourth block of the regression.

Table 12: Frequencies of Independent Variables in Block Four

<b>Respondent Characteristics</b>	<b>N</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
<b><u>Working On-Campus</u></b>			
0 hours	4238	73.61%	73.61%
1 - 10 hours	803	13.95%	87.56%
11 - 20 hours	571	9.92%	97.48%
21 - 30 hours	85	1.48%	98.95%
31 - 40 hours	55	0.96%	99.91%
More than 40 hours	5	0.09%	100.00%
<b><u>On-Campus Involvement</u></b>			
Never	1757	30.52%	30.52%
One Time	884	15.36%	45.88%
Sometimes	1590	27.62%	73.50%
Many Times	848	14.73%	88.23%
Much of the Time	677	11.76%	100.00%
<b><u>Breadth of On-Campus Involvement</u></b>			
0 student groups	1437	25.10%	25.10%
1 student group	1104	19.28%	44.38%
2 - 3 student groups	1572	27.45%	71.83%
4 - 5 student groups	807	14.09%	85.93%
6 -7 student groups	436	7.61%	93.54%
8 or more student groups	370	6.46%	100.00%

*Dependent Variable (Postsecondary Academic Achievement)*

For postsecondary academic achievement, as measured by college GPA, a total of 5,751 students responded. As noted in Table 13, 30.36%

( $n=1,746$ ) of the sample self-reported their GPA as being between 3.50 and 4.00 (coded as category 5), 37.85% ( $n=2,177$ ) of the sample self-reported their GPA as being between 3.00 and 3.49, 23.23% ( $n=1,336$ ) of the sample self-reported their GPA as being between 2.50 and 2.99, 6.85% ( $n=394$ ) of the sample self-reported their GPA as being between 2.00 and 2.49, and 1.70% ( $n=98$ ) of the sample self-reported their GPA as being below 2.00. The mean of this categorical variable is 3.88 (SD=0.98), and the median is 4.00. Refer to Table 13 for the frequencies of the dependent variable of the regression.

Table 13: Frequency of Dependent Variables in the regression

<b>Respondent Characteristics</b>	<b>categorical code</b>	<b>N</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
<b><u>College GPA</u></b>				
3.50 - 4.00	5	1746	30.36%	30.36%
3.00 - 3.49	4	2177	37.85%	68.21%
2.50 - 2.99	3	1336	23.23%	91.45%
2.00 - 2.49	2	394	6.85%	98.30%
Below 2.00	1	98	1.70%	100.00%

### Regression Analysis

For this study, a significance level of  $p<.001$  was utilized for testing the hypotheses. This significance level is more conservative, and can be used in this study due to power in the large number of respondents. While the following data tables show specific p-values of variables for matters of interest, only p-values equal to or less than .001 were considered statistically significant and will be discussed in further details.

Of the 5,757 students represented in this study, 60 were removed from the regression analysis due to incomplete responses on one or more questions on the MSL survey instrument. Therefore, a total of 5,697 students were used in the regression analysis. Hierarchical regression performed a total of four regressions on the dependent variable: (1) Block One vs. Dependent Variable, (2) Block One and Two vs. Dependent Variable, (3) Block One, Two, and Three vs. Dependent Variable, and (4) Block One, Two, Three, and Four vs. Dependent Variable. There was no valuable information gathered from the first three regressions, therefore only the fourth and final regression is displayed and discussed. Refer to Appendix E for the full hierarchical regression results.

Overall, the regression analysis for this study showed that demographic, pre-college, and involvement factors explained a small amount of the variance of postsecondary academic achievement, as measured by self-reported college GPA. The aggregated  $R^2$  for the total regression was 12.1%. Table 14 depicts a summary of all regression analysis for this study. Included in Table 14 are the  $R$ ,  $R^2$ , Adjusted  $R^2$ , and  $R^2$  Change. Also included are the F Change, Significance of F Change, Beta Unstandardized Coefficient, Significance of Beta, and overall Significance of the block in the regression. Refer to Table 14 for the results of the regression. Refer to Table 15 for a summary of all significant variables in the study and their relationship to the dependent variable.

Table 14: Regression Analysis

Block/Variable (N=5697)	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	F Change	Sig. F Change
<b>Block One: Demographic</b>	0.232	0.054	0.052	0.054	32.225	.000***
Age						
Gender						
Ethnicity						
<i>African American/Black</i>						
<i>American Indian/Alaska Native</i>						
<i>Asian American/Asian</i>						
<i>Native Hawaiian/Pacific Islander</i>						
<i>Latino</i>						
<i>Multiracial/Multiethnic</i>						
<i>Race/Ethnicity Not Included</i>						
Socioeconomic Status						
<b>Block Two: Pre-College</b>	0.330	0.109	0.107	0.055	351.076	.000***
High School GPA						
<b>Block Three: Off-Campus</b>	0.338	0.114	0.112	0.006	18.561	.000***
Working Off-Campus						
Off-Campus Involvement						
<b>Block Four: On-Campus</b>	0.352	0.124	0.121	0.009	20.356	.000***
Working On-Campus						
On-Campus Involvement						
Breadth of On-Campus Involvement						

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

<b>Block/Variable (N=5697)</b>	<b>Beta (β) (Unstandardized Coefficient)</b>	<b>p-value</b>	<b>Sig</b>
<b>Block One: Demographic</b>			
Age	.029	.000***	.000***
Gender	-.135	.000***	
Ethnicity			
<i>African American/Black</i>	-.495	.000***	
<i>American Indian/Alaska Native</i>	-.825	.000***	
<i>Asian American/Asian</i>	-.096	.019*	
<i>Native Hawaiian/Pacific Islander</i>	-.076	.723	
<i>Latino</i>	-.216	.000***	
<i>Multiracial/Multiethnic</i>	-.172	.001**	
<i>Race/Ethnicity not included</i>	-.120	.122	
Socioeconomic Status	.007	.257	
<b>Block Two: Pre-College</b>			
High School GPA	.192	.000***	.000***
<b>Block Three: Off-Campus</b>			
Working Off-Campus	-.003	.000***	.000***
Off-Campus Involvement	.016	.095	
<b>Block Four: On-Campus</b>			
Working On-Campus	-.003	.131	
On-Campus Involvement	.025	.026*	
Breadth of On-Campus Involvement	.027	.000***	.000***

