Engagement in the first year as a predictor of academic achievement and persistence of first-year students.

Jimmie A. Schlinsog

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ENGAGEMENT IN THE FIRST YEAR AS A PREDICTOR OF
ACADEMIC ACHIEVEMENT AND PERSISTENCE OF
FIRST-YEAR STUDENTS

By

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B.S. University of Wisconsin Oshkosh, 1993
M.A. Eastern Michigan University, 1998

A Dissertation
Submitted to the Faculty of the
College of Education and Human Development of the
University of Louisville
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For the Degree of

Doctor of Philosophy

Department of Educational and Counseling Psychology
University of Louisville
Louisville, Kentucky

August, 2010
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A Dissertation Approved on

July 15, 2010

by the following Dissertation Committee

Dissertation Chair
DEDICATION

This dissertation is dedicated to Michele for all of her support, love, and patience as a dissertation widow.

And to

Evan and Matthew, my junior research assistants who offered writing breaks at almost always the exact right moment.

And to

Marvin and Ann, who gave this first-generation student the kick-in-the-pants he needed to go to college.
ACKNOWLEDGEMENTS

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ABSTRACT

ENGAGEMENT IN THE FIRST YEAR AS A PREDICTOR OF ACADEMIC ACHIEVEMENT AND PERSISTENCE OF FIRST-YEAR STUDENTS

Jimmie A. Schlinsog

July 15, 2010

This study explored the relationship between engagement in educationally purposeful activities during the first year of college and academic achievement, persistence, and graduation. The study focused on the impacts of engagement on student outcomes related to academic achievement, persistence, and graduation at a comprehensive university located in the mid-South region of the United States. Differences in engagement and outcomes between first-generation and continuing-generation students were also explored. This longitudinal panel study utilized an Input-Environment-Output assessment model for the design and analysis. The input variables consisted of background characteristics including gender, ethnicity, high school preparation, and first-generation status. The chief environmental variable was engagement as measured by the National Survey of Student Engagement (NSSE). The outcome variables included academic achievement, persistence, and graduation within the six-year reporting cycle for the Council on Postsecondary Education (CPE) in the state of Kentucky. The results indicated that first-generation students were less well prepared in terms of high school GPA and ACT, typically earned a lower
first-year GPA and fewer credits, and were less likely to persist and to graduate compared to continuing-generation students. Those that did graduate, however, did so with a similar GPA to continuing-generation students. The significant predictors of academic achievement at the end of the first year of college were high school GPA and ACT. High school GPA and ACT were also significant predictors of the likelihood of persistence and graduation within six years. Surprisingly, engagement did not emerge as a predictor of the likelihood of persistence or graduation for either first-generation or continuing-generation students nor were there significant differences in engagement between first-generation and continuing-generation students. Significant differences in engagement did, however, emerge according to ethnicity and gender with students of color indicating higher levels of engagement than White students and women being more engaged than men. Implications for practice and suggestions for future research are also considered.
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CHAPTER ONE
INTRODUCTION

A long-time concern amongst college administrators has been, and continues to be, retention of students within the institution. Nationally, only approximately two thirds of students who enroll at an American institution will return the following year. Similarly, only about one third of students who enroll in college as first time freshmen will graduate (Berkner & Choy, 2008; Levitz & Noel, 1989). American College Testing suggests an even more bleak picture reporting 25% of new entering freshman do not persist to their sophomore year and only half of those who do enter their sophomore year will actually graduate (ACT, 1998, 2001, 2006). According to the Kentucky Council on Postsecondary Education (CPE), the six-year graduation rate in Kentucky colleges and universities range from a high of 61% at one of the largest institutions to a low of 33% at one regional university (Kentucky Council on Postsecondary Education, 2004). Retention, from an institutional perspective, is a key factor related to perceived effectiveness with direct implications for funding.

During the 1960s and 70s, increased funding for higher education was provided by state and federal governments through direct appropriations, grant
programs, and direct student aid programs. With these revenues, colleges and universities were able to offset the cost of education using state appropriations to subsidize the educational enterprise and keep tuition rates lower. The levels of increased funding and direct aid programs encouraged greater participation in postsecondary education pursuits. However, while there was a noted increase in enrollment, actual graduation rates from the 1980s to the 1990s declined by nearly 6% (Mortenson, 2000, 1998).

Since the mid-1990s, state funding has remained mostly static or in some cases decreased. As state appropriations decreased or did not keep pace with inflation and expenses, tuition increased to meet the fiscal needs of institutions (Johnstone, 2001a, 2001b). Increased tuition combined with decreasing retention and graduation rates prompted questions concerning institutional effectiveness and value. Measures related to graduation and retention became more important as state funding authorities perceived retention and graduation rates as an indicator of institutional quality (Astin, 2005; Scott, Bailey, & Kienzl, 2006). Likewise, persistence and graduation is also considered by national media in developing college rankings such as in *US News and World Report*. Despite this perception, Scott, Bailey, and Kienzl (2006) found that public institutions were able to demonstrate greater productivity as measured by six-year graduation rates and retention, than private institutions when holding student attributes such as ACT, high school GPA, family income, and other characteristics constant. Astin (2005) and Astin and Oseguera (2005) found similar results in which public institutions with lower overall tuition costs exhibited
higher than expected retention rates compared to private institutions. As student costs increase, either through loans or additional out-of-pocket payments, the direct effect is that decreased retention and graduation rates may affect perceived institutional quality (Barefoot, 2004).

As funding in higher education becomes tighter, more states are beginning to view persistence and program completion as measurable funding objectives. As a result, greater emphasis is placed on identifying factors related to student departure prior to program completion or graduation. Persistence research has consistently identified various factors related to voluntary departure from higher education (Astin, 1993b; Bean & Metzner, 1985; Braxton, 2000; Braxton, Hirschy, & McClendon, 2004). The college environment, involvement in educational pursuits, educational aspirations, goal and institutional commitment, and various student pre-college characteristics and demographic variables have all helped to explain portions of the variance in persistence and graduation (Astin & Oseguera, 2005; Bean, 2005; Lotkowski, Robbins, & Noeth, 2004; Tinto, 1997).

Complicating issues related to retention and graduation rates, approximately 43% of all students entering college in the late 1980s and early 1990s were identified as first-generation students. That is, these students’ parents did not attend a postsecondary educational institution (Nunez & Cuccaro-Alamin, 1998). First-generation students were more likely to enroll in two-year community colleges and were more likely to be working full-time in order to help pay for their education. Similarly, these students tended to be older than other first-year students and were less likely to complete the bachelor’s degree than
students whose parent(s) attended some postsecondary education (referred to as continuing-generation students). One report indicated that only approximately 10% of first-generation students who began their college career at a community college were likely to transfer to a four-year institution and complete the bachelor's degree (Tinto, 2004). Continuing-generation students, on the other hand, are those for whom one or both parents completed a college degree.

Pascarella, Pierson, Wolniak, and Terenzini (2004) reported that first-generation students were disadvantaged in terms of the type of institution they attended and their aspirations for degree attainment. First generation students were more likely to attend community or technical colleges rather than four-year or research institutions. Similarly, first-generation students were less likely to complete as many credit hours, less likely to engage in campus and co-curricular activities, and showed smaller net gains in academic and personal development and growth areas than did their peers who had one or both parents with some postsecondary education (McMahon, 1999). According to Grubb (2006) community and technical colleges, while attractive to students from lower socio-economic backgrounds, have lower completion rates and offer programs aimed at lower levels in the labor market focusing on technical and career training rather than traditional higher education. Thayer (2000) reported that first-generation students also exhibit lower pre-college critical thinking levels and had lower SAT scores and high school grade point averages than did other students while Strayhorn (2006) found that they earned lower GPAs and were more likely to drop out entirely at the end of the first semester. This has led many
researchers (see Pascarella & Terenzini 1991, 2005 for example) to examine the challenges of transition to college and developmental and educational outcomes of attending college. Others, including Bean (2005), Seidman (2005), and Braxton (2004) have examined student retention and integration in particular.

The needs of first-year students and the difficulties in transition have been well documented as far back as the 1930s when Sheeder (1938) explored the importance of transition and the challenges facing first-year students at universities in the Northeastern portion of the United States. Concerns such as financing, freedom from parents, appropriate time management, academic preparation, social maturity, and decision-making are as much an issue for today's freshmen as they were for administrators in the 1930's. McCarthy and Kuh (2006), in a review of high school student engagement reports, found that high school seniors spent only approximately half as much time on homework and class preparation as was expected by college faculty and experienced by college freshmen. These finding supports Hicks' (2003, 2005) studies which found that entering freshman, regardless of preparation, tend to have unrealistic expectations of how hard they will have to work in college coursework.

Among one of the chief challenges of first-year students is the successful integration into the institution (Tinto, 1988, 1993). Successful integration requires the new student to adjust to the institution in a number of dimensions including academic, social, personal, and emotional dimensions (Baker, McNeil, & Siryk, 1985; Baker & Siryk, 1984; Dadonna & Cooper, 2002; Tinto, 1988, 1993). Integration is an essential process that involves developing new relationships
and a sense of belonging at the college or university. Just as integration affects persistence, engagement inside and outside the classroom may also influence academic achievement and persistence. Engagement is the amount of time and energy a student dedicates to academic pursuits and preparation for courses and involvement in co-curricular activities. Engagement in educationally purposeful activities such as preparing for class, research, writing papers, and involvement in clubs or campus activities should promote improved integration. As a result, academic achievement and persistence should also increase (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Kuh, Schuh, Whitt, Andreas, Lyons, & Strange, 1991).

**Statement of the Problem**

Retention of students has been identified by many state funding agencies as a key indicator of effectiveness of public higher education. As more legislatures begin to tie funding to retention and graduation rates (Barefoot, 2004), institutions will be more pressed to provide programs and initiatives to assist students in adjusting to the institution and persisting to graduation. However, as most would argue, colleges and universities should not adjust enrollment methods to recruit only students most likely to persist to graduation. Instead, intentional practices to help students successfully integrate into the institution and persist are necessary if institutions are to meet the demands of funding authorities and the consumer mindset of the American college student. Thus, institutions must strive to develop a better understanding of their students and the factors related to academic achievement and persistence.
A great deal of the research in academic achievement and retention has focused on national data sets such as the Cooperative Institutional Research Program (CIRP). National studies are important for identifying trends and global concerns such as academic preparation, parents' educational attainment, finances, and other factors. However, Pascarella and Terenzini (1980, 1991, 2005) and Tinto (1993, 2004) have called for an increase in institution-specific retention studies to assist administrators in making intentional decisions best suited for their campus (Nora, Barlow, & Crisp, 2005).

**Purpose of the Study**

The purpose of the present study was to determine the influence of individual student characteristics and engagement in educationally purposeful activities on academic achievement and persistence among first-year students at a master's college and university located in the mid-south region of the United States. The current study investigated the relationship between engagement and background characteristics as they explain the variance in academic achievement and persistence and predict graduation. The study examined the ways in which first-generation students may engage differently compared to continuing-generation students and how these differences were related to the students' persistence at the institution. This study also examined the differential impact of engagement on first-generation students versus their continuing-generation peers. Consistent with Nora, Barlow, and Crisp's (2005) call for more institution-specific studies, this research was conducted utilizing data from one institution to track the academic achievement, persistence, and graduation of the
2002 entering cohort longitudinally through a six-year graduation timeframe. Specificity in this manner promotes a better understanding of the impact of engagement on students at this institution over their college career.

**Research Setting**

This research was conducted utilizing an existing database of student information and responses to the First Day Survey and the National Survey of Student Engagement (NSSE). Specific descriptions of the instruments are presented in chapter three. The location for this study was Western Kentucky University, a comprehensive regional master's college and university located in south central Kentucky. Western Kentucky University enrolls approximately 18,000 students of which over 40% report being first-generation students. Degree-seeking students who enrolled as first-time in college in the fall 2002 semester constituted the cohort for this study and were followed longitudinally through the six-year graduation reporting as required by the Kentucky Council on Post-Secondary Education (CPE).

The CPE also requires administration and reporting of NSSE data on a two-year cycle for all public institutions in the state of Kentucky. The CPE uses NSSE data to measure and report effective educational practices related to student-faculty interaction and student civic engagement. These results are made public for comparative purposes among the public institutions in Kentucky. Future plans call for funding structures to include NSSE data, but those efforts have not yet been implemented (Kentucky CPE, 2009; Whitfield, 2001).
The research model followed an input-environment-output (I-E-O) model proposed by Astin (1993a) for the purpose of researching the effects of environment and experiences on educational outcomes. Figure 1 provides a graphic representation of the model. For the purpose of this research, input characteristics consisted of individual student characteristics prior to enrollment such as gender, ethnicity, academic preparation, and first-generation status. Input characteristics constituted the primary independent variables in the study and may affect both environmental and output variables. Environmental characteristics included how and to what extent the student engaged in educationally purposeful activities while enrolled. Environmental characteristics were considered dependent variables based upon the individual input characteristics, but were also considered independent variables influencing outputs. Output variables were the final dependent variable influenced both by student entry characteristics (inputs) and engagement experiences (environment).

Figure 1: Astin's Input-Environment-Output Assessment Model
Research Questions and Hypotheses

The current research explored the relationships between engagement and persistence at a regional, master’s level institution in the mid-south portion of the United States. Six research questions with corresponding directional hypotheses were addressed in this study.

1. Is there a difference in parental importance of higher education for first-generation students compared to continuing-generation students?
   
   H₁: First-generation students will report lower parental importance of higher education than will continuing-generation students.

2. Is there a difference in students' own educational goal expectations for first-generation students compared to continuing-generation students?
   
   H₂: First-generation students will report lower personal expectations for educational goal than will continuing-generation students.

3. Is there a difference in global engagement on the NSSE between first-generation students and continuing generation students?
   
   H₃: First-generation students will report lower levels of engagement on the NSSE than will continuing-generation students.

4. What amount of variance in academic achievement is explained by engagement over and above demographic variables at the end of the first year of college for first-time full-time traditional age college students?
   
   H₄: Controlling for student background characteristics, higher engagement scores on the NSSE will be associated with higher cumulative GPA at spring 2003.
5. Are engagement and grade point average significant predictors of persistence controlling for student background characteristics, for first-time full-time traditional age college students in the 2002 reporting cohort?

\[ H_5: \] Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative first-year GPA will be associated with greater likelihood of persistence to fall 2003.