Table 15: Summary of significant variables in study and their relationship to the dependent variable ordered by significance level

<b>Variable</b>	<b>p-value</b>	<b>Relationship to Dependent Variable</b>
Age	0.001	Positive (+)
Gender	0.001	Negative (-)
Ethnicity (African American/Black)	0.001	Negative (-)
Ethnicity (American Indian/Alaska Native)	0.001	Negative (-)
Ethnicity (Latino)	0.001	Negative (-)
High School GPA	0.001	Positive (+)
Working Off-Campus	0.001	Negative (-)
Breadth of On-Campus Involvement	0.001	Positive (+)
Ethnicity (Multiethnic/Multiracial)	0.01	Negative (-)
Ethnicity (Asian American/Asian)	0.05	Negative (-)
On-Campus Involvement	0.05	Positive (+)

### *Hypothesis One*

The data failed to support the first hypothesis of this study that the independent variable age was negatively related to the dependent variable postsecondary academic achievement, as measured by college GPA. According to the regression results, the variable Age was positive and significant at the .001 level. The value of the unstandardized beta coefficient for the variable was .029, meaning that if the variable age increases by one unit, the dependent variable (college GPA) would increase by .029.

### *Hypothesis Two*

The data failed to support the second hypothesis of this study that the independent variable socioeconomic status would be negatively related to the

dependent variable postsecondary academic achievement, as measured by college GPA. According to the regression results, the variable socioeconomic status was not significant to the .001 level.

### *Hypothesis Three*

The data supported the third hypothesis of this study that the independent variable high school GPA would be positively related to the dependent variable postsecondary academic achievement, as measured by college GPA. According to the regression results, the variable high school GPA was significant to the .001 level. The value of the unstandardized beta coefficient for the variable was .192, meaning that if the variable high school GPA increases by one unit, the dependent variable (college GPA) would increase by .192.

### *Hypothesis Four*

The fourth hypothesis of this study that the independent composite variable off-campus experiences would be negatively related to the dependent variable postsecondary academic achievement as measured by college GPA was supported. This significant finding is explained in terms of off-campus employment (working off-campus was significant at the .001 level), but not supported in regard to the inquiry of how involved first-generation college students are off-campus. According to the regression results, the variable off-campus involvement was not significant at the .001 level. The value of the working off-campus unstandardized beta coefficient

was -.003, meaning that if the variable working off-campus increases by one unit, our dependent variable (college GPA) would decrease by .003.

#### *Hypothesis Five*

The fifth hypothesis of this study that the independent composite variable on-campus experiences would be positively related to the dependent variable postsecondary academic achievement was supported and significant at the .001 level. It was supported regarding breadth of involvement in on-campus clubs and organizations. It is also important to note that breadth of on-campus involvement was statistically significant at the .001 level. The value of the unstandardized beta coefficient for the variable was .027, meaning that if the variable breadth of on-campus involvement increases by one unit, the dependent variable (college GPA) would increase by .027. On-campus involvement and working on-campus were either not significant or did not meet the .001 level established.

#### Model Summary

The hierarchal linear regression model used in this study contained many independent variables. As such, it was possible to include variables that reduced the model's ability to show how much variance of the dependent variable was actually explained by the independent variables (Licht, 1995). The  $R^2$  and  $R^2$ -adjusted values were very close to each other, which suggested that the model did not contain a significant amount of independent variables that were irrelevant to the study.

Overall, the entire model explained a total of 12.4% of the variance of postsecondary academic achievement, as defined by College GPA. Only 1.5% of the variance was explained by college off or on campus experiences; 0.6% of the variance was explained by off-campus experiences, and 0.9% explained by on-campus experiences. This result is relatively low, and depicts that 87.6% of the variance of College GPA is left unexplained. There are a few reasons that could explain the low variance that will be discussed further in Chapter 5. This study was a within-group and only looked at first-generation college students who attended a four-year institution. Thus, this study was unique to previous studies in the literature that studied first-generation college students at different institutional types. More details and rationale will be discussed in Chapter Five.

#### *Block One: Demographic Characteristics*

When looking at the final model and examining model significance by block (see Table 14), block one explained a total of 5.4% of variance. The only variables that were statistically significant ( $p < .001$ ) in block one were age (positive), Gender (being male; negative), identifying as African American/Black (negative), identifying as American Indian/Alaska Native (negative), and identifying as Latino (negative).

#### *Block Two: Pre-College Academic Achievement*

Block two added a total of 5.5% to the variance of postsecondary academic achievement. This value was attributed solely to the variable high

school GPA, since block two only contains one variable. The beta unstandardized coefficient for this variable was 0.19.

#### *Block Three: Off-Campus Experiences*

Block three added a total of 0.6% of the variance of postsecondary academic achievement. The only variable that was statistically significant in this block was working off-campus. Even though this variable was statistically significant, the value of beta unstandardized coefficient is very low (-.003).

#### *Block Four: On-Campus Experiences*

Block four added 0.9% of the variance of postsecondary academic achievement. The only variable that was significant to the .001 level was breadth of on-campus involvement with the beta unstandardized coefficient as .027.

### Conclusion

Chapter Four provided a comprehensive analysis of the major findings of this study. The chapter introduced sample characteristics, demographic characteristics, regression analysis, and a summary of the assumptions of the regression model. Chapter Five will highlight the major findings of the study, as well as discuss its implications and thoughts for future research.