6. What is the significance of student background characteristics, global measure of engagement on the NSSE, and grade point average on predicting graduation by spring 2008 for first-time full-time traditional age college students in the 2002 reporting cohort?

\[ H_6: \] Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative spring 2003 GPA will be associated with increased likelihood of graduation by spring 2008.

**Significance of the Study**

This research is important as higher education administrators, and student affairs administrators in particular, must develop a keen understanding of the interaction between student entry characteristics and engagement in predicting student persistence or withdrawal behavior. A better understanding of these interactions will allow administrators to more clearly design and manage institutional programs to have the greatest influence on student persistence. Likewise, an understanding of the interaction between classroom activities and out of the classroom activities, both social and academic in nature, will help
faculty and student affairs officers to better understand the importance of 'blurring the lines' between the classroom and the rest of the university experience. This study also extended the understanding of the connection between engagement and academic achievement called for by Gordon, Ludlum, and Hoey (2008) using institutional data rather than self-report data.

This study is also significant within the growing concern for the postsecondary education of high school graduates in Kentucky. The institution at which this study was conducted is composed of nearly 40% first-generation students. A better understanding of the effects of engagement on this population in particular is essential in continuing to help students achieve success. Also, the state of Kentucky currently requires administration of the NSSE on a two-year cycle and uses the benchmarks in reporting for institutional quality. Thus, an examination of the influence of engagement on academic achievement and graduation is also important within the current state higher education coordinating body context.

The study is also important in terms of the economic development and growth associated with higher education. Specifically, Desjardins (2003) found that increased education through post secondary degree completion led to greater economic benefits for the individual. Carnevale (2008) similarly reports that a baccalaureate degree leads to increased income over the course of a lifetime. This was consistent with McMahon's findings that increased education within the society also led to economic benefits (1999). Therefore, as degree completion increases through persistence and academic achievement, there
should be a similar increase in economic benefits for the degree-holder and for society in general.

**Limitations**

This study was conducted using information from only one institution. While institutional studies are important for developing better understanding of students at that school (Nora, Barlow, & Crisp, 2005), the results may not be applicable to other institutions. This study was conducted utilizing existing data from institutional and nationally available assessment instruments that was not necessarily collected for this purpose. In particular, the First-Day Survey is an institution-specific instrument that does not have existing psychometrics related to reliability or validity. As a result, questions on the instrument may or may not have accurately measured what they were purported to measure (Dillman, 2000; Fowler, 1998). Another limitation of using existing data was that the instruments used for one purpose seldom fully addressed the research questions in subsequent studies (Carter, 2003). Similarly, as with any survey methodology, the researcher was limited by the self-report nature of data collection and the ability of the respondent to accurately interpret the question, recall information, and record information in the form of responses to individual survey items (Fowler, 1998).

**Definition of Terms**

1. Goal Commitment/Institutional Attachment (Baker & Siryk, 1984; Tinto, 1993): The level of personal commitment to complete the degree program at the current institution.
2. Involvement: "The amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1984; 1993b). The terms "involvement" and "engagement" are often used interchangeably in the literature. In recent years, the term "engagement" has become more popular perhaps due to its use by accrediting bodies. The term "engagement" will be used primarily for this reason.

3. Engagement: "The amount of time and effort students put into their studies and other activities that lead to the experiences and outcomes that constitute student success...how institutions allocate their human and other resources and organize learning opportunities and services to encourage students to participate in and benefit from such activities." (Wolf-Wendel, Ward, & Kinzie, 2005, p. 412).

4. Global Engagement: A measure of engagement derived for the purpose of this study by combining 42 items from the National Survey of Student Engagement that constitute the quality benchmarks of effective educational practice. Specifics on how this score is derived will be included in chapter three.

5. First-Generation Student: A student for whom neither parent attended college or completed a post-secondary degree (Choy, 2001; Ishitani, 2006).

6. Continuing-Generation Student: One or both parents attended post-secondary institutions and obtained a baccalaureate degree (Ishitani, 2006).
7. Parental Importance: The level of importance a parent or parents have placed on their student’s higher education. This measure is included in the First-Day Survey and measured according to the student’s perception of how important his or her education is to his or her parents.

8. Persistence: A student behavior that results in a student continuing enrollment at an institution beyond the first year (Hagedorn, 2005). The Kentucky Council on Postsecondary Education measures persistence as a student returning to enroll in at least one course in the fall semester following his/her freshman year.

9. Retention: The measure of student-behavior in which the student continues enrollment at a single college or university from the first to the second year and beyond (Barefoot, 2004).

10. Voluntary Departure: The student’s decision to depart from the university for one or several reasons. Voluntary departure does not include removal due to academic dismissal or conduct dismissal (Tinto, 1993).

11. Graduation: The point at which a given student has completed the academic degree requirements and received his or her diploma and/or degree statement. A graduate is a “former student who has completed the prescribed course of study in a college or university” (Hagedorn, 2005, p. 92). Reporting for graduation rates was defined by the Student’s Right to Know and Campus Security Act of 1990 as the percentage of those students who graduate within 6 years. This definition is consistent with the Council on Postsecondary Education.
Summary

The following chapters explore the literature associated with persistence and engagement. Specific factors related to first-year students and first-generation students are reviewed as well. The methodology for data collection, the sample, and the research setting are more fully described in chapter three. The research questions and planned analysis procedures are described. Finally, a description of the final sample, general results, and specific responses to each research question are provided. Chapter five includes a review of the results within the context of the current literature and suggestions for institutional policy and action along with limitations of the present study and recommendations for further research.
One of the most important challenges facing first-generation college students is their preparation and transition into a new complex social and academic environment. Pascarella, Pierson, Wolniak, and Terenzini (2004) and McMahon (1999) reported first-generation students defined as those students for whom neither parent pursued any postsecondary education, were more likely to attend community colleges, earn fewer credits, and achieve lower grade point averages than were other students. First-generation students also have different expectations about their experiences with postsecondary education that affect their academic achievement and likelihood of graduation. Likewise, they were also more likely to drop out of college within the first semester. First-generation students were less likely to engage in campus and co-curricular activities, and showed smaller net gains in academic and personal development and growth areas than did their peers who had one or two parents with some postsecondary education.

Developing a stronger understanding of the unique challenges faced by first-generation students can help postsecondary education institutions in
developing appropriate interventions to assist students in making a successful transition to college. However, in order to accomplish that goal, institutional leadership must first build a knowledge base of how first-generation students interact with their faculty and peers at the institution and the outcomes of engagement with various learning opportunities both in and out of the classroom.

The review of literature examining the experiences of first-generation students and new students in general focuses primarily on transition to college with Tinto's Student Integration Model as the context for understanding voluntary departure. Astin's postulates related to student involvement and Kuh's research on student engagement form the theoretical framework on the effect of how students use their time both inside and outside the classroom to predict academic achievement and persistence to graduation.

Astin's (1993a) Input-Environment-Output assessment model, introduced in chapter one, is discussed briefly as an approach to conducting this study. The theoretical framework that follows is based upon engagement in academic-related activities and a summary of theories related to student integration and departure. Specific research on first-year students and first-generation students and the influence of background characteristics such as parents' education level, gender, ethnicity, and academic preparation on persistence and engagement are also examined. Specific attention in the literature review is devoted to first-generation students.
Theoretical Framework

The theoretical framework begins with a brief summary of Astin's Input-Environment-Output assessment model and Kuh's theories related to student engagement in educationally purposeful activities. Following a summary of student engagement, student integration models based upon Tinto's work is summarized.

Input-Environment-Output Assessment Model

This study follows an input-environment-output (I-E-O) model proposed by Astin (1993a) for the purpose of assessing the effects of environment and experiences on educational outcomes. Figure 1 provides a graphic representation of the model. Within the context of this study, input variables consist of individual student characteristics prior to enrollment such as gender, ethnicity, academic preparation, and first-generation status. Input variables constitute the primary independent variables in the study and may affect both environmental and output variables. Environmental factors consider the effect of experiences, policies, and procedures unique to the institution and the student's experience that may affect student outcomes. Within the context of the current study, environmental characteristics include how and to what extent the student engages in educationally purposeful activities while enrolled. Environmental characteristics play a dual role as both dependent variables based upon the individual input characteristics, and as independent variables influencing outputs. Output variables are the final outcomes influenced both by student entry.
characteristics (input variables) and engagement experiences (environment).

For the purpose of this study, output variables consist of academic achievement measured by cumulative grade point average (GPA) and graduation within six years consistent with reporting requirements in the state of Kentucky.

**Student Engagement**

Astin (1984, 1993b) offers a theory of student development based upon the student's investment and expenditure of energy devoted to the academic experience. While involvement was the original terminology used in his line of research, the term engagement has become more popular in the literature. The essential point to Astin's theory is as involvement in the academic environment increases, the student should learn more, report greater developmental gains, and is more likely to persist at the institution.

Involvement can take place both inside and outside the classroom and customarily focuses on interaction between faculty and students that promote greater collaboration and increased opportunities for learning. Examples of
involvement include research projects, participating in classroom discussions, participation in advising with faculty or staff, and utilizing faculty office hours. Likewise, involvement outside the classroom includes social engagement with peers and involvement in student organizations or intramural sports, for example.

Astin (1984) offers five basic postulates of involvement related to student success. These principles are:

1. Involvement is the investment of physical and psychological energy in the college experience. The experiences may be very specific such as preparing for an exam or more general such as the overall student experience.

2. Involvement occurs along a continuum from low energy or investment to high energy or investment. The same individual may have varying degrees of involvement in different elements of the college experience.

3. Involvement can be measured both qualitatively and quantitatively.

4. The amount of student learning or developmental gain is directly related to the quality and quantity of energy and time that the student invests.

5. The effectiveness of any program or activity is related to the capacity of that program or activity to increase student engagement or involvement (p. 298).
Thus, the student and institution share responsibility for engagement activities. While the student is responsible for pursuing opportunities to engage or interact with faculty and peers, the institution is responsible for developing policies, procedures, and conditions that facilitate involvement with others in the learning process.

Astin asserts that while other theories place the student at the mercy of the institution and various teaching and testing practices, his student involvement theory promotes a shared responsibility between the student and the institution. Involvement theory rests on student motivation to invest time and energy as resources into educational and developmental pursuits. Time and energy are both viewed as limited resources that the student must choose to allocate as necessary to meet his or her academic, personal, and social needs and objectives. The view of time and energy as resources implies that greater investment in one area of the student experience results in less time and energy to invest in other areas. Thus, the student is responsible for how time and energy are budgeted, so to speak, in the college experience.

Since time and energy are limited, the institution is in competition with outside commitments in the student’s life. The institution may also offer internal competition for time and energy through offering multiple ways in which the student may engage in academic, social, and personal pursuits at the institution. For instance, student activity programs, athletic competitions, and special events on campus may compete with study and research for student time and energy. Astin (1973, 1977, 1993b) found that students who lived on campus were likely to
devote more time to engaging with faculty, staff, and other students than were students who lived off-campus. They were also more likely to persist at the university and to exhibit greater gains in intellectual development and report higher levels of overall satisfaction with their college experience (Astin, 1993b; Berger, 1997; Pascarella & Terenzini, 1991, 2005).

More recently, the term engagement has been replacing involvement in the literature or the two have been used synonymously. Wolf-Wendel, Ward, and Kinzie (2009) reported that Astin believes engagement and involvement may be considered synonyms. However, according to Wolf-Wendel et al., involvement is a superficial way of interacting with the environment whereas engagement includes both breadth and depth of interaction within the milieu. Engagement, then, suggests that students are taking full advantage of the opportunities to interact with peers, faculty, staff, and various activities on campus in support of their academic goals. Both Astin and Kuh, to a certain extent, view the two terms synonymously. For the purpose of this study, the term engagement will be used in reference to measures of student interaction with educationally purposeful and co-curricular activities and faculty, staff, and students. The term involvement will be used when referring specifically to Astin’s postulates and theories related to student behavior and success.

**Summary of Student Engagement**

Student engagement, then, is a function of how the student and institution interact. Engagement in educationally purposeful activities such as research with faculty, writing papers, and preparing for class should lead to increased
development of cognitive skills. Likewise, engagement with peers both in and out of the classroom, especially with students from diverse social, ethnic, and philosophical backgrounds should lead to increased problem solving, leadership, and interpersonal skills (Pascarella & Terenzini, 2005).

Models related to student integration and voluntary departure are addressed in the next section. The importance of academic and social integration as it relates to student persistence and engagement will also be considered.

Student Integration and Voluntary Departure

Spady (1970) called for an approach to understanding student departure from a theoretical perspective rather than merely reviewing and summarizing studies on student success or departure. He used Durkheim’s (1951) theories related to suicide to determine the causes for student dropout and develop a model that would explain why some students leave college prematurely while others do not. In developing his theory, Spady suggests a model that accounts for the interaction between individual student characteristics and institutional needs, pressures, and controls that result in both a positive transition and integration to the institution. Dissonance in the interaction, on the other hand, could lead to a less-than-perfect fit, resulting in voluntary departure prior to completing the degree or other educational goals.

Using Spady’s (1970) work as a starting point, Tinto (1975, 1993) proposed a theory of voluntary departure from the institution. Tinto also applied Durkheim’s (1951) theory of suicide in developing his model (Tinto, 1975, 1982,
1988, 1993). Tinto suggested that voluntary departure was analogous with egotistical suicide as posited by Durkheim. Egotistical suicide arises when an individual is not able to sufficiently establish a sense of belonging or membership in the new community. The sense of belonging is achieved through the development of a common set of values and beliefs established through academic and social integration. Essentially, this lack of integration into the institution or dissonance in values and expectations leads the student to withdraw from college prior to fulfilling his or her educational goals.

Tinto (1993) further developed his model based on VanGennep's (1960) presentation on the rites of passage in tribal society. Tinto suggested that new students experience similar rites during their incorporation and transition from high school to the university setting. The phases proposed by VanGennep include separating from the past; transitioning into the new environment or peer group; and incorporating the new society's values, beliefs, and expectations into his or her own. Integration to the new collegiate setting involves developing a personal affiliation with others at the institution and an intellectual affiliation through sharing common values, goals, and beliefs.