## CHAPTER FIVE

### DISCUSSION

This study examined the role of how demographic characteristics, pre-college academic achievement, and involvement factors contributed to the postsecondary academic achievement of first-generation college students. Based on relevant literature, five hypotheses were developed and were tested using hierarchical linear regression. The regression analysis used Astin's (1991) I-E-O model as a theoretical framework in which to carry out the study. This chapter will first provide the major findings from the study by addressing each hypothesis, discuss the unexplained variance of the dependent variable, address limitations, and provide implications for future practice.

#### Summary of Findings

Five hypotheses were developed from the examination of the literature relevant to the problem statement and purpose of this study. The hypotheses and other relevant variables were tested using hierarchical linear regression. Astin's (1991) I-E-O model served as the study's theoretical framework, and thus the variables in the study were organized into relevant blocks. The blocks were then entered into the regression model from distal to proximal in relation to the dependent variable, postsecondary academic achievement. The following were the blocks represented in the study: (1) demographic characteristics (age, gender, race/ethnicity, socioeconomic status), (2) pre-college academic achievement (high school GPA), (3) off-campus

experiences (involvement, working off-campus), and (4) on-campus experiences (involvement, working on-campus, breadth of involvement).

The findings of the study showed that the four blocks in the study explained only 12.4% of the variance of postsecondary academic achievement, as measured by College GPA. While all four blocks in the study were statistically significant to the .001 level, not all of the variables included in the block were statistically significant, and only 1.5% of the variance was explained by off or on campus college experiences. The following will provide more information regarding the five hypotheses of this study. In detail, a brief report of the findings as well as previous literature that supports or does not support the specific hypothesis will be provided. *Caution should be used in drawing inferences from these findings due to the small amount of explained variance.*

#### *Hypothesis One*

The first hypothesis of this study was that age was negatively related to the dependent variable postsecondary academic achievement. As stated in Chapter Four, the data failed to support the first hypothesis of this study so this hypothesis is rejected. According to the regression results, the variable age was significantly positive at the .001 level. The value of the unstandardized beta coefficient for the variable was .029, meaning that if the variable age increases by one unit, the dependent variable (college GPA) would increase by .029. In summary, older students tended to show higher college GPAs than younger students. This study supported the literature that

stated that first-generation college students tended to be older than non-first-generation college students (Chen, 2005; Nuñez & Cucarro-Alamin, 1998; Riehl, 1994; Terenzini et al., 1995), and also supported the notion that age is one of the demographic characteristics of first-generation college students that is a factor in postsecondary academic success. This study showed that older first-generation college students at four-year institutions exhibited higher levels of academic achievement, as measured by college GPA than younger first-generation college students. When considering this finding, Darkenwald and Novak (1997) attempted to discover if a relationship existed between the age of college students and grades they earned in class. Their study found no statistically significant relationship between the two variables for college students in the four-year institutional setting, however, determined that in the community college setting, older students tended to have earned better grades than younger students. The overall findings of this study show that age is a promising demographic predictor of academic achievement for first-generation college students and that more research is needed to better explain this phenomenon.

### *Hypothesis Two*

The second hypothesis of this study was that socioeconomic status is negatively related to postsecondary academic achievement. The data failed to support the second hypothesis of this study so the hypothesis is rejected. According to the regression results, the variable socioeconomic status was not significant at the .001 level. This finding was not expected because the

literature supported that first-generation college students tended to have a lower socioeconomic status than non-first-generation college students, and served as a negative impact on college achievement (Nuñez & Cuccaro-Alamin, 1998)

The nature of this study was a within-group analysis, and did not attempt to compare first-generation college students from non-first-generation college students. The results of the study suggest that among first-generation college students, socioeconomic status of those students who attend a four-year college is not a factor in their academic achievement, even though first-generation students have lower incomes than non-first-generation students.

Potentially, first-generation college students attending four-year institutions had more family support or earned significant financial aid packages that made this variable not significant. Another reason could be that there are sources of income earned by first-generation college students that are not collected by the MSL, such as governmental support, scholarships, loans, and financial support outside of the family. A large number of these students were not working indicating they had other sources of funding. This study defined socioeconomic status based off the total income of the parents/guardians of the respondent. Since first-generation college students are reported to be older, and have dependents, perhaps their income should be considered when analyzing factors of their postsecondary academic performance.

In summary, it is clear that there is a degree of uncertainty when addressing the relationship between the socioeconomic status of first-generation college students and postsecondary academic success. However, more research needs to focus on the multiple types of income and aid first-generation college students obtain, as well as this student population's types of financial burdens (i.e. dependents) they have.

### *Hypothesis Three*

The third hypothesis of this study was that pre-college academic achievement, as measured by high school GPA, is positively related to postsecondary academic achievement. The data supported this hypothesis, and according to the regression results, the variable high school GPA was significant to the .001 level. The value of the unstandardized beta coefficient for the variable was .190, meaning that if the variable high school GPA increases by one unit, the dependent variable (college GPA) would increase by .190. This finding is congruent to Dennis et al. (2005) who determined that high school GPA was a significant factor in explaining cumulative college GPA.

While the regression analysis showed that high school GPA explained the highest amount of variance of postsecondary academic achievement, it only explained 5.5% which is still considerably low. When considering this finding, it is important to note that this study defined pre-college academic achievement only as high school GPA. Literature regarding the experiences of first-generation college students frequently considered additional pre-

college factors such as standardized test scores, previous attendance at a two-year institution, and time spent between high school and college as pre-college characteristics of this student population (Strayhorn, 2006). More information regarding the additional pre-college factors of first-generation college students will be explained later in this chapter, along with other factors in the study that contributed to unexplained variance.

#### *Hypothesis Four*

The fourth hypothesis of this study was that off-campus experiences is negatively related to postsecondary academic achievement. This study analyzed two factors that represented off-campus experience: the amount of hours spent working at an off-campus job and a Likert scale question inquiring about their overall involvement in off-campus clubs and organizations. Although significant, the off-campus experiences block explained less than 1.0% of the variance of postsecondary academic achievement. The only variable representing off-campus experiences that was statistically significant was working off-campus. The value of the unstandardized beta coefficient for the variable was  $-.003$ , meaning that if the variable working off-campus increases by one unit, the dependent variable (college GPA) would decrease by  $.003$ . The finding is significant but not very meaningful.