Nora (2001) elaborates on the integration process in suggesting that there is not a clear and distinct point at which a student separates from one social network and integrates into the new network. Instead, there is a blurred sense of transition during which the student may be both separating and incorporating at the same time. While a literal view of Tinto's theory suggests a strict sequential process, Nora suggests there is a great deal of crossover.
between the three phases as a student both maintains connections with family while building new relationships with peers and faculty at the same time. This blurring of the lines, so to speak, between separation and integration allows the student to gradually release dependence on past associations while simultaneously building new relationships. He suggests this is particularly the case for students-of-color, but allows that a similar dynamic may exist for Caucasian students as well. In a sense, according to Torres and Nora (2003), parent influences are replaced by faculty and staff influences while high school peer influences are replaced by college peer influences. The process takes place through engagement behaviors and how students allocate their time and energy between home and college pressures.

Encouragement from others, according to Nora (2001), may be a significant predictor of goal and institutional commitment. Likewise, encouragement from faculty and peers may be a factor that relates to how students perceive their institution to be supportive of students both academically and personally. While encouragement is important in the transition and adjustment process, Nora asserts that students must also be willing to open themselves to new ideas, values, and beliefs that may conflict with those learned from family and friends. In this process, students must make critical and informed decisions about which previously held beliefs and values to retain and which to amend or reject. This suggests a tempering of the strict interpretation of the separation and integration process. A safety net in which parents and friends
are supportive of the student may be essential in this process of growth and development in the adjustment process.

Integration and Engagement

Simply put, persistence is enhanced when the student makes a smooth transition to the new community and establishes a meaningful place within the social structure of the institution and the peer group. However, the key to integration and persistence, according to Astin (1977, 1993b), is the student’s engagement with faculty and with other students inside and outside the classroom. The greater the quantity and quality of engagement between faculty and students, the greater likelihood the student will integrate more fully into the academic life of the institution and continue enrollment to graduation (Pascarella & Terenzini, 1980, 1991, 2005). Integration and membership in the community and the degree of agreement between the individual’s values and beliefs and those of the college community play integral roles in departure decisions (Braxton & Hirschy, 2005).

According to Wolf-Wendel, Ward, and Kinzie (2009), Kuh suggests that a student becomes “integrated through involvement and engagement, by devoting effort to things that promote positive outcomes.” (p. 417). They also report that Tinto views integration as a “state or a perception of fit” with the institution (p. 419) whereas engagement is a behavior. Tinto admits that integration is a concept that is difficult to measure whereas, behavior, such as engagement, is more easily observed or measured (Wolf-Wendel, et al., 2009).
The student must continually evaluate and re-evaluate his or her level of integration and commitment to the institution and higher education goals which leads to decisions concerning persisting or departing (Braxton & Lien, 2000). Background characteristics such as secondary education experiences, parents' level of support and education, and individual skills and abilities influence preparedness for college and subsequent persistence. Commitments external to the institution, such as family, friends from the pre-college social network, and part-time or full-time jobs, are considered in competition for valuable time and energy resources that could be devoted to educational pursuits. These external commitments may interfere with social and academic integration and have been shown to lead to stop-out and dropout behavior (Astin & Oseguera, 2005; Pascarella & Terenzini, 1991, 2005).

The student and the institution share some level of responsibility for integration and commitment. Students are responsible for decisions that influence interaction and integration with peers through student organizations, study groups, academic clubs, and other options that are presented to individual students. The student is also responsible for seeking out academic-related opportunities that enrich their learning inside and outside the classroom (Astin, 1977, 1993b). Such opportunities include research projects with faculty, service learning projects, and volunteer work directly related to the student's academic pursuits. Institutions, conversely, are responsible for allocating resources to make these opportunities available to students. Institutions should also attempt to identify students at risk for premature departure and implement programs to
aid in integrating into the institution (Hicks, 2003, 2005). Each decision has a direct impact in the student’s use of time and energy in pursuit of educational goals (Cabrera, Nora, & Castaneda, 1993; Henry, 2005; Levitz & Noel, 1989; Russell, Hancock, & McCullough, 2007; Tinto, 1988, 1982, 1993). Thus, integration is the product of engagement in educationally purposeful activities that leads to greater likelihood of persistence to graduation.

**Summary**

Engagement and involvement in educationally purposeful activities such as research with faculty, preparing for class, and spending time in group work with other students can have a positive impact on persistence. Likewise, engagement in co-curricular activities can also positively affect persistence through encouraging increased social integration. However, while Tinto suggests that students ought to separate completely from their past associations, others encourage a more tempered approach that modifies existing relationships while transitioning to college.

**Literature Review**

The literature review examines published research in the areas of college student engagement, integration, and persistence amongst college students. Some researchers have focused their efforts on persistence to the second year of college while others have considered persistence to graduation. The review is organized into sections corresponding to the input-environment-output (I-E-O) assessment model described earlier. Much of the research includes multiple outcome variables related either to input variables or environmental variables.
and it is sometimes difficult to separate one output from one input or environmental variable. Thus, studies presented in the literature review are organized according to the primary variable under consideration within the context of the I-E-O assessment model.

First, a brief review of specific integration concerns consistent with the first-year student will be presented. Background characteristics as input variables including first-generation status, ethnicity, and gender will be examined. A review of first-generation students is important as the current study focuses on persistence behavior at an institution in which the majority of undergraduate students are the first in their family to pursue postsecondary education. Following the examination of background characteristics, studies that focus on engagement related to academic achievement and persistence will be presented and considered.

**First-Year Students**

The most critical timeframe in college for persistence is the first year (Astin, 1977, 1993b; Levitz & Noel, 1989; Pascarella & Terenzini, 1991, 2005). Students tend to make departure decisions early in their first year of college, sometimes even in the first 4-6 weeks of the fall semester or earlier (Hoyt & Winn, 2004; Ishitani & DesJardins, 2002; Whiteley, 2002; Woosley, 2003). First-year students face the most critical challenges in connecting and integrating with the institution. Failure to do so, according to Tinto (1975, 1982, 1988, 1993) can result in the early voluntary departure of first year students, thus limiting their likelihood of attaining their educational objectives. As a result, integration to
college is often highlighted as a key variable in predicting retention and academic progress (Schwitzer, Griffin, Ancis, & Thomas, 1999; Tomlinson-Clark, 1998).

In a very early study of college transition and integration, Sheeder (1938) conducted interviews with college administrators. He highlighted 15 concerns in his analysis and was able to identify key sources for these transition issues. Most prevalent were issues related to finances, personal freedom, study skills, personal responsibility/irresponsibility, and inadequate academic preparation for collegiate work. Perhaps not surprisingly, these concerns remain on the minds of administrators today as they affect student success, integration, and goal achievement (Astin, 1993b; Tinto, 1975, 1993).

Dadonna and Cooper (2002) utilized a pre-post test survey to determine the changing needs of first-year students prior to and shortly after participating in a new student orientation program. The post-orientation analysis indicated overall decreases in concerns in all areas they measured. Successful social and personal transition was important to the overall integration process, but students appeared to be more concerned with academics rather than social and personal concerns both prior to and following orientation.

Woosley (2003) measured the long-term effects of the first few weeks of college using bachelor's degree attainment as the outcome. Controlling for background characteristics and demographics, she measured educational commitment and employment in the first few weeks of the fall term and tracked the cohort to graduation. While educational commitment was found to significantly predict attainment of a bachelor's degree, first-generation students
were found to have lower probabilities of attaining the degree. Woosley’s research confirms other findings (Astin, 1993b; Pascarella & Terenzini, 1991, 2005) indicating that the first few weeks of the student’s collegiate experience may be essential to retention and goal attainment.

Suggesting that specific programs could be designed to aid in the transition to college, Wolfe (1993) explored the effectiveness of a first-year intervention program on subsequent integration and persistence. She explored the impact of a year-long program “designed to enhance academic and social integration” (p. 322). The results were consistent with Astin (1973, 1993) and Schroeder and Mable (1994) that on-campus students reported significantly greater degrees of social integration than did non-residential students. Likewise, students participating in the intervention program also reported greater degrees of social integration and were found to persist at significantly higher rates than did non-program participants.

Initial expectations can also help to set the stage for integration and persistence. Helland, Stallings, and Braxton (2002) examined how achieving initial expectations of college affected subsequent commitment to college and student departure decisions. Social integration was defined as “the sense of a person’s congruence with social systems” within the institution (p. 382) is a factor associated with institutional type (Chapman & Pascarella, 1983) and attributes (Berger & Braxton, 1998; Braxton & Brier, 1989), motivation (Stage, 1989), residence life community (Berger, 1997), and engagement (Milem & Berger, 1997). If students’ expectations are not met, then they are less likely to invest
the psychological and physical energy necessary to integrate into the academic
and social arena of the institution. Likewise, without this investment of energies
and subsequent integration, students are less likely to persist at the institution of
initial enrollment.

Fulfillment of social expectations was found to have a direct positive effect
on social integration and on subsequent institutional commitment which in turn
led to greater intent to persist. Women and more affluent students tended to
report greater success at having their social expectations met than did men while
non-white students were more likely to report barriers to meeting their social
expectations (Helland, Stallings, & Braxton, 2002). As a result of experiencing
barriers to social integration, non-white students showed lower likelihood of
persistence. Surprisingly, fulfillment of academic expectations did not have an
impact on the integration variables in this study.

Similarly, Smith and Wertlieb (2005) compared the social and academic
expectations of first-year business students finding that they generally had higher
expectations both academically and socially with experiences not meeting their
initial expectations. This was consistent in both academic and social dimensions
of college integration. These unrealized expectations transformed into
disappointing experiences in both the social and academic adaptation to the
collegiate environment. Academic achievement comparisons showed a general
trend toward an inverse relationship between academic expectations and
experiences. Instead of high expectations resulting in higher grades, they found
that students who were slightly more pessimistic about their academic integration tended to earn higher grades.

**Summary of First-Year Students**

First-year students face incredible challenges in adapting and integrating to college. A tendency to over-estimate their ability to adapt and integrate tends to lead to greater stress and struggles as they find their place in a new and complex social setting. More moderate self-expectations, on the other hand, may prompt students to budget more time and energy to finding those ways to engage and integrate into the collegiate setting rather than expecting the college to seek the student out.

**Background Characteristics**

Numerous research studies have been published that examine the impact of various background characteristics on persistence, academic achievement, developmental outcomes, graduation rates, and other dimensions of postsecondary education (see Pascarella & Terenzini, 1991, 2005 for example). Most of the studies cited in Pascarella and Terenzini’s comprehensive review of how college affects students (1991, 2005) concluded that various background characteristics appear to affect persistence, academic achievement, and graduation. The review of background characteristics related for this study will begin with first-generation status and explore the unique needs and challenges of first-generation students. While the focus of this research is first-generation students, factors related to ethnicity and gender will also be briefly examined as they relate to educational outcomes.
First-Generation Students

First-generation students are a specific sub-population of the first-year student group that deserves special attention. Choy (2001) describes first-generation students as those college students whose parents or grandparents did not attend college or any other form of postsecondary education. This definition remains fairly consistent throughout the literature, though some (Pascarella & Terenzini 1991, 2005) suggest that there may be varying levels of first-generation status dependent upon whether one or both parents attempted some form of postsecondary education. Common throughout the literature, however, is that first-generation students are less likely to attend college compared to peers whose parents obtained a degree, more likely to enroll in community colleges, and less likely overall to return for their second year of college (Choy, 2001; Horn & Nunez, 2000; McMahon, 1999; Tinto, 2004; Warburton, Bugarin, & Nunez, 2001).

Despite academic preparation in K-12 education, Horn and Nunez (2000) found that potential first-generation students, regardless of ability, were less likely to enter college than were students whose parents attended some college. They found that high school students whose parents did not attend college took fewer math and science courses than do students whose parents experienced at least some college. Similarly, they interacted with teachers and guidance counselors less often than did their peers and received less support and assistance in applying to colleges and preparing for college entrance exams. First-generation students also reported lower overall degree aspirations and, as confirmed by
McMahon (1999), were more likely to enroll in community and technical colleges. While nearly 46% of students whose parents attended college reported intentions to seek advanced degrees, only 17% of potential first-generation students indicated their intention to seek advanced degrees. Laanan (2003) confirmed first-generation students reported lower degree aspirations than did continuing-generation students. Parental expectations and encouragement from mentors did not affect degree aspiration.

Warburton, Bugarin, and Nunez (2001) discovered similar findings in an exploration of how various levels of academic preparation aided in persistence and degree completion of first-generation students. They found that those first-generation students who attended and completed college tended to have more rigorous coursework in high school and benefited from counseling and college preparation provided by high school guidance counselors. However, first-generation students were also less likely to take AP courses and exams than were other students.

In terms of their college experience, first-generation students were also more likely to stop-out of college for one or more terms prior to completing their degrees (Warburton et al., 2001). This confirms other research about student persistence behavior (Hoyt & Winn, 2004). Likewise, Hu and Kuh (2002) also noted first-generation students were more likely to be disengaged in intellectual pursuits than were their peers. Despite this, first-generation students who take advantage of opportunities to spend more time with faculty and with peers on
academic-related projects show greater gains in academic success and are more likely to persist than students who do not engage in similar activities.

Rodriguez (2003) found that first-generation students that successfully completed bachelor’s degrees benefited from social support at home, college counseling, better academic preparation, and needed financial aid throughout their college careers. Carini, Kuh, and Klein (2006) found that higher levels of engagement can have a compensatory effect on learning for students who are less well-prepared for college-level academics.

First-generation students tend to be underprepared for college in several ways (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Longwell-Grice & Longwell-Grice, 2008). Longwell-Grice and Longwell-Grice submit that first-generation students lack specific types of support from their parents who are not as familiar with college and university settings. For instance, parents might be very supportive emotionally of their children attending college, but lack the explicit experience necessary to provide support and assistance in navigating the university structure or helping their student gain access to valuable support services such as tutoring, counseling services, or academic advising. Similarly, parents may be ill-prepared to assist first-generation students in developing the skills necessary to interact with faculty.

Longwell-Grice and Longwell-Grice (2008) found this to be the case in their study of first-generation men. Despite academic potential of the men they interviewed, they found that their participants lacked the comfort level necessary to interact with faculty to promote academic integration. Instead, students
reported feeling intimidated by faculty who were there to act as gatekeepers to weed out those who were not college material. They tended to fear that professors would view them as a bother to be gotten rid of rather than offering real assistance. In this sense, the men interviewed in this study viewed faculty as a barrier to their success rather than a partner in their efforts.

Not surprisingly, the fear of faculty described by Longwell-Grice and Longwell-Grice (2008) could affect a sense of belonging among college students and affect the overall integration process. Hausmann, Schofield, and Woods (2007) explored sense of belonging as predicted by self-esteem, interaction with peers, and interaction with faculty. More time spent with faculty resulted in a greater sense of belonging to the institution. First-year students who exhibited this greater sense of belonging also indicated higher intentions to persist. Those with lower levels of academic integration, on the other hand, indicated that they would be more likely to leave the institution at the end of the first year. They found that despite the degree of academic and personal integration achieved by students, sense of belonging tended to decline throughout the first year.

Pike and Kuh (2005) explored the differences in engagement in educationally purposeful activities between first-generation and continuing-generation college students and the associated gains in intellectual and developmental growth. They hypothesized that students whose parents had different levels of education would exhibit differing levels of engagement inside and outside the classroom with faculty, staff, and peers. Subsequently, differing levels of engagement in educationally purposeful activities would result in
differing levels of gains in intellectual abilities. They found that neither academic nor social engagement had a direct effect on intellectual gains. However, there was an indirect relationship between both engagement factors and intellectual gains. Perceptions of the college environment as supportive and concerned with educational outcomes and integration of educational experiences were directly related to increased learning and intellectual development. Background characteristics such as living on campus and intent to pursue advanced degrees were also related to engagement resulting in greater gains in learning and intellectual development. First-generation students were less engaged overall compared to continuing-generation students. Lower levels of engagement among first-generation students were attributed to lower educational aspirations and lower likelihood to live on campus.

Carini, Kuh, and Klein (2006), on the other hand, found that engagement with faculty and peers does have an effect on academic achievement and critical thinking. They measured engagement using the National Survey of Student Engagement (NSSE) and compared results in engagement to a series of cognitive and performance tests focused on critical thinking and problem solving. After controlling for pre-college ability, their findings indicated that higher levels of engagement were associated with higher scores in critical thinking and problem solving. They also found that for at-risk students, including first-generation students, greater levels of engagement resulted in higher than anticipated scores on critical thinking measures.
Using data collected from institutions participating in the National Study of Student Learning (NSSL), Pascarella, Pierson, Wolniak, and Terenzini (2004) explored how first-generation students experience and benefit from involvement in cognitive and psychosocial development and post-college status attainment. They also explored the differences between first-generation and other students along college experiences and whether first-generation status influenced cognitive and psychosocial developmental outcomes differently compared to other students.

Findings indicated that first-generation students were likely to enroll in moderately selective or open-admission institutions compared to other students. First-generation students were also less likely to consider pursuing advanced degrees. In general, first-generation students were less likely to take advantage of the opportunities at college resulting in completing fewer credit hours; worked more hours per week while studying fewer; and indicated decreased co-curricular involvement in student organizations and intramural sports. First-generation students also tended to show slightly lower levels of growth in critical thinking and scientific reasoning but showed greater net gains compared to other students.

Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) used similar methodology to explore the relationship between student behavior and institutional practices that promote student academic success. They hypothesized that increased engagement with faculty and peers would stimulate cognitive growth and development. They found that students who spent more time preparing for classes, talking with faculty, and interacting with students from diverse
philosophical, ethnic, and racial backgrounds earned better grades and tended to persist to the second year than did students who were not as engaged in these types of activities. Engagement at this level not only accentuated academic achievement and persistence for first-generation students, but also had a compensatory effect. That is, first-generation students engaged in roughly the same quantity and quality of experiences as continuing-generation students tended to show greater net gains in academic achievement and persistence. This compensatory effect on persistence remained significant even after controlling for background characteristics, academic achievement, and financial aid considerations. Filkins and Doyle (2002) found similar results with first-generation students and students from lower socio-economic backgrounds.

Suggesting that expectations may be related to integration, Hicks (2003, 2005) explored the importance of pre-college expectations for first-year students. In a 2003 study, Hicks explored the expectations of entering students participating in a summer transition and preparation program. The results indicated that first-generation and continuing-generation students had different perceptions and expectations of what college would be like. In general, first-generation students perceived that their college experience would mirror their high school experience more closely in that faculty would be likely to teach study skills in the classroom, would talk with students about difficulties or problems with coursework, and would be open to helping students with personal problems. First-generation students were also more likely to express concerns that they would not finish college compared to continuing-generation students. Hicks
(2003) found that even brighter students in the first-generation group were likely to report similar perceptions as above.

One concern identified by Hicks was that first-year students in general reported that they would likely not participate in student organizations and clubs while in college. Hicks suggests that this trend, if true, may be a concern as Tinto (1982, 1988, 1993) and Astin (1977, 1993b) both have found that interaction with peers is a primary mode for engagement and integration that promote persistence behavior and institutional commitment. In a follow up study, Hicks (2005) found that participation in summer college preparation programs, however, provided the students an opportunity to amend their expectations to conform more to the true collegiate experience.

Individual student behavior is potentially tied to their intentions to engage in particular activities (Ajzen, 1991; Purswell, Yazedjian, & Toews, 2008). In an exploration of how planned behavior predicts outcomes, Purswell, Yazedjian, and Toews (2008) compared academic success related intentions of first-year students to self-reports of actual behavior. They found that behavior could be predicted by intention, parental support and peer support. If parents and peers encouraged students to study and prepare for classes and provided particular advice on strategies, then students would likely follow through with those intentions. However, a stark contrast was found comparing motivations between first-generation students and continuing-generation students. For students whose parents had some college experience, peer support was significant in predicting actual behaviors related to engagement. For first-generation students,
on the other hand, behavior was more likely predicted by individual intentions. Furthermore, there was little difference reported in intentions to engage in educationally purposeful activities between first-generation students and continuing-generation students.

**Summary of First-Generation Students**

The literature on first generation students consistently reports challenges and barriers to higher education associated with poor academic preparation at the secondary school level, lower critical thinking skills, less attention from teachers to prepare them for college, and decreased understanding and support of family members (Thayer, 2000). Likewise, first-generation students tend to enter the postsecondary setting through the community college from which only a handful will persist and transfer to a four-year institution to receive their bachelor's degree (Tinto, 2004). First-generation students also report greater difficulty in making the transition to college and report more stressors than other students. Work and family responsibilities, perceived or real, also compete with engagement opportunities that could help first-generation students compensate for their disadvantages.

However, those first-generation students who persist during the first and second-years to begin their third year of college appear to be just as likely to graduate as other students. Likewise, the effects of increased time spent studying, engaging in research, and engaging with their peers can compensate for lower levels of academic preparation and lead to greater opportunities for academic success and persistence. While the definition of the first-generation
student varies in the literature, the present study will focus the definition to include those students for whom neither parent obtained a college degree.

**Ethnicity and Gender**

In many of the same ways that first-generation students may be disadvantaged in college, students of color may experience similar challenges in the integration process and educational outcomes (Pascarella & Terenzini, 1991, 2005). Seidman (2005) reports that African-American students tend to persist to their second year of college, nationally, at a rate of 75% compared to 80% for White students. Similarly, while the six-year graduation rate for White students approaches 57%, the rate for African-American and Hispanic students is only 41.7% and drops to 35.8% for Native American students (CSRDE, 2003). Seidman asserts that commonalities in the decreased persistence and graduation rates for minority students may be linked to their first-generation status. Similarly, Seidman supports Watson, Terrell, and Wrights’ (2002) findings that minority students tend to be marginalized in the campus community or asked to speak on behalf of their race in class discussions. Examining this within the context of the theoretical foundations discussed earlier, minority students may feel ostracized or tokenized in the campus environment leading to decreased sense of integration and belonging to the campus. As a result, integration is not fully achieved and the likelihood of premature voluntary departure may become a viable solution.

Despite concerns of feeling marginalized, however, Hu and Kuh (2002) found that minority students tended to be more engaged in educationally
purposeful activities than did White students. Harper, Carini, Bridges, and Hayek (2004) found that men and women at HBCUs engaged differently in two main areas. Women reported higher sense of academic rigor in the classroom than did men. However, men reported more contact with faculty and staff compared to women. Their findings remained stable when any one institution in their sample was removed from the analysis and were consistent across both public and private HBCUs. Carter (2006) cited that increased engagement among minority students led to increased persistence. Similar findings by Hurtado, Carter, and Spuler (1996) indicated that in-college experiences and engagement compensated for disadvantages in student background characteristics related to ethnicity and gender.

Carter (1999), in a review of the BPS: 90:92 data set, found that African American students had slightly higher degree aspirations than did White students despite socio-economic status. Carter suggests that this could be due to a very small proportion of African American students in the population covered by the BPS dataset. However, she also noted that degree aspiration decreased over time for both African American and White students at similar rates. She also found that age and children also had a negative effect on degree aspiration. Older students and students with children were more likely to report lower degree aspirations than were traditional aged students and those without children. The difference was more pronounced for African American students than for White students.
Hu and Kuh (2002) found that female students, compared to male students, tended to be more moderated in their engagement. Whereas men tended to be clustered in the extreme engaged and disengaged ends of the spectrum, women tended to be more clustered in the middle range in terms of engagement. Research cited by Pascarella and Terenzini (1991, 2005) suggest that women are more likely to attend college than men, are more likely to persist compared to men, and are more likely to earn higher grades and graduate.

Women and women of color in particular, often report lower levels of self-beliefs than do men, which may act as barriers to achieving educational goals (Boyd, McCabe, & d'Arcy, 2003). Although women tend to rely more greatly on social support from friends and family, they also tend to receive lower levels of support from family and tend to feel more stressed about college than do men.

Torres (2003) found that support from family and friends were important for Latino students. Dixon Rayle, Robinson Kurpius, and Arredondo (2006) found similar results with women enrolled at a major research institution. Social support along with self-beliefs and university comfort were examined as they related to the academic achievement of women. Self-beliefs encompassed self-esteem, self-efficacy, and personal values related to education. Social support includes support derived from family and friends and mentoring from faculty and staff. University comfort includes perceptions of the university environment, congruence with the university culture and values, and stress related to academics. Relating to Tinto's theory, lower levels of self-beliefs combined with
poor social support and discomfort with the university community may lead to an increased likelihood of departure decisions.

Dixon Rayle, Robinson Kurpius, and Arrendondo (2006), examined the effects of these factors as they related to academic achievement and explored differences between White women and women of color. Self-beliefs, social support, and perception of comfort in the university setting were important in predicting persistence for women in this study accounting for nearly 54% of the variance in predicting persistence. These results were consistent across ethnicity and appeared to be independent of academic achievement. Social support was consistently the greatest predictor of persistence for students. Interestingly, mother's educational level, as opposed to father's, showed greater significance for women in pursuit of education. Whether the female students' father had a degree appeared to have little influence on postsecondary objectives. Students who felt more prepared for college from their high school experiences were more likely to persist than were students who felt less prepared by their high school experience. Thus, as Tinto and Nora both assert, support in the educational environment from both family and peers is key to adjustment, transition, and persistence in the college setting.

**Other Background Characteristics**

Other background characteristics may also influence academic achievement and persistence. Using survival analysis to develop a model of retention for undergraduate students over the course of five years, Murtaugh, Burns, and Schuster (1999), found that attrition increased with age at time of
enrollment and decreased with higher high school GPA and first semester GPA. In their survival analysis, they found that approximately 20% of students withdrew after the spring term of the freshman year, approximately 30% (cumulatively) withdrew after the sophomore year, and approximately 40% (cumulatively) had withdrawn by the end of the fourth year. The survival analysis not only accounts for students that withdraw, but provides a visual representation of attrition patterns over the course of time.

A stepwise multiple regression analysis indicated that enrollment in an orientation course was found to be a significant predictor of retention as was first-semester GPA and high school GPA. However, minority student status and out-of-state status were shown to increase the hazard of early withdrawal rates. Separate regression equations for race and residency indicate that non-White students, with the exception of Native Americans, and international students are also at greater risk for withdrawal.

Among other variables, Vare, Dewalt, and Dockery (2004) explored initial commitment and student entry characteristics to predict the retention of undergraduate students enrolled in teacher education programs. Student entry characteristics, SAT scores, and high school academic achievement comprised several of the variables used in the analysis. The researchers also included a measure of preferred learning style consistent with Kolb’s model of experiential learning (Kolb, 1983).

The results of the study indicated that the major predictors of persistence were SAT scores, high school GPA, level of father’s education, and the score
measuring preferred learning styles. The score on preferred learning style indicates that students perform best when teaching styles match preferred learning styles. Contrary to Tinto’s model of voluntary student departure, initial commitment to the institution was not a significant predictor for this group of teacher education students.

Summary of Background Characteristics

With few exceptions, students have little control over the background characteristics they bring with them to college. Indeed, students have very little control over their parent’s level of education, family income, and other characteristics. However, many of these characteristics may have an influence on academic achievement, persistence, and graduation. What is less clear, however, is the degree to which background characteristics directly influence engagement in educationally purposeful activities while in college. The present study attempts to build a better understanding of the effects of background characteristics on engagement.

Environmental Factors

The primary environmental factor in the input-environment-output model under consideration in this study is engagement in educationally purposeful activities. Engagement is defined as the shared responsibility between institution and student to interact with faculty and peers, become involved in research activities, prepare for classes, and become involved in clubs and organizations. It is difficult to examine engagement and integration in the environment without discussing output measures related to academic achievement, persistence, and
graduation at the same time. As a result, those output variables consistent with the input-environment-output assessment model will be discussed in the context of engagement and integration research.

**Engagement**

Heavily influenced by Astin and Kuh, the literature review on engagement focuses on student behaviors inside and outside the classroom which demonstrate the investment of time and energy in the learning process and the life of the university. The life of the university may encompass experiences in the residence halls, in the student union, in the laboratory, in the classroom, and on the intramural field, to name only a few. Engagement may also have an impact on persistence decisions. Much of the research on engagement focuses on various learning outcomes such as critical thinking, personal development, intellectual development, problem solving, and persistence.