Regarding off-campus employment, numerous studies have reported that being employed is a common characteristic of first-generation college students.(Nuñez & Cuccaro-Alamin, 1998; Riehl, 1994; Terenzini et al.,

1995). Clearly, the more hours devoted to a job off-campus, the less potential time and energy students have to focus on their academic pursuits. In regard to overall off-campus involvement, no statistically significant relationship in this study was discovered. Terenzini et al. (1995) discovered that many first-generation college students have off-campus jobs and tend to live off-campus as well, thus disconnecting them from the collegiate community. While it is apparent that first-generation college students are involved off campus, there still exists a limited amount of literature that relates off-campus involvement to postsecondary academic achievement. One of the issues regarding this study was that off-campus involvement was measured by a single question asking respondents to assess their level of off-campus involvement using a Likert scale. Potentially more questions that specifically addressed different types of off-campus involvement (e.g. involvement in various organizations or clubs, volunteering at an organization) would aid in determining concrete results regarding the relationship between the off-campus experiences of first-generation college students and their overall postsecondary academic achievement.

#### *Hypothesis Five*

The fifth hypothesis of this study was that on-campus experiences are positively related to postsecondary academic achievement. This study analyzed three variables that represented the on-campus experiences of first-generation college students: the amount of hours spent working at an on-campus job, the frequency of overall involvement in on-campus clubs and

organizations, and the breadth of on-campus involvement. On-campus experiences only explained 0.9% of the variance of postsecondary academic achievement. The value of the unstandardized beta coefficient for the breadth of involvement variable was .027, meaning that as involvement in more different kinds of organization increases by one unit, the dependent variable (college GPA) would increase by .027. The hypothesis was not supported in regard to on-campus involvement and working on-campus, but was supported in regard to the breadth of involvement in on-campus clubs and organizations. According to the regression results, the variable on-campus involvement was not significant to the .001 level, as is evident by the significance of the unstandardized beta coefficient. However, for further research, it is important to note that on-campus involvement was significant at the .026 level. Taking into consideration that on-campus involvement was not significant at the .001 level, the value of the unstandardized beta coefficient was .025; as on-campus involvement increases by one unit, College GPA would increase by .025.

These findings were not in congruence to the literature regarding the involvement of first-generation college students that articulated that involvement leads to positive outcomes in college, including achievement (Astin, 1993). However, similar to off-campus involvement, the literature has shown that first-generation college students tend to be less involved than non-first-generation college students (Pike & Kuh, 2005). It may be that depth of involvement (as measured by the frequency of involvement in

organizations) is not as important to first-generation students as is exploring or joining several organizations that provide a connection to the institution. The depth of that connection may not matter as much as the effort those students made to explore and join groups of interest to them. Joining more groups may influence a positive approach to campus climate which, in turn, influences achievement (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999).

Breadth of on-campus involvement was statistically significant in the regression model. Breadth of on-campus involvement was a variable derived from a question from the MSL regarding overall student involvement in on-campus activities and was not aggregated by nature (see Table 6). If this study analyzed the specific types of on-campus involvement first-generation students participated in, it could potentially determine if there were specific types of on-campus involvement that best support the postsecondary academic achievement of this student population. More information regarding the on-campus involvement of first-generation college students and its connection to postsecondary academic performance will be provided in the subsequent section.

#### Unexplained Variance

As stated previously, the results of this study showed that the demographic, pre-college, and involvement factors of first-generation college students explain 12.4% of the variance of the postsecondary academic achievement of this student population. This result is very low and there is a

large amount of the variance of postsecondary academic achievement left unexplained. This section will propose the reasons for the high level of unexplained variance that have direct implications for areas of further research.

### *Other Pre-College Factors*

This study only used one variable to represent pre-college academic achievement. Pre-college academic achievement was defined as high school GPA and the results showed that this variable only explained 5.5% of the variance of postsecondary academic achievement. When trying to understand the results, it is important to remember that while this study utilized high school GPA because of its presence in many studies involving first-generation college students (e.g., Dennis et al., 2005; Riehl, 1994; Warburton et al., 2001), it is not the only pre-college factor that could influence postsecondary academic performance.

### *Academic Preparedness*

Terenzini et al. (1995) determined that first-generation college students exhibited being weaker in math and reading skills as well as critical thinking skills. Since these characteristics are first developed before college, this study could have included variables that measured specific performance in reading, writing, and critical thinking skills, rigor of high school coursework, as well as variables to assess the types of remedial coursework first-generation students took.

### *Self-Efficacy and Other Personal Measures*

Another concept that was not explored in this study was the academic self-efficacy and level of confidence in which first-generation college students have toward their postsecondary academic pursuit and achievement. Hellman and Harbeck (1997) discovered that “the first-generation student may have lower self-perceptions of academic ability than second-generation [(non-first-generation)] students” (p. 167). As a result, the authors suggested that first-generation college students feel academically inadequate to their non-first-generation peers. Inman and Mayes (1999) added to the results of Hellman and Harbeck by stating that when compared, first-generation students are typically more concerned with increasing their levels of self-efficacy. Nuñez and Cuccaro-Alamin (1999) noted that if first-generation college students reported that they experience lower self-efficacy in their ability to succeed academically at an institution of higher education, this may have an effect on their actual postsecondary academic performance.

### *Other Pre-College Variables*

Another possibility to explain the low variance of pre-college factors can be found in Strayhorn’s (2006) study. His study included various pre-college factors (ACT score, SAT score, previous attendance at a two-year college, and time spent between high school and college), and did not include high school GPA. In his study, all of the pre-college factors explained about 17% of the variance of college GPA. For first-generation college students, the absence of standardized test scores, past attendance at a two-year

institution, and time off between high school and college in this study could explain why the variance was so low.