Engagement is defined in various ways by different authors probably attributed to the specific focus of individual studies. Similar to Astin's involvement theory, engagement takes many forms both inside and outside the classroom including research with faculty, preparing, or not preparing, for classes, writing papers, attending co-curricular events on campus, involvement with student organizations, and involvement in other clubs and activities on campus. The review of literature on engagement will attempt to identify the particular aspect of engagement that individual authors used in their studies. However, the overall definition of engagement for this study will continue to focus on the time and effort students focus on various activities coordinated by the
institution that lead to personal and academic success (Wolf-Wendel, Ward, & Kinzie, 2005).

Milem and Berger (1997) explored the relationship between engagement and persistence behavior at a highly selective private university. The researchers attempted to create a link between engagement and Tinto's theory of student integration by analyzing longitudinal data on student retention. They examined the environmental factors that contribute to or inhibit the integration process; whether the addition of behavioral constructs about engagement enhances the understanding of the integration process; and the relationship between student behavior and perceptions of the integration process during the first year of college.

Their final regression model indicated that women reported higher levels of perceived support from both the institution and peers, despite lower levels of interaction with faculty. White students were likely to report higher degrees of academic non-engagement during the spring term and higher levels of engagement in Greek activities compared to students of color. Approximately 25% of the variance in engagement during the spring term was predicted by engagement during the first eight weeks of the previous fall term. Contrary to Tinto's model, academic integration was not a strong predictor of institutional commitment in this sample. Students who reported lower levels of engagement during the fall term were also less likely to report lower levels of engagement during the spring term and lower levels of perceived support from the institution.
The results suggest that engagement in various activities both in and out of the classroom have some influence on students' perception of peer and institutional support. These perceptions in turn influence goal and institutional commitment. Further, the interaction between perception of support and engagement may contribute to the successful transition and incorporation into the university community. Consistent with other research (Pascarella & Terenzini, 1991, 2005), engagement with peers and faculty during the first six weeks of the fall term is strongly related to engagement in the spring and persistence behaviors.

Using a mixed-method approach, Kuh (1995) examined the impact of various types of student engagement on campus. The purpose was to examine the out-of-classroom experiences engaged in by college seniors that affected their learning and development. The study was conducted as part of a major investigation of several universities thought to be exemplary in engaging students in the total undergraduate experience (Kuh & Associates, 1991). The conceptual framework for the study was grounded in Astin’s theory of involvement as a factor related to retention and student learning.

Activities mentioned most often by students included peer interaction (79%), academic related activities (68%), faculty interaction (46%), and work (32%) as being most important in influencing their development and growth during college. Students reported greatest gains in areas of cognitive complexity, humanitarianism, knowledge, and practical competence through engagement in out-of-class experiences. Thus, engagement both inside and
outside the classroom appears to be influential in personal growth and development.

Suggesting that institutional type and individual student characteristics may interact to influence student engagement in various intellectual pursuits, Hu and Kuh (2002) explored the impact of institutional characteristics on engaged and disengaged students. The sample consisted of over 50,000 students who had participated in the College Student Experiences Questionnaire (CSEQ) over a nine-year period. Highly engaged students (5.4% of the sample) were defined as those who were heavily involved in intellectual pursuits while disengaged students (18.2%) were least involved in educationally purposeful pursuits. These two groups formed the anchors of a continuum with students in the middle grouped together and defined as typically engaged students (76.4%). The results indicated that men tended to be clustered in either the highly engaged or disengaged ends of the spectrum while women were distributed more evenly. Freshman and sophomore students tended to be less engaged than did juniors or seniors. This suggests that engagement increases as one spends more time in college and moves deeper into one’s major field of study and away from general education classes. Students of color tended to be more disengaged in educational pursuits than did White students as were students who were undecided about their major course of study. Of note, students who perceived that their institution, regardless of type or size, emphasized scholarship and intellectual analysis reported higher levels of personal relationships with faculty
and other students. Finally, students whose parents had earned a bachelor’s degree were more likely to be engaged than were first-generation students.

While Hu and Kuh (2002) focused on institutional characteristics, Kuh, Pace, and Vesper (1997) measured behavior and estimated the extent to which students were engaged in activities consistent with good practices in undergraduate education. This was consistent with Astin’s postulate that involvement is a student responsibility for making decisions as much as it is an institutional responsibility for providing opportunities. They found that active learning methods and cooperation among students were the best predictors of intellectual gains and development at all three types of institutions. In general, when students believed that their institution valued scholarship and critical thinking, they were more likely to demonstrate greater gains in appropriate measures.

Ethington and Horn (2007) reviewed the effects of work to examine personal and intellectual development of students enrolled at a community college. They found that quality of effort strongly influences personal and social development among college students. The greater the energy students invest in opportunities for engagement, the more they view the environment as challenging and stimulating. Most environmental factors were found to have a positive effect on engagement with the exception of work commitment. The greater the responsibilities at work, the less engaged students tended to be. However, consistent with both Tinto and Astin, the interaction between the
environment and the individual constitutes the dominant factor in predicting student growth and development.

Learning communities have been a popular strategy for promoting integration and retention. Zhao and Kuh (2004) conducted an analysis of NSSE (National Survey of Student Engagement) data to assess the value of learning community involvement as a component of student engagement. Learning communities typically consist of a group of students co-enrolled in two or more academic courses together. Optionally, the students may also be assigned to live in close proximity together in residence halls. The functional purpose behind learning communities is to provide students with greater opportunities to connect with each other to engage in academic and non-academic pursuits and promote greater integration and transition to the university.

The results indicated that membership in a learning community was associated with higher levels of academic effort and greater degrees of integration. Academic integration, in particular, was improved due to more contact with faculty in a cluster of courses that were connected through assignments common to the learning community model. Students in learning communities also described their experience on campus as more positive and the university as more supportive of their social and academic needs. Involvement in learning communities was also associated with greater gains in personal and social development and greater degrees of practical competence.

In a further review of classroom engagement with faculty, Russell, Hancock, and McCullough (2007) explored the outcomes of undergraduate
student engagement in research activities with faculty. Participation in undergraduate research opportunities resulted in increased confidence, understanding of research and scientific methods, and increased likelihood of attending graduate school. Research opportunities also helped to clarify academic and professional pursuits and increased the likelihood that students would complete their degree and pursue graduate studies. The amount of time students spent conducting research was also a factor in intent to pursue graduate studies. Thirty percent of students with 12-18 months of experience indicated the intent to pursue advanced degrees versus 13% of those with fewer than 3 months of experience and 8% of those with no experience. Results were fairly constant across racial and ethnic groups and gender.

Summary of Engagement

Engagement has been shown to be a key factor in persistence to college. The studies cited above outline the importance of engagement in promoting student achievement and building the network of influential and meaningful relationships that promote individual student success in college. Engagement with faculty in academic pursuits such as collaborative learning and research is related to acquisition of course content knowledge and intent to pursue graduate education. Likewise, engagement outside the classroom with peers is tied to increased problem-solving skills, better adjustment, and critical thinking skills. This is especially true when students engage with peers from diverse social, ethnic, and philosophical backgrounds. Increased levels of engagement can also have a compensatory effect on outcomes for at-risk students (Carini, Kuh, &
Klein, 2006). That is, first-generation students and students of color who engage more inside and outside the classroom can overcome the barriers associated with their at-risk status or lower level of high school preparation. Yet, Grayson (1997) and Brint (2008) report that first-generation students engage less in activities that contribute to increased GPA such as classroom involvement and preparing for class, are less engaged in social activities, and were found to have lower GPAs than were continuing-generation students.

Engagement can also be a strong factor related to persistence. For instance, students who are more engaged in academic pursuits showed greater overall levels of adjustment to the institution. Likewise, these students also reported that they felt more supported by faculty and their peers than did students who had lower levels of engagement. Engagement can be a factor related to whether students live on or off campus and to parental education level. Finally, students who are more engaged tend to earn higher grades, a key source of extrinsic reward considered by students as they make their persistence decisions.

With an understanding of engagement and the characteristics of first-year students, we now turn our attention to persistence behaviors and the impact of both institutional characteristics and individual student characteristics that influence the departure decision.

**Student Integration and Persistence**

As discussed earlier, persistence is a student behavior that results in continued enrollment at the institution. Continued enrollment should eventually
lead the student to his or her academic goals. Likewise, continued enrollment leads to increases in critical thinking, problem solving, interpersonal skills, and more opportunities to engage with peers and faculty in the academic arena. Persistence will be examined based upon characteristics of students that can predict persistence or departure. For instance, academic preparation in high school and parental education, in particular, will be explored as they fit into the persistence puzzle. The following section also contains a great deal of crossover studies that link persistence with integration and/or engagement. These studies are addressed here as persistence behavior was the primary dependent variable.

A key to understanding retention and persistence is determining the reasons that some students choose to leave college prior to completing their degree program or course of studies and the timing of those departure decisions. In an attempt to determine the primary causes that students leave college prematurely, Hoyt and Winn (2004) conducted a survey of non-returning students at an open admission four-year college to determine if stop-outs, dropouts, transfer-outs, and opt-outs reported different reasons for leaving the institution. While the definitions of the first three are fairly common, the key difference with opt-outs compared to the other groups is that they completed their educational goals that may not have included traditionally recognized degree programs or course sequences defined by the institution.

Hoyt and Winn (2004) conducted surveys and phone interviews with students to determine their reasons for leaving the institution. Compared to transfer-outs, stop-outs and opt-outs were older, more likely to have children, and
more likely to work full-time. Stop-outs and opt-outs were also more likely to experience difficulties juggling between work and classes. Conversely, transfer-outs tended to receive more financial support from parents and were less likely to experience conflict between college and work. Family responsibilities were also less of an issue for transfer students than the other groups. Greater financial and moral support from parents and fewer familial responsibilities may be a primary reason that transfer-outs were able to continue their education at other institutions.

Dropouts typically cited academic difficulties as a key factor in leaving the institution. Lower grades and poor academic performance were major reasons for leaving cited by dropouts. Poor academic performance and academic struggles in general may result in students dropping out of college in the first year because of a tendency toward lower term grade point average than other groups. Stop-outs, on the other hand, cited financial difficulties as the chief cause for not returning. These students tended to work more to pay for their education. The stop-out group also tended to be out-of-state students with greater financial obligations to the institution. Stop-outs, however, reported being satisfied with the academic environment and with the social environment. Thus, financial obligations appear to be the primary cause for stopping-out in order to save money to return in a future term. The current study does not examine the reason that students do not persist. Thus, any student that does not return to the institution, regardless of reason, will be considered a non-persister.
Suggesting that some students enroll in college with pre-determined plans to later withdraw or transfer, Whiteley (2002) studied planned attrition from postsecondary education programs in Australia. Citing concerns among faculty about students who enroll in certain programs only to withdraw and transfer to other programs, she sought to develop an understanding of the causes for this planned form of attrition. Approximately 82% of participants indicated that they intended to complete their current degree program while 17% indicated that they did not plan to finish their current program. As the data was collected during the first week of classes, students appear to formulate these types of plans (persistence versus planned withdrawal) early in the college career. Students who intended to complete their program were more likely to be enrolled in their program of preference. Likewise, fewer students enrolling in their second or third choice reported an intention to persist. Of these, the majority indicated that they wished to transfer to their preferred program of study upon successful completion of one or two years of college study in a related program.

Ishitani (2006) and Ishitani and DesJardins (2002) investigated departure decisions based upon the Beginning Postsecondary Students Longitudinal Study: Second Follow-up (BPS: 90/94). The BPS dataset was assembled by the National Center for Educational Statistics as part of a project to track student attendance in postsecondary education institutions. The authors cited that Tinto and Spady focus on the reason why students either persist or withdraw, but they do not elaborate to determine specifically when a student intends to withdraw. Using event history modeling, the researchers examined the timing of student
departure to determine whether there is a significant timeframe in the departure
decision that might influence student behavior. Ishitani and DesJardins (2002)
found distinct points at which students were likely to withdraw. These points
were directly after the first semester and again after the fifth semester of
enrollment. Thus, students had greater departure rates in the spring term of the
first and third years of school.

Ishitani (2006) and Ishitani and DesJardins (2002) also found that first-
generation students were more likely to withdraw prior to degree completion.
There was no significant difference in departure behavior for men versus women
or across ethnicity. The results also indicated that Asian-American students
were more likely to withdraw after the first year than were White students, but no
more likely to in following years. However, after completing the first three years
of school, Ishitani (2006) found that likelihood of reaching graduation within 6
years of initial enrollment increased for first-generation students at a greater rate
compared to their continuing-generation students. The models presented in both
studies highlight the influence of degree aspiration as a potential precursor to
goal and institutional commitment. That is, the lower the degree aspiration, the
less likely the student is to persist beyond the second or third year. However, the
higher the level of degree aspiration, regardless of first-generation status, the
greater likelihood of persistence to graduation, even though it may take longer for
first-generation students than for others. Thus, the influence of family
background and income combined with degree aspirations and integration can
predict persistence over time.
Pratt, Hunsberger, Pancer, Alisat, Bowers, Mackey, Ostaniewicz, Rog, Terzian, and Thomas (2000) used an experimental design to assess the effects of focused peer-group meetings on overall integration to college. The findings indicated that students engaged in small discussion groups showed higher levels of overall adjustment to college and stronger social support than students not involved in similar programs. Similarly, those assigned to discussion groups reported missing fewer classes, a key element in engagement. This supports Astin’s postulate on investment of time and energy in meaningful activities designed to foster integration and intellectual development.

Four years later, Pancer, Pratt, Hunsberger, and Alisat (2004) traced the retention rates of students participating in the group intervention versus the control group. They found that 28% of the control group students had withdrawn from the university while less than 8% of students in the group intervention program had withdrawn. Pancer et al. suggest that engagement in these group activities encouraged greater integration to the institution which led to improved persistence over students not engaged in the small group program.

Student-faculty interaction outside the classroom has been considered as a positive influence on student retention. Pascarella and Terenzini’s (1979a, 1979b) hallmark survey of students in their first year of study concerned the quality and quantity of their interactions with faculty outside the classroom and how those interactions influence decisions related to persistence. Students were asked to identify the number of times they had various types of contact with faculty members over their freshman year. Quality of contact was measured as
interactions lasting 10 minutes or more. The sample was skewed in that the majority of the students surveyed reported few or no interactions while a small number of students accounted for the majority of the total number of interactions.