Chen (2005) discovered that in comparison to non-first-generation college students, first-generation college students took more remedial classes, earned fewer credits per term, and were not as well represented in math and science courses. It may be that taking remedial courses at four-year institutions assist students in overcoming lower high school achievement mediating the effect of high school grades on college grades. Potentially these findings may suggest that when addressing first-generation college students, high school GPA may not be the best predictor of postsecondary academic performance, and more pre-college factors need to be considered.

#### *Other Involvement Factors*

This study used two variables to represent off-campus experiences, and three variables to represent on-campus experiences. This study defined involvement as “the amount of physical and psychological time and energy the student invests in the education process” (Astin, 1993, p. 2). The results showed that off-campus experiences and on-campus experiences of first-generation college students explained 1.5% of the variance of postsecondary academic achievement. When trying to understand these results, some literature emerged to assist in the comprehension.

#### *Peer Group*

Literature has shown that the peer group is an important component of the involvement of college students, and that it can have significant positive

effects of student development (Astin, 1993; Dennis et al., 2005). This study addressed involvement in both the frequency of participation and breadth of on-campus involvement in clubs and organizations, and both concepts provide first-generation college students with the opportunity to interact with other peers. However, the peer group is not the primary focus of any of the variables in this study, and more research needs to be performed that specifically addresses if first-generation college students' postsecondary academic achievement benefits from interacting with peers.

#### *Academic Involvement*

As mentioned previously, Grayson (1997) stressed the importance of both social and academic involvement in the experiences of first-generation college students. When observing this study, social involvement seems to be emphasized and measured more than academic involvement. This is evident by the nature of the questions regarding the frequency of involvement in both off-campus and on-campus clubs and organizations, as well as the breadth of on-campus involvement. Specifically, the MSL survey instrument listed the following as types of student groups that may provide academic involvement: academic/departmental/professional clubs, honor societies, and living-learning programs. It is observed that as a result, this study did not gain enough information regarding the academic involvement of first-generation college students. If first-generation college students tend to be more involved in academic involvement activities, such as interactions with professors, group projects with peers, or participation in classroom discussions, and less

involved in social involvement activities, it is important that the academic involvement be accounted.

### *Engagement*

Similar to involvement, literature regarding first-generation college students stated that engagement is important to the overall academic experience of this student population. Wilkins and Boyle (2002) discovered that there existed a positive relationship between first-generation college student's engagement in various educational practices (e.g., interacting with faculty, faculty mentoring) and cognitive and affective growth in college. The literature also showed that first-generation college students tended to benefit greatly from practices that forced them to engage in the class, such as collaborative class presentations, and other forms of group work (Pike & Kuh, 2005; Wilkins & Boyle, 2002). When considering this study, it is important to note that the literature pertaining to first-generation college students shows sparse agreement and consistency regarding the terms involvement and engagement. While the lack of data regarding the ways in which first-generation college students engage in the college community may serve as possible rationale for the low variance of postsecondary academic success explained, more literature is needed to bring more clarity to the terms involvement and engagement, in order to properly address nuances in these phenomena in the experience of first-generation college students.

## Limitations of Study

### *Definition of Academic Achievement*

As stated in the first chapter of this study, pre-college academic achievement was defined as high school GPA, and postsecondary academic achievement was defined as college GPA. While GPA is a general indicator of academic achievement, it is important to note that it is not the only measure of academic achievement. This chapter has highlighted that there are pre-college factors other than high school GPA; such as college academic preparedness, standardized test scores, time spent between high school and college, matriculation at a two-year institution, and self-efficacy of postsecondary academic achievement that could serve as good predictors of postsecondary academic achievement. Similarly, postsecondary academic achievement could have been defined in ways other than college GPA, such as achievement of specific learning outcomes, increased signs of self-efficacy for academic achievement, and overall satisfaction of one's college experience.

### *Self-Reported GPA*

This study utilized self-reported high school GPA and college GPA as variables. In comparison to official scores, the use of self-reported measures of achievement may be unreliable and not true indicators of performance. Pike (1995) stated that self-reported scores serve as good substitutes for official scores, but are to be used with care. While Pike validates the use of

self-reported scores in this study, there is a possibility that more variance could have been explained with official scores.

### *Academic Involvement*

The only involvement experiences that were considered in this study were off-campus employment, off-campus involvement, on-campus employment, on-campus involvement, and breadth of on-campus involvement. A stronger relationship between involvement and postsecondary academic achievement may have been found if this study included types of involvement directly related to academic achievement, such as faculty interaction, faculty mentoring, class presentations, and class discussions (Wilkins & Boyle, 2002).

### Implications for Practice

As stated previously, this study showed that demographic, pre-college, and environment factors predicted only 12.4% of the variance of postsecondary academic success. While this study showed that the mentioned independent variables are a factor in explaining postsecondary academic success, it is difficult to be very specific about the implications for practice. This section attempts to highlight some of the implications that can confidentially be made from the results without over stating the findings.

This study may illustrate the need to further examine institutional type when exploring the first-generation student experience. Experiences that may prove significant to the population at one type of institution may not be meaningful at another. When comparing the differences in experiences at

community colleges versus other types of institutions, Cushman (2007) reported that:

First-generation students at community college will probably find many fellow students who share their backgrounds, because these colleges typically serve large numbers of low-income students and students of color. At a state university or private college, however, first-in-the-family students are often taken aback by the social and academic climate. (p. 2)

While community colleges seem to be a good fit for the specific needs of first-generation college students, they need to feel supported by their institution regardless of institution type. In particular, four-year institutions need to provide specific targeted support services for this student population that address the various issues that they face as compared to non-first-generation college students. Also, specific involvement initiatives, both social and academic, should be afforded to these students, so they can remain connected, supported, and motivated to excel academically.