The results indicated that approximately 10% of the variance in voluntary departure or persistence was accounted for by interactions with faculty. In contrast, background characteristics accounted for only 2% of the total variance. Although the findings were not statistically significant, they did support previous studies that indicated faculty-student interaction can have a positive impact on persistence. Interactions focused on intellectual pursuits and course related concerns were found to have a larger impact than other types of interaction. These types of interactions, according to the authors, tend to extend and reinforce the academic experience and foster academic integration. Men tended to benefit more from informal interaction than did women while women tended to experience more interaction centered on informal socialization and discussion of campus issues than did men. The findings suggest that programs and other organized events and activities that foster these types of contacts may influence overall persistence and retention during the first year.

In a follow up, Pascarella and Terenzini (1979b) studied the main and interaction effects of student characteristics and academic integration on persistence behavior. The study sought to determine whether various activities might accentuate persistence for students already prepared for college and/or compensate for characteristics of at-risk or less-prepared students. Institutional commitment and interaction with faculty appeared to be more important in
predicting persistence for men while quality of peer relations was more important for women. They found that better academic achievement among men was related to increased likelihood to persist. But, as pre-college measures of academic achievement increased, the degree of importance of academic achievement in college for persistence behavior decreased.

Increased interaction with faculty was found to have its strongest compensatory effect with first-generation freshman males. Similarly, faculty concerns for teaching and student development were most influential for first-year women with lower value levels attached to higher education. Conversely, as importance of graduating and parental education increased, the impact of relationships with faculty decreased. This inverse relationship suggests that integration and engagement activities may help to compensate for poor personal and academic preparation among at-risk students. The nature of peer group relationships accentuated the persistence behavior for women who were already at low-risk for departure. Likewise, women who attached strong importance to graduation at the start of college were also most affected by the strength of those relationships through college.

Greater levels of academic integration appeared to compensate for lower levels of social integration (Pascarella & Terenzini, 1979b). The results also indicated that experiences during the freshman year may be more important than Tinto predicted. The levels of contact with faculty and peer relationships in the first year may compensate for student entry characteristics that might otherwise lead to premature, voluntary departure from the institution. Compensatory
behaviors learned and established during the first year of college may continue as learned behaviors that influence the student throughout the college career.

**Summary of Student Integration and Persistence**

Policies, procedures, and programs at the institutional and the departmental level all have the effect of providing choices or opportunities for students to make decisions related to withdrawal or continued enrollment. Students who engage more with faculty and with each other in educationally purposeful activities tend to persist at a higher rate than other students (Pascarella & Terenzini, 1991, 2005). Likewise, increased engagement can have a compensatory effect on persistence for first-generation students. In other words, first-generation students who engage in more research and educationally purposeful activities tend to persist at higher rates than students who do not participate in such activities (Carini, Kuh & Klein, 2006; Pascarella & Terenzini, 1979a, 1979b).

Similar findings were observed when students engaged in supportive peer group interactions. These types of environmental factors are consistent with engagement research discussed earlier that includes learning communities, cooperative learning opportunities, and partnering with faculty for research opportunities. However, environmental predictors are only one piece of the puzzle, as Tinto (1975, 1988, 1993) and Astin (1977, 1984, 1993b) posit that student characteristics such as gender, ethnicity, and academic preparation also play a role in engagement and persistence.
Education Outputs

Within the input-environment-output assessment model, this study focuses on two short-term outputs and one long-term output. Academic achievement as measured by grade point average at the end of the first year of enrollment and persistence to the second year of school are short-term outputs of background characteristics and environmental variables. Graduation, defined as the point at which the student has successfully completed all requirements to obtain the degree, is the final long-term output in the model. Consistent with the Student Right to Know and Campus Security Act of 1990, reporting for graduation rates at universities is standardized to six years. While, outputs related to academic achievement and graduation have been discussed within the context of engagement and integration earlier, a brief summary of those findings is presented.

Gordon, Ludlum, and Hoey (2008) found that the NSSE quality benchmarks showed some validity in accounting for the variance in academic achievement and persistence with first-year students at a highly selective institution. However, when controlling for student background characteristics such as gender, ethnicity, and high school preparation the amount of variance decreased considerably. While their study adds some rationale to utilizing the NSSE in this manner, the results were not easily generalizable to other institutions and did not differentiate between first-generation and continuing-generation students. They also cite that relatively few studies examining the
validity of using the NSSE in predicting academic achievement and persistence have been published.

Individual predictors of academic achievement and persistence include gender, ethnicity, and parental education level. In general, first-year students whose parents earned a college degree are more likely to persist at higher rates than are first-generation college students. However, the decisions that students make while in college can have a compensatory effect on persistence and academic achievement. For instance, first-generation students who fully engage in the opportunities available to them inside and outside the classroom are more likely to graduate than are their peers who do not take advantage of these opportunities (Carini, Kuh, & Klein, 2006; Pascarella & Terenzini, 1991, 2005). Once first-generation students make it to their third year of school, they are no less likely to depart than are continuing-generation students (Ishitani, 2006).

Gender and race have also been shown to factor into the persistence puzzle. Women are slightly more likely to persist than are men while students of color enrolled at predominantly White institutions are more likely to come into conflict with various barriers or hurdles in integrating to the institution. However, institutional programs aimed at helping students make a smooth transition and promote integration with peers and with faculty have been shown to again compensate for these barriers to their success (Dixon Rayle, et al., 2006; Pascarella & Terenzini, 1991, 2005).

In general, continuing-generation students with higher levels of degree aspiration and greater levels of preparation are more likely to persist than are
first-generation students. The transition process is also important as universities and students share the responsibility in the integration process. However, variations in transition and integration are also noted between racial and ethnic groups with Latino/a students and other students of color showing a greater need to maintain connections with parental and other groups from their past than perhaps have been identified amongst White/Caucasian students.

The research exploring reasons and timing of departure tend to support both integration and engagement theories that place greater importance on student entry characteristics and intentional engagement in educational and social activities. Considerable compensatory effects for at-risk students have been observed through measuring engagement in educationally purposeful activities inside and outside the classroom. Likewise, peer interaction and supportive relationships early on in the college career can also have a compensatory effect for at-risk students (Pascarella & Terenzini, 1979a, 1979b, 1991, 2005). Research in support of integration models also suggests that commitment to the institution is both a precursor and a product of persistence. Greater goal and institutional commitment tends to lead to greater engagement which influences subsequent goal and institutional commitment and persistence (Tinto, 1993; Vare, Dewalt, & Dockery, 2004).

**Summary of Literature Review**

The way that students interact with each other and with faculty has been considered to be a strong predictor in persistence and academic achievement. The more a student engages in educationally purposeful activities with his or her
peers and with their faculty members, the more likely the student is to persist and earn better grades. Engagement can include research projects, preparing for class, library research, and involvement in learning communities. Likewise, engagement with peers, particularly those from diverse social, ethnic, and philosophical backgrounds has been linked to increased understanding of others, problem-solving, and critical thinking skills. Engagement can have a complementary affect on persistence and academic achievement for students who are well prepared for school and can help compensate for the lack of preparation or experience for other students (Kuh, 2001, 2003; Kuh, et al, 2008; Kuh et al, 1991).

Persistence is a student behavior that results in continued enrollment to graduation or to meet academic goals. Persistence is a function of grades, satisfaction with the institution, experiences while in school and background characteristics. Those background characteristics include parental education, academic preparation, access to resources, and a host of others. In particular, individual intention to persist and to engage in purposeful activities appears to also be a strong predictor of persistence.

While first-year students already pose a challenge for colleges and universities in meeting expectations of accrediting and funding bodies, first-generation students in particular are a unique population. First-generation students are significantly less likely to persist, earn lower grades, and engage in fewer educational activities than do their continuing-generation peers.
Furthermore, fewer than a third of first-generation students will eventually graduate within the six year timeframe recognized in most states (Tinto, 2004).

A clearer understanding of the effects of engagement in educationally purposeful activities and co-curricular activities is paramount in developing programming and policies that are aimed at improving retention. The purpose of the present study is to examine the influence of engagement among first-generation students on academic achievement and persistence among a cohort of students. The study includes measures of degree aspiration taken in the first semester and measures of engagement taken during the spring term of their freshman year. The study should help to clarify how input variables such as gender, ethnicity, and first-generation status influence engagement behaviors and a better understanding of the overall impact of engagement on academic achievement and graduation. As this study is conducted at an institution in the mid-south region of the United States with a large percentage of first-generation students the analysis will also include a comparison of the experiences and effects between first-generation students and continuing-generation students.

Chapter three presents the methodology and statistical analysis used to conduct this study. A review of the primary instruments is also provided. Chapter three also revisits the input-environment-output assessment model updated to reflect the particular variables of interest in this study.
CHAPTER THREE
METHODOLOGY

The following chapter describes the research methodology used in this study. A description of the research design, the sample and population, and sampling techniques are presented, followed by a description of the institution-specific instrument and national assessment instrument that were utilized. Concluding this chapter is a discussion of the statistical analysis that was utilized.

Research Design

This panel study design involved the analysis of existing data related to persistence and academic achievement as measured by grade point average (GPA); first-year student expectations and background characteristics; and data collected through participation in the National Survey of Student Engagement (NSSE) administered to freshmen and seniors during the spring 2003 term. Major data points in this longitudinal study included background characteristics, first-day measures, second semester measures of engagement and academic achievement, third semester measure of persistence, grade point average at graduation, and graduation within the 6-year reporting cycle. This longitudinal design allowed for collecting data on the same individual over several years to
assess the relationship between engagement, academic achievement, and persistence to graduation.

All data are property of Western Kentucky University and housed on a secure server accessible to Institutional Research personnel only. Data concerning academic achievement and persistence to graduation were obtained from university records. The analyses were conducted on one cohort through the 6-year graduation rate consistent with reporting to the Council on Postsecondary Education in the state of Kentucky.

**Population and Sample**

The population for this survey was all first-time, full-time, degree-seeking students enrolled at Western Kentucky University in the fall 2002 Cohort. This cohort was due for reporting to the CPE for 6-year graduation cycle in 2009 and was the latest group for whom data was available. Western Kentucky University is a comprehensive regional Master’s Level institution located in south central Kentucky. Total enrollment for the institution is approximately 18,000 students of whom approximately 40% are first-generation students. Western Kentucky University enrolls students from all fifty states and several foreign nations. Approximately 3100 first-time full-time students are admitted to the University each fall semester. Of these, 96% are considered traditional age students under 24 years old. Approximately 84% are White/Caucasian, 9% African American, and 8% are other or not-reported. Approximately 60% are female (WKU Fact Book, 2007). Approximately 53% of students reported that they were first-generation students at the time of enrollment. Non-traditional-age students over
the age of 22 at time of first enrollment were restricted from this study because of the overall small percentage (3.2%) in the population at this institution.

Descriptive statistics concerning the number of actual students included in the final analysis are presented in chapter four.

Instruments

Two primary instruments were used for this study. The first was the First Day Survey, an institutionally developed instrument used to collect information from first-year students enrolled in the university's freshman seminar course. The second was The College Student Report administered by the National Survey of Student Engagement, a nationally used instrument that claims to measure student behaviors related to educationally purposeful activities.

The First Day Survey

The University Experience Questionnaire, more commonly referred to as the First Day Survey, is an instrument developed by faculty and staff at Western Kentucky University to identify the transition concerns and goal commitment of students enrolled in UC-175, a first-year seminar course. The course is offered both as a generic course for first-year students who have not yet declared a major and as a department-specific course for students who have declared a major. The common designation for this group of courses, regardless of academic department, is UC-175. The course is offered during both the fall and spring terms.

The First Day Survey consists of 78 items that include demographic information; background information such as measures of goal and institutional...
commitment, likelihood of involvement outside of class, student transition concerns, and a self-assessment in which students are asked to rate themselves compared to other first-year students on given variables. A copy of the instrument may be found in Appendix A.

The First Day Survey was administered on the first day of class to all students enrolled in the UC-175 courses. The instrument is a paper-pencil survey and includes student ID numbers. Students were informed prior to completing the assessment that the information may be used for research purposes in addition to the stated intended use. The intended use, as stated by the faculty member administering the survey, is to collect data about why the student chose WKU and what concerns the student has that might help the professor plan for future class sessions.

Currently, there is no psychometric information available for the instrument. However, this does not pose a threat to the study as only concrete variables such as parent’s education level, goal commitment in terms of degree, and institutional commitment were of interest in the present study.

National Survey of Student Engagement

Background

The National Survey of Student Engagement (NSSE), also known as the College Student Report, is an instrument that purports to measure student engagement in educationally purposeful activities inside and outside the classroom. The NSSE is administered annually to freshmen and senior level students to measure engagement during their time in college. A copy of the
The majority of the survey questions refer specifically to student behaviors that relate to increased learning and personal development outcomes of attending college (Chickering & Gamson, 1987, 1991; Kuh, 2001; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005; Pike, 2006). The survey also asks students for demographic information such as gender, race/ethnicity, residence status, major, and parents' educational level. The survey collects responses in a format that satisfies the criteria that promote the validity of self-report data (Kuh, 2001; NSSE, 2010). The questions ask students to report their involvement in common academic activities in the recent past such as preparing for classes, asking questions in class, writing assignments, and doing homework problems. Participating institutions also have the option to link NSSE data with institutional datasets for additional analysis.

Structure

The NSSE consists of 135 questions divided into four major sections (Carini, Hayek, Kuh, Kennedy, & Ouimet, 2003; Kuh, 2004). While those sections are not specifically labeled on the instrument, Carini et al. (2004) provides a brief description of each. College Activities is a series of 22 items...
that consists of activities in which students may engage in and out of the classroom. While this series is generally composed of items that indicate good educational practices, two items are also related to being unprepared for class. Example items include “How often have you asked questions in class or contributed to class discussions?” “How often have you included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments?” and “How often have you worked harder than you thought you could to meet an instructor’s standards or expectations?”

The Reading, Writing, and Other Educational Program Characteristics series of questions includes 20 items related to how students spend their time. Several items are consistent with Bloom’s (1956) taxonomy of educational objectives including memorizing, analyzing, synthesizing, making judgments, and applying class material to new problems. Other items include intentions to participate in study abroad, practicum experiences, and similar experiential programs. Measures are also collected for time spent on activities including socializing, studying, reading, and participating in student activities. Example items include “In a typical week, how many homework problem sets did you complete?” “During the current school year, how many papers or reports between 5 and 19 pages did you write?” and “During the current school year, how much has your coursework emphasized analyzing the basic elements of an idea, experience, or theory such as examining a particular case or situation in depth and considering its components?”
The third group of questions, Educational and Personal Growth, consists of 15 items related to estimates of personal and social development including interpersonal skills, ethical and responsible behavior, civic involvement, practical competence, and the skills necessary to attain independence after college. Example items include “Which of the following have done or do plan to do before you graduate from your institution? (response set includes practicum, community service, research projects, and other activities)” “To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in acquiring a broad general education?” and “To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in thinking critically and analytically?”

The final section, Opinions about Your School, consists of 11 items that examine satisfaction with college and personal relations with students, faculty, and staff and the degree to which the institution is supportive of students. Example items include “To what extent does your institution emphasize spending significant amounts of time studying and on academic work?” and “To what extent does your institution emphasize helping you cope with non-academic responsibilities (work, family, etc.)?”

The remaining items include demographic information and self-report information on grades, parental education, ethnicity, and living situation. This section also includes questions about intended majors and minors. Finally, this section allows the institution to include custom questions for their own use.
NSSE Quality Benchmarks

Forty-two items from the NSSE are reduced to five basic quality benchmarks important to student learning and institutional effectiveness (Kuh et al., 2001; National Survey of Student Engagement, 2006; Pascarella, Seifert, & Blaich, 2010). NSSE uses the term benchmark to promote measured comparison between schools. These benchmarks allow institutions and coordinating boards to compare themselves within Carnegie classifications or consortia groups. For the purpose of the present study and to avoid the sense of comparison where none are currently being made, the term “dimensions” was used in place of benchmarks. The five dimensions of student engagement were developed by conducting a principal components factor analysis with oblique rotation. The extracted factors were examined using a theoretical approach consistent with the design of the instrument to formalize five dimensions of student engagement. However, the developers do not report specific factor loading information for the quality benchmarks.

Kuh and his associates (2001) and NSSE administrators (NSSE, 2010) describe these dimensions summarized in Table 1. They include level of academic challenge with 11 items that focus on how much time students spend preparing for class, reading, and writing, and institutional expectations for performance. The second dimension uses 7 items to measure active and collaborative learning inside and outside the classroom. The third dimension, student faculty interaction has 6 items related to how often and to what extent students talk with faculty on topics related to class, advising, and getting
feedback from faculty. Likewise, this dimension also explores student-faculty interaction outside of the classroom and involvement in research with faculty. The fourth, enriching educational experiences consists of 12 items focused on interactions with students from diverse backgrounds, use of technology, and engagement in co-curricular activities such as internships, learning communities, and senior projects. The final dimension, supportive campus environment uses 6 items to measure student perspective on how the institution helps them to be successful and supports them in non-academic related areas. Information concerning item intercorrelations and Cronbach's alpha for the quality benchmarks are also included in Table 1 along with a complete description of each dimension. A complete list of items from the NSSE that compose each benchmark may be found in Table 2.

Thus, the NSSE purports to measure engagement based upon five dimensions of institutional effectiveness consistent with quality educational experiences. Kuh and his associates (2001) and NSSE administrators (2010) indicate that they conducted a factor analysis, but do not report specific Eigen values or loading information. LaNasa, Cabrera, and Transgrud (2009) attempted a confirmatory factor analysis forcing five factors, but the factors did not align well with that of NSSE administrators.
Table 1: *NSSE Quality Benchmarks*

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Description</th>
<th>Number of Items</th>
<th>Cronbach's Alpha ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Academic Challenge</td>
<td>Measures time spent preparing for class, reading and writing, and expectations for performance.</td>
<td>11</td>
<td>FY: .73, SY: .76</td>
</tr>
<tr>
<td>Active and Collaborative</td>
<td>Measures extent of class participation, collaborative work with others, tutoring, and involvement in community projects.</td>
<td>7</td>
<td>FY: .66, SY: .66</td>
</tr>
<tr>
<td>Learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>Measures the quality and quantity of interaction with faculty including getting feedback, working with faculty outside of class, and research.</td>
<td>6</td>
<td>FY: .71, SY: .74</td>
</tr>
<tr>
<td>Enriching Educational</td>
<td>Measures extent of interaction with students from diverse social, ethnic, racial, and political backgrounds; utilization of technology; involvement in internships, community service, and study abroad; and co-curricular activities.</td>
<td>12</td>
<td>FY: .59, SY: .66</td>
</tr>
<tr>
<td>Experiences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supportive Campus Environment</td>
<td>Measures the extent to which students perceive that the campus environment helps them succeed academically and socially.</td>
<td>6</td>
<td>FY: .79, SY: .80</td>
</tr>
</tbody>
</table>

¹. FY: First Year Students; SY: Senior Year Students

The NSSE quality benchmarks are particularly useful in examining student engagement from an institutional quality point of view (Kuh, 2003). The Council on Postsecondary Education in Kentucky currently requires institutions to administer the NSSE on a two-year cycle and uses the benchmarks in reporting for institutional quality. Kentucky was considering using the benchmarks in their funding structure however, that action has not yet been taken (Kentucky CPE, 2009). But, the prospect of the benchmarks being used in funding formulae...
<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Item</th>
<th>Question*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of Academic Challenge</strong></td>
<td>4a</td>
<td>Number of assigned textbooks, books, or book-length packs of course materials</td>
</tr>
<tr>
<td></td>
<td>4c</td>
<td>Number of written papers or reports of 20 pages or more</td>
</tr>
<tr>
<td></td>
<td>4d</td>
<td>Number of written papers or reports of between 5 and 19 pages</td>
</tr>
<tr>
<td></td>
<td>4e</td>
<td>Number of written papers or reports of fewer than 5 pages</td>
</tr>
<tr>
<td></td>
<td>2b</td>
<td>Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components</td>
</tr>
<tr>
<td></td>
<td>2c</td>
<td>Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships</td>
</tr>
<tr>
<td></td>
<td>2d</td>
<td>Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions</td>
</tr>
<tr>
<td></td>
<td>2e</td>
<td>Applying theories or concepts to practical problems or in new situations</td>
</tr>
<tr>
<td></td>
<td>1r</td>
<td>Worked harder than you thought you could to meet an instructor's standards or expectations</td>
</tr>
<tr>
<td></td>
<td>9a</td>
<td>Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)</td>
</tr>
<tr>
<td></td>
<td>10a</td>
<td>Spending significant amounts of time studying and on academic work</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Active and Collaborative Learning</th>
<th>1a</th>
<th>Asked questions in class or contributed to class discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1b</td>
<td>Made a class presentation</td>
</tr>
<tr>
<td></td>
<td>1g</td>
<td>Worked with other students on projects during class</td>
</tr>
<tr>
<td></td>
<td>1h</td>
<td>Worked with classmates outside of class to prepare class assignments</td>
</tr>
<tr>
<td></td>
<td>1j</td>
<td>Tutored or taught other students (paid or voluntary)</td>
</tr>
<tr>
<td></td>
<td>1k</td>
<td>Participated in a community-based project (e.g., service learning) as part of a regular course</td>
</tr>
<tr>
<td></td>
<td>1t</td>
<td>Discussed ideas from your readings or classes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with others outside of class (students, family members, co-workers, etc.)</td>
</tr>
</tbody>
</table>
### Student-Faculty Interaction

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1n</td>
<td>Discussed grades or assignments with an instructor</td>
</tr>
<tr>
<td>1o</td>
<td>Talked about career plans with a faculty member or advisor</td>
</tr>
<tr>
<td>1p</td>
<td>Discussed ideas from your readings or classes with faculty members outside of class</td>
</tr>
<tr>
<td>1q</td>
<td>Received prompt written or oral feedback from faculty on your academic performance</td>
</tr>
<tr>
<td>1s</td>
<td>Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)</td>
</tr>
<tr>
<td>7d</td>
<td>Work on a research project with a faculty member outside of course or program requirements</td>
</tr>
</tbody>
</table>

### Enriching Educational Experiences

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1v</td>
<td>Had serious conversations with students who are very different from you in terms of religious beliefs, political opinions, or personal values</td>
</tr>
<tr>
<td>1u</td>
<td>Had serious conversations with students of a different race or ethnicity</td>
</tr>
<tr>
<td>10a</td>
<td>Encouraging contact among students from different economic, social, and racial or ethnic backgrounds</td>
</tr>
<tr>
<td>9d</td>
<td>Participating in co-curricular activities</td>
</tr>
<tr>
<td>1l</td>
<td>Used an electronic medium to discuss or complete an assignment</td>
</tr>
<tr>
<td>7a</td>
<td>Practicum, internship, field experience, co-op experience, or clinical assignment</td>
</tr>
<tr>
<td>7b</td>
<td>Community service or volunteer work</td>
</tr>
<tr>
<td>7c</td>
<td>Learning community</td>
</tr>
<tr>
<td>7e</td>
<td>Foreign language</td>
</tr>
<tr>
<td>7f</td>
<td>Study abroad</td>
</tr>
<tr>
<td>7g</td>
<td>Independent study</td>
</tr>
<tr>
<td>7h</td>
<td>Culminating senior project</td>
</tr>
</tbody>
</table>

### Supportive Campus Environment

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8a</td>
<td>Relationships with other students</td>
</tr>
<tr>
<td>8b</td>
<td>Relationships with faculty members</td>
</tr>
<tr>
<td>8c</td>
<td>Relationships with administrative personnel and offices</td>
</tr>
<tr>
<td>10e</td>
<td>Providing the support you need to thrive socially</td>
</tr>
<tr>
<td>10b</td>
<td>Providing the support you need to help you succeed academically</td>
</tr>
<tr>
<td>10d</td>
<td>Helping you cope with your non-academic responsibilities (work, family, etc.)</td>
</tr>
</tbody>
</table>

*All items quoted from National Survey of Student Engagement 2003*
leads to greater importance in understanding the benchmarks for institutional reporting and application purposes in Kentucky.

Psychometric Properties

Validity refers to the degree to which an instrument measures what it claims to measure. The NSSE instrument was adapted from other long-standing instruments used in college student research including the College Student Experiences Questionnaire (CSEQ) (Pace, 1984) and instruments used by the Cooperative Institutional Research Program (CIRP) (Astin, 1993b). These instruments are well researched and are reported to adequately measure the constructs they assert to measure (Kuh, 2001, 2004). NSSE administrators cite this as evidence of validity for the NSSE itself. Finally, Kuh et al. (2008) report that engagement accounts for 13% of the variance in GPA over and above the amount accounted for in background characteristics. The Kuh et al. study used student-reported grade information. However, as Gordon, Ludlum, and Hoey (2008) indicate, fewer studies using institution reported GPA as an outcome have been conducted.

Content and face validity was assessed using a focus-group method with several hundred students at multiple universities (Kuh, 2004; NSSE, 2010; Ouimet, Carini, Kuh, & Bunnage, 2001). They found that students interpreted the meaning of questions and the scales used on the NSSE consistently. Those items that students agreed were confusing or awkwardly worded were re-written and re-validated accordingly. While the survey developers do not report specific statistical results related to the validity, including results from the factor analysis,
they do indicate that responses are "approximately normally distributed and the patterns of responses to difference groups of items discriminate among students both within and across major fields and institutions" (Kuh et al., 2001, p. 10).

In addition to the development of the previously mentioned quality benchmarks (Table 1 and Table 2), NSSE developers conducted a principal components factor analysis with oblique rotation on the items in the Activities, Educational and Personal Growth, and Opinions about Your School sections of the instrument. The analysis yielded four factors that together accounted for 44.6% of the variability in engagement. The factors were identified as student-faculty interaction consisting of eight items that accounted for 25.8% of variance; student-student interaction consisting of six items that accounted for 6.9% of variance; diversity consisting of 3 items that accounted for 6.1% of variance; and class work consisting of 5 items that accounted for 5.7% of the variance. A second factor analysis with oblique rotation was conducted on the items in the Educational and Personal items yielding three factors that together accounted for 57.3% of the variance in developing competence. These factors were labeled personal-social competence consisting of seven items accounting for 41.7% of variance; practical competence consisting of five items accounting for 8.8% of variance; and general education consisting of three items accounting for 6.8% of the variance. Finally, a third factor analysis on the items in the Opinions about your School section yielded three factors that accounted for 61.3% of the variance in satisfaction with college. These factors included quality of relations with five items accounting for 41.7% of variance; campus climate-social with five
items accounting for 11.3% of variance; and campus climate-academic with two items accounting for 8.4% of the variance in satisfaction (Kuh, 2004).

Filkins and Doyle (2002) conducted a principal components factor analysis with varimax rotation on the 20 college activities items on the 2000 and 2001 editions of the College Student Report. The results extracted two factors consistent with NSSE benchmarks related to faculty-student contact and active and collaborative learning. The faculty-student contact factor included five items with item total correlations ranging from .41 - .60 and inter-item correlations ranging from .21 - .47. The reliability of the faculty-student contact factor had an alpha = .73. The active and collaborative learning factor included nine items with item total correlations ranging from .32 - .51 and inter-item correlations ranging from .14 - .76. The reliability of the active and collaborative learning factor had an alpha = .74. The two factors combined explained between 25% and 27% of the total variance in self-reported gains in cognitive and affective development among both first-generation and continuing-generation students separately and together.

Reliability

Reliability may be considered the consistency with which the instrument measures the same construct among participants and between settings. Similarly, reliability is also measured by the stability of scores over time. Stability is usually measured through a test-retest method in which the same individual completes the instrument at two different times and the results are compared for similarity. Kuh, Hayek, Carini, Ouimet, Gonyea, and Kennedy (2001) provide
some brief data and explanation related to the reliability of the NSSE instrument. While some statistics are not provided and the report lacks some specificity, they do report Cronbach’s alpha scores and inter-item correlations of items within each of the four sections on the instrument.