This study has shown that there are factors other than high school GPA that could have an impact on the overall academic achievement of first-generation college students. Practitioners and researchers need to continue to focus their efforts on understanding the experiences of first-generation college students in comparison to non-first-generation college students. Higher education administrators and researchers can tailor their efforts to

meeting the specific needs of this student population once they understand the various pre-college challenges faced by first-generation students

This study provided dialogue toward the understanding of how first-generation college students are involved. While it is understood that first-generation college students are involved in the college environment, the specific ways in which this student population is involved is not certain. Also, it is still unclear how their involvement affects their overall postsecondary academic achievement. Student affairs professionals need to continue to engage first-generation college students in the college community and in particular provide programs in which these students can participate in, which potentially could positively contribute to academic achievement. Faculty and other academic representatives can engage first-generation college students in the classroom by the promotion of collaborative work, classroom discussions, and develop ways in which these students could interact with both non-first-generation college students, and faculty.

#### Suggestions for Further Research

The literature showed that the college experiences of first-generation college students are a topic that is infrequently researched and discussed, in comparison to other topics pertaining to this student population (e.g. college access, persistence, demographic characteristics, comparisons to non-first-generation college students). Further research is needed to explore and discuss the college experiences of first-generation college students, so that

researchers and practitioners can fully understand how to best support these students in the college environment.

Within the exploration of the college experiences of first-generation college students, more attention needs to be given to the ways in which this population is involved, and how their involvement impacts their academic success. While this study showed that on-campus experiences had a positive relationship with postsecondary academic success, it is still unclear as to what specific on-campus experiences best predict success. By discovering the ways in which first-generation college students are involved, practitioners will have the ability to focus their efforts and abilities on these experiences, which in turn will promote academic success.

An area that has been sparsely researched regarding first-generation college students is their off-campus involvement. While this study did show a positive relationship between off-campus experiences and postsecondary academic success, it is still vague as to what specific off-campus experiences that promote the academic success of first-generation college students. By understanding the ways in which first-generation college students are involved off-campus, practitioners will be able to tailor their time and efforts on developing initiatives to bridge gaps between off-campus and on-campus experiences, and developing on-campus experiences and programs that complement the off-campus experiences of this student population. Another area of needed research is the addition of more qualitative studies pertaining to the college experiences of first-generation college students.

While quantitative studies have provided sound results pertaining to some aspects of the college experience of first-generation students, the voice of the first-generation college student population is absent. Arguably, the best way to understand the ways in which first-generation college students are involved both on and off-campus or the concrete motivators of postsecondary academic achievement is to give the opportunity for members of this students population to provide personal narratives. The addition of more qualitative studies pertaining to the college experiences of this student population will give better direction to researchers on the types of data needed to understand the experiences of this student population from a quantitative perspective.

#### Conclusion

By the observance of the results of this study and the possible reasons for the large amount of unexplained variance, it is clear that there are many issues that pertain to the postsecondary academic achievement of first-generation college students. It is important that future studies continue to explore in-depth the ways in which first-generation college students best succeed in higher education. In particular, more research that focuses on the ways in which first-generation college students are involved in the four-year college experience will best inform higher education practitioners and researchers on how to motivate, retain, and ultimately support these students.



APPENDIX A: VARIABLES TABLE WITH CODING SCHEME

<u>Block/Variable Name</u>	<u>Measure</u>	<u>Item</u>	<u>Response Choices</u>	<u>Coding</u>	<u>I-E-O Variable Type</u>
<b><i>Block One:</i></b>					
<b><i>Demographic Characteristics</i></b>					
Age	numerical	27. What is your age?	open-ended		Input
Gender	categorical	28. What is your gender?	Female, Male, Transgender White/Caucasian, African American/Black, American Indian/Alaska Native, Asian American/Asian, Native Hawaiian/Pacific Islander, Latino (see Chapter 3 for how the Latino category was constructed) , Multiracial or multiethnic, Race/ethnicity not included above (dummy variable) Less than \$12,500, \$12,500 - \$24,999, \$25,000 - \$39,999, \$40,000 - \$54,999, \$55,000 - \$74,999, \$75,000 - \$99,999, \$100,000 - \$149,999, \$150,000 - \$199,999, \$200,000 and over, Don't know, Rather not say	open-ended 1 = Female; 2 = Male	Input
Ethnicity	categorical	31. Please indicate your racial or ethnic background. (Mark all that apply)		students were classified into a single group; those that select two or more groups were classified as multiracial.	Input
Socioeconomic Status	categorical	36. What is your <u>best estimate</u> of your parent(s) or guardian(s) combined total income from last year? If you are independent from your parents, indicate your income. (Choose one)		1 = Less than \$12,500; 2 = \$12,500-\$24,999; 3 = \$25,000-\$39,999; 4 = \$40,000-\$54,999; 5 = \$55,000-\$74,999; 6 = \$75,000-\$99,999; 7 = \$100,000-\$149,999; 8 = \$150,000-\$199,999; 9 = \$200,000 and over	Input
<u>Block/Variable Name</u>	<u>Measure</u>	<u>Item</u>	<u>Response Choices</u>	<u>Coding</u>	<u>I-E-O Variable Type</u>
<b><i>Block Two: Pre-College Academic Achievement</i></b>					

<u>Block/Variable Name</u>	<u>Measure</u>	<u>Item</u>	<u>Response Choices</u>	<u>Coding</u>	<u>I-E-O Variable Type</u>
HSGPA	categorical	25. What were your average grades in High School? (Choose One)	A or A+, A- or B+, B, B- or C+, C, C- or D+, D or lower	7 = A or A+; 6 = A- or B+; 5 = B; 4 = B- or C+; 3 = C; 2 = C- or D+; 1 = D or lower	Input

**Block Three: Off-Campus Experiences**

WorkOff	categorical	4a. Approximately how many hours do you work off campus in a typical 7 day week?	open-ended	open-ended	Environment
InvolvementOff	score	13. Since starting college, how often have you been an involved member or active participant in an off-campus community organization (e.g. PTA, church group)?	<i>Likert Scale 1-5</i> ; 1 = Never, 5 = Much of the Time	response choices serve as coding	Environment

**Block Four: On-Campus Experiences**

WorkOn	categorical	5a. Approximately how many hours do you work on campus in a typical 7 day week?	open-ended	open-ended	Environment
InvolvementOn	score	13. Since starting college, how often have you been an involved member or active participant in college organizations?	<i>Likert Scale 1-5</i> ; 1 = Never, 5 = Much of the Time	response choices serve as coding	Environment

<b>Block/Variable Name</b>	<b>Measure</b>	<b>Item</b>	<b>Response Choices</b>	<b>Coding</b>	<b>I-E-O Variable Type</b>
StudentGroups	numerical	14. Which of the following kinds of student groups have you been involved with during college? (Check all the categories that apply)	Academic/ Departmental/ Professional, Arts/Theater/Music, Campus-wide programming groups, Cultural/ International Honor Society, Living- learning programs, Leadership Media, Military, New Student Transitions, Para professional group Political/ Advocacy, Religious, Service, Culturally based fraternities and sororities, Social fraternities or sororities, Sports- Intercollegiate or Varsity, Sports- Club, Sports- Leisure or Intramural, Special Interest, Student governance group	This variable will be aggregated; the value of this variable will total the amount of response choices selected by each member of the sample	Environment

**Block 5:**  
**Postsecondary**  
**Academic**  
**Achievement**

GPA	categorical	34. What is your best estimate of your grades so far in college? [Assume 4.00 = A] (Choose One)	3.50 – 4.00, 3.00 – 3.49, 2.50 – 2.99, 2.00 – 2.49, 1.99 or less, No college GPA	5 = 3.50 - 4.00; 4 = 3.00 - 3.49; 3 = 2.50 - 2.99; 2 = 2.00 - 2.49; 1 = Below 2.00	Output
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APPENDIX B: DESCRIPTIVE STATISTICS CHART

Respondent Characteristics	N	Minimum	Maximum	Mean	Std. Deviation	Variance
<b>Age</b>	5738	18	68	23.35	7.34	53.83
<b>Gender</b>	5757	1	2	1.35	.48	.23
<b>Ethnicity</b>						
White/Caucasian	5757	0	1	.57	.50	.25
African American/Black	5757	0	1	.08	.27	.07
American Indian/Alaska	5757	0	1	.00	.07	.00
Asian American/Asian	5757	0	1	.11	.31	.10
Native Hawaiian/Pac. Islander	5757	0	1	.00	.06	.00
Hispanic/Latino	5753	0	1	.14	.35	.12
Multiracial	5757	0	1	.07	.25	.06
Race/Ethnicity Not Included	5757	0	1	.03	.16	.03
<b>Socioeconomic Status</b>	5757	1	9	3.84	1.96	3.83
<b>High School GPA</b>	5754	1	7	5.79	1.20	1.45
<b>Working Off-Campus</b>	5757	0	90	11.68	15.07	227.08
<b>Off-Campus Involvement</b>	5757	1	5	2.07	1.34	1.78
<b>Working On-Campus</b>	5757	0	60	3.38	7.01	49.16
<b>On-Campus Involvement</b>	5756	1	5	2.62	1.36	1.85
<b>Breadth of On-Campus Involvement</b>	5726	0	21	2.66	2.97	8.83
<b>College GPA</b>	5751	1	5	3.88	.97	.95

APPENDIX C: UNIVERSITY OF MARYLAND'S INSTITUTIONAL REVIEW BOARD APPROVAL



UNIVERSITY OF  
MARYLAND

INSTITUTIONAL REVIEW BOARD

2100 Lee Building  
College Park, Maryland 20742-5121  
301.405.4212 TEL 301.314.1475 FAX  
irb@deans.umd.edu  
www.umresearch.umd.edu/IRB

January 08, 2009

**MEMORANDUM**

*Application Approval Notification*

**To:** Dr. Susan R. Komives  
John Dugan  
Jennifer Smist  
Paige Haber  
National Clearinghouse for Leadership Program/Office of Campus Programs

**From:** Mary Ann Ottinger, Ph.D. *MAO*  
Associate Vice President for Research Compliance and Policy  
University of Maryland, College Park

**Re:** **IRB Application Number:** 05-0454  
**Project Title:** "The Multi-Institutional Study of Leadership"

**Approval Date:** January 08, 2009

**Expiration Date:** July 23, 2009

**Application Type:** *Addendum/Modification:*  
Approval of request, submitted to the IRB office on December 14, 2008, to allow EDCP masters student, Isaiah Thomas, to use the MSL data for his masters thesis.

**Type of Research:** Non-Exempt

**Type of Review of Addendum:** Expedited

The University of Maryland, College Park Institutional Review Board (IRB) approved your IRB application. The research was approved in accordance with 45 CFR 46, the Federal Policy for the Protection of Human Subjects, and the University IRB policies and procedures. Please include the above-cited IRB application number in any future communications with our office regarding this research.

**Recruitment/Consent:** For research requiring written informed consent, the IRB-approved and stamped informed consent document is enclosed. The expiration date for IRB approval has been stamped on the informed consent document. Please keep copies of the consent forms used for this research for three years after the completion of the research.

**Continuing Review:** If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, after the expiration date for this approval (indicated above), you must submit a renewal application to the IRB Office at least 30 days before the approval expiration date. If IRB approval of your project expires, all human subject research activities including the enrollment of new subjects, data collection, and analysis of identifiable private information must stop until the renewal application is approved by the IRB.

APPENDIX D: CORRELATION TABLE

	AGE	GEN D	WHIT E	BLAC K	AMERIN D	ASIA N	HAWA II	LATIN O	MUL TI	RACEN O	HSGP A	SOCI O	WorkOF F	InvOF F	WorkO N	InvO N	InvBREADT H	COLLGP A
AGE	1.000	-.004	.020	.074	.028	-.092	.009	-.031	.018	.024	-.336	-.107	.282	.249	-.018	-.182	-.125	.107
GEND		1.000	.018	-.047	-.001	.024	.004	-.002	-.011	-.001	-.114	.054	-.004	-.032	-.003	.009	.079	-.081
WHITE			1.000	-.333	-.077	-.400	-.064	-.465	-.308	-.188	.088	.257	-.009	-.033	-.015	.045	.026	.150
BLACK				1.000	-.020	-.101	-.016	-.117	-.078	-.047	-.069	-.112	.037	.066	.032	-.023	.010	-.118
AMERIND					1.000	-.023	-.004	-.027	-.018	-.011	-.042	-.029	-.006	.025	.030	-.036	-.036	-.058
ASIAN						1.000	-.019	-.141	-.093	-.057	.071	-.088	-.074	-.020	-.005	.003	-.006	-.005
HAWAII							1.000	-.023	-.015	-.009	.002	.009	.023	-.008	-.004	-.023	-.015	.000
LATINO								1.000	-.109	-.066	-.081	-.129	.045	.011	-.026	-.055	-.071	-.085
MULTI									1.000	-.044	-.045	-.050	-.002	.000	.023	.024	.056	-.021
RACENO										1.000	-.028	-.050	.009	.005	.013	-.001	.010	-.004
HSGPA											1.000	.066	-.156	.059	.173	.134	.134	.216
SOCIO												1.000	-.022	-.065	-.069	.038	.029	.040
WorkOFF													1.000	.119	-.282	-.251	-.179	-.051
InvOFF														1.000	.023	.121	.150	.065
WorkON															1.000	.206	.202	.023
InvON																1.000	.546	.101
InvBREADT H																	1.000	.114
COLLGA																		1.000

APPENDIX E: HIERARCHAL LINEAR REGRESSION TOTAL OUTPUT

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.857	.065		59.422	.000
Age	.015	.002	.114	8.740	.000
Gender	-.182	.027	-.089	-6.866	.000
African American/Black	-.561	.049	-.153	-11.429	.000
American Indian/Alaska Native	-1.003	.188	-.069	-5.341	.000
Asian American/Asian	-.083	.042	-.026	-1.961	.050
Native Hawaiian/Pacific Islander	-.128	.225	-.007	-.569	.570
Latino	-.324	.038	-.115	-8.448	.000
Multiracial	-.207	.052	-.053	-4.013	.000
Race/ethnicity not included above	-.164	.081	-.026	-2.018	.044
Socioeconomic Status	.009	.007	.019	1.383	.167
2 (Constant)	2.313	.104		22.210	.000
Age	.026	.002	.197	14.657	.000
Gender	-.119	.026	-.058	-4.582	.000
African American/Black	-.497	.048	-.136	-10.402	.000
American Indian/Alaska Native	-.864	.183	-.059	-4.734	.000
Asian American/Asian	-.097	.041	-.031	-2.350	.019
Native Hawaiian/Pacific Islander	-.132	.219	-.008	-.605	.545
Latino	-.248	.037	-.088	-6.637	.000
Multiracial	-.149	.050	-.038	-2.972	.003
Race/ethnicity not included above	-.113	.079	-.018	-1.431	.152
Socioeconomic Status	.007	.007	.015	1.134	.257
<b>High School GPA</b>	<b>.205</b>	<b>.011</b>	<b>.252</b>	<b>18.630</b>	<b>.000</b>
3 (Constant)	2.299	.104		22.064	.000
Age	.027	.002	.203	14.307	.000
Gender	-.118	.026	-.058	-4.565	.000
African American/Black	-.502	.048	-.137	-10.521	.000
American Indian/Alaska Native	-.893	.182	-.061	-4.905	.000
Asian American/Asian	-.107	.041	-.034	-2.589	.010
Native Hawaiian/Pacific Islander	-.100	.218	-.006	-.461	.645
Latino	-.242	.037	-.086	-6.487	.000
Multiracial	-.152	.050	-.039	-3.030	.002
Race/ethnicity not included above	-.113	.079	-.018	-1.438	.151
Socioeconomic Status	.009	.007	.017	1.322	.186
High School GPA	.200	.011	.246	18.193	.000
<b>Working Off-Campus</b>	<b>-.004</b>	<b>.001</b>	<b>-.068</b>	<b>-5.200</b>	<b>.000</b>

	<b>Off-Campus Involvement</b>	<b>.034</b>	<b>.009</b>	<b>.047</b>	<b>3.632</b>	<b>.000</b>
4	(Constant)	2.227	.106		20.940	.000
	Age	.029	.002	.217	15.220	.000
	Gender	-.135	.026	-.067	-5.281	.000
	African American/Black	-.495	.047	-.137	-10.581	.000
	American Indian/Alaska Native	-.825	.181	-.057	-4.543	.000
	Asian American/Asian	-.096	.041	-.030	-2.321	.019
	Native Hawaiian/Pacific Islander	-.076	.217	-.004	-.341	.723
	Latino	-.216	.037	-.080	-6.025	.000
	Multiracial	-.172	.050	-.044	-3.424	.001
	Race/ethnicity not included above	-.120	.078	-.019	-1.522	.122
	Socioeconomic Status	.007	.007	.015	1.141	.257
	High School GPA	.192	.011	.235	17.359	.000
	Working Off-Campus	-.003	.001	-.053	-3.831	.000
	Off-Campus Involvement	.016	.010	.024	1.826	.095
	<b>Working On-Campus</b>	<b>-.003</b>	<b>.002</b>	<b>-.019</b>	<b>-1.425</b>	<b>.131</b>
	<b>On-Campus Involvement</b>	<b>.025</b>	<b>.011</b>	<b>.035</b>	<b>2.279</b>	<b>.026</b>
	<b>Breadth of On-Campus Involvement</b>	<b>.027</b>	<b>.005</b>	<b>.083</b>	<b>5.434</b>	<b>.000</b>

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