Table 3 includes summary information on reliability measured by Cronbach’s alpha for the NSSE. In general, the NSSE appears to reliably measure the same construct between and among students. Individual dimensions of engagement showed strong test-retest reliability as reported by NSSE developers (2010). The test-retest analysis was conducted in 2002 and again in 2005 with correlations for the 2002 analysis ranging from .74 to .78 and correlations for the 2005 analysis ranging from .69 to .74. This suggests consistency and stability in the constructs purported to being measured by the NSSE. However, the researchers do not indicate how much time elapsed between administrations. Pike (2006) conducted an analysis of NSSE benchmark items separating them further into smaller scalelets of 4-5 items each. He found that these individual scalelets provided dependable measures of engagement with as few as 25 students at the departmental level within the university.
There are few independent studies conducted on the NSSE that attempt to confirm the validity and reliability or other psychometric properties of the instrument. However, the NSSE remains the primary instrument for this purpose and is commonly used by state consortia and individual campuses to assess quality of engagement in educational activities. Likewise, institutions using the NSSE have the option of releasing their results for use with various ranking reports, chief among them USA Today's college ranking project. Thus, despite a lack of complete data, the NSSE appears on the surface and from information that is available to be a good instrument for use in measuring student engagement. However, further independent study on the psychometrics will aid other researchers greatly.

Variables

The variables included in this study were derived from the review of the literature presented earlier. The major dependent variables were persistence as
measured by continued enrollment to the subsequent fall term following the first year of college; academic achievement as measured by grade point average at the end of the first year of college; grade point average at graduation; and graduation within six years. Persistence and graduation were both measured dichotomously as either yes or no while GPA was measured as interval data on a 0 – 4 scale. Data concerning the major independent variables were obtained from university student information and advising systems. The major independent variables were student background characteristics including gender, ethnicity, and college preparation measured by ACT or SAT scores collected from the student information and advising system.

There was no definitive question to establish first-generation status. Thus, the researcher examined responses to the item on the First Day Survey and established a cut-off based upon student responses. Students that indicated their parents' highest degree was a high school diploma or GED were coded as first-generation. Students who indicated that their parents had obtained at least an associate’s degree were coded as continuing-generation students.

A measure of engagement was derived using the 42 questions that NSSE identifies as comprising the five dimensions of engagement. A single score for each participant was generated by converting the scores to a 100-point scale and computing the mean of the sum total of the 42 items. Items that were negatively worded were reverse-coded prior to the conversion. Questions with response choices of “yes,” “no,” or “undecided” were converted so that yes was assigned 100 points and no or undecided were assigned zero points. This yielded a global
measure of engagement score for each student. NSSE researchers utilize this 100-point scale to account for both varying range scales in the instrument and to account for non-stratification in the sampling process. The method also allows easier comparison of scores between schools and across years (NSSE, 2009).

Engagement, as described in the proposed analysis section, functioned as both independent variables and dependent variables. Figure 2 revisits the input-environment-output model and includes the variables at each step in the process. Table 2 summarizes the source of the items from the NSSE that are used to derive the global measure of engagement. The variables described above are summarized in Table 4.

*Figure 2: Astin's Input-Environment-Output Assessment Model with Study Variables*

**Procedure**

This research involved the secondary analysis of existing data sets that included NSSE data, First Day Survey data, and information available from the
student information and advising system at Western Kentucky University. All data were available from the Office of Institutional Research. The data sets were collected and linked together using a randomly assigned identifier generated by the student information and advising system. Using this random identifier rather than a student ID further ensured the anonymity of the student as the number cannot be directly linked back to an individual student without direct access to the university’s institutional research database. The dataset consisted of first-time, full-time students enrolled in the fall 2002 cohort and tracked their academic achievement and graduation as of spring 2008 consistent with the Council on Postsecondary Education’s requirement to track and report a 6-year graduation rate.
<table>
<thead>
<tr>
<th>Input Variables</th>
<th>Source</th>
<th>Item</th>
<th>Level of Measurement</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>SIAS ¹</td>
<td>Nominal, 2</td>
<td>Male/Female</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>SIAS</td>
<td>Nominal, 3</td>
<td>White/African American/Other</td>
<td></td>
</tr>
<tr>
<td>Parents’ Education Level</td>
<td>SIAS</td>
<td>Nominal, 2</td>
<td>No Secondary Degree/Secondary Degree</td>
<td></td>
</tr>
<tr>
<td>HS GPA</td>
<td>SIAS</td>
<td>Interval</td>
<td>0.0 – 4.0</td>
<td></td>
</tr>
<tr>
<td>Degree Aspiration (own expectation) Parental Importance</td>
<td>First Day Survey #2</td>
<td>Ordinal</td>
<td>AA/BA/MA/PhD/Professional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First Day Survey #9</td>
<td>Interval</td>
<td>Utmost Importance; Very Important; Neutral; Not Very Important; Not at all Important</td>
<td></td>
</tr>
<tr>
<td>Academic Preparation ACT/SAT</td>
<td>SIAS</td>
<td>Ratio</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Variables ²</th>
<th>Source</th>
<th>Item</th>
<th>Level of Measurement</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Measure of Engagement</td>
<td>Computed</td>
<td>Interval</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Output Variables</td>
<td>Source</td>
<td>Item</td>
<td>Level of Measurement</td>
<td>Coding</td>
</tr>
<tr>
<td>Grade Point Average</td>
<td>SIAS</td>
<td>Interval</td>
<td>0.0 - 4.0</td>
<td></td>
</tr>
<tr>
<td>Persistence</td>
<td>SIAS</td>
<td>Nominal</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Graduation</td>
<td>SIAS</td>
<td>Nominal</td>
<td>Yes/No</td>
<td></td>
</tr>
</tbody>
</table>

1. Student Information and Advising System
2. Environmental variables function as both dependent and independent variables. They are independent variables for the purpose of analysis of Academic Achievement and Persistence/Graduation and dependent variables upon Student Background characteristics.
3. Composite score is computed by summing the responses to the 42 items comprising the five dimensions of engagement for each student and then dividing by the total number of possible items.
Data Collection

There were two major data collection points related to survey administration in this study. The First-Day Survey was administered by faculty in the classroom to students enrolled in first-year seminar courses on the first day of class each semester. The First-Day Survey is a paper-pencil instrument with optical scan capabilities to aid in data entry and minimize data input errors. Students who were not present on the first day of class were not offered an opportunity to participate in the First-Day Survey. First-year students were offered the opportunity to participate in the NSSE during the spring 2003 term. Likewise, those students from this cohort who persisted to senior status were also offered the opportunity to participate in the NSSE during the spring term of their senior year. The NSSE was administered on-line via an email invitation. Initial data collection was coordinated by the Office of Institutional Research at Western Kentucky University and was approved by WKU’s Human Subjects Review Board (HRSB).

Analysis of academic achievement and persistence data collected from the Student Information and Advising System (SIAS) at the end of the first full year of college and the end of the subsequent fall term (third semester of continuous enrollment) were conducted utilizing the procedures outlined in data analysis below. Cumulative grade point average was collected for analysis at the end of the first year of classes and again at graduation. Grade point average and persistence at the end of the first year of enrollment were analyzed and reported independently as that is a point in the academic career in which first-year
students are at greatest risk for dropping out of college. Persistence of first-year students in this cohort was defined as those students who enrolled in at least one course during the following fall term (their third semester of college). This is also the method used by the CPE to track persistence.

**Research Questions and Analyses**

Six research questions with corresponding directional hypotheses were addressed in this study. For organizational purposes, each research question is presented together with its corresponding independent (IV) and dependent (DV) variables and proposed analysis. Table 4 summarizes the variables, source, measurement of data, and coding scheme used in the study.

1. Is there a difference in parental importance of higher education for first-generation students compared to continuing-generation students?

   **H1:** First-generation students will report lower parental importance of higher education than will continuing-generation students.

   i. IV: first-generation status as collected from the institution’s student information and advising system (SIAS) measured as yes or no.

   ii. DV: parental importance as measured by question number 9 on the first day survey on a 5-point Likert-type scale.

   **Analysis:** An independent samples t-test was conducted to determine if there was a significant difference in the level of parental importance in higher education reported by first-generation students versus continuing-generation students. The t-tests were conducted
maintaining the assumptions of the independence of scores and that
the scores were distributed normally in the population from which this
sample was taken (Shavelson, 1996).

2. Is there a difference in students' own educational level expectations for first-
generation students compared to continuing-generation students?

\( H_2: \) First-generation students will report lower expectations for
educational level expectation compared to continuing-generation
students.

i. IV: first-generation status as collected from the institution's
   SIAS measured yes or no.

ii. DV: degree goal objective as measured by question number
    2 on the first day survey on a 5-point ordinal scale
    corresponding to associate’s, bachelor’s, master’s, doctoral,
    or professional.

Analysis: The Mann-Whitney \( U \)-test was conducted to determine if
there was a significant difference in the student's own expectations for
higher education reported by first-generation students versus
continuing-generation students. The \( U \)-tests were conducted
maintaining the assumptions of the independence of scores and that
the scores are distributed normally, with the exception of central
tendency, in the population from which this sample was taken
(Shavelson, 1996).
3. Is there a difference in global engagement on the NSSE between first-generation students and continuing generation students?

H₃: First-generation students will report lower levels of engagement on the NSSE than will continuing-generation students.

a. IV: first-generation status as collected from the institutional SIAS measured yes or no.

b. DV: global measure of engagement on the NSSE survey measured on a continuous scale.

Analysis: An independent samples t-test was conducted to determine if there was a significant difference in engagement scores reported by first-generation students versus continuing-generation students. The t-tests were conducted maintaining the assumptions of the independence of scores and that the scores were distributed normally in the population from which this sample was taken (Shavelson, 1996). The global measure of engagement was the primary measure for this analysis, but additional t-test analyses were conducted on the five dimensions of engagement computed by the NSSE and are reported in chapter four.

4. What amount of variance in academic achievement is explained by engagement over and above demographic variables at the end of the first year of college for first-time full-time traditional age college students?
H₄: Controlling for student background characteristics, higher engagement scores on the NSSE will be associated with higher cumulative GPA at spring 2003.

a. IV: student background characteristics (gender, ethnicity, first-generation status, high school preparation); global measure of engagement on the NSSE.

b. DV: academic achievement as measured by grade point average at the end of the spring 2003 semester.

Analysis: A hierarchical multiple regression analysis (MR) was conducted to examine the amount of variance explained in academic achievement as measured by cumulative GPA at the end of the spring 2003 semester over and above the amount explained by student background characteristics and engagement measured by the NSSE. Student background characteristics including gender, ethnicity, first-generation status, and academic preparation were entered first. Engagement was entered second. The MR was conducted with assumptions as described by Shavelson (1996) and Pedhazur (1997). Those assumptions included the independence of scores (the scores on dependent variable are normally distributed in each possible combination of independent variables), homoscedasticity (variance in the scores of the dependent variable are normally distributed in the population), and linearity meaning that the relationship between the
dependent and independent variables are approximately linear when other variables are held constant.

5. Are engagement and grade point average significant predictors of persistence controlling for student background characteristics, for first-time full-time traditional age college students in the 2002 reporting cohort?

H5: Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative first-year GPA will be associated with greater likelihood of persistence to fall 2003.

   a. IV: student background characteristics (gender, ethnicity, first-generation status, high school preparation); global measure of engagement on the NSSE; cumulative GPA at end spring 2003.

   b. DV: persistence at the institution to fall 2003 as measured dichotomously yes or no.

Analysis: A logistic regression was conducted to determine the likelihood of persistence, a dichotomous dependent variable that can be predicted from the independent variables consisting of student background characteristics, engagement measured by the NSSE, and cumulative GPA at the end of spring 2003.

   Logistic regression is useful in predicting the odds of a particular incident, in this case persistence to fall 2003, happening given the effect of the independent variables. Unlike MRA, logistic regression assumes only that the observations of the variables are independent of
each other and that the same probability of membership (persistence) is maintained across the predictor or independent variables. The final assumption is that the observations of the variables do not have to be normally distributed. The Wald statistic was used to test the significance of individual independent variables and the appropriateness of the model was tested by the likelihood ratio for goodness of fit (Pedhazur, 1997; Peng, Lee, & Ingersoll, 2002). All relevant statistics including the $\beta$, standard error, $Exp(\beta)$, confidence interval, $R^2$, and $p$ value were reported.

6. What is the significance of student background characteristics, global measure of engagement on the NSSE, and grade point average on predicting graduation by spring 2008 for first-time full-time traditional age college students in the 2002 reporting cohort?

$H_0$: Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative spring 2003 GPA will be associated with increased likelihood of graduation by spring 2008.

a. IV: student background characteristics (gender, ethnicity, first-generation status, high school preparation); global measure of engagement on the NSSE; cumulative GPA at spring 2003.

b. DV: graduation from the institution by spring 2008.
Analysis: A logistic regression was conducted to determine the likelihood of graduation by spring 2008, a dichotomous dependent variable that can be predicted from the independent variables consisting of student background characteristics, engagement as measured by the NSSE, and cumulative GPA at the end of spring 2003.

Results, implications, and recommendations based upon the analyses models described above are presented and discussed in chapters four and five. The discussion will include limitations upon the generalization of this study and recommendations for future research and practice.
CHAPTER FOUR
RESULTS

This chapter provides results from analysis described in chapter three for each of the research questions. In addition, information concerning the reliability analysis for the NSSE is provided. A description of the sample is presented first followed by the reliability analysis. A general description of the sample demographics are presented first. Since the main focus of this study is first-generation students, additional demographic description highlighting the comparisons between first-generation and continuing-generation student are provided. Following that, specific results for each research question are presented.

Sample Demographics

The sample for this study consisted of 2531 first-time first-year students enrolled at a comprehensive regional master's college and university located in the southeast portion of the United States. All students enrolled full-time during the fall semester in 2002 and were tracked to a six-year graduation rate consistent with reporting required by the Student Right to Know and Campus Security Act of 1990. The sample consisted of 1039 men (41%) and 1492
women (59%) which approximates the general campus population of 40% male and 60% female for the institution. The sample was mostly White (89%) while 7% identified as African American and 2.6% identified as other. Twenty-eight students did not indicate their ethnicity. Approximately 71% of the students lived in university controlled residence halls during their first year of school and 60% attended the university’s new student orientation and transition program prior to the fall semester. Only 139 students in the cohort (5.5%) were enrolled as honors students while 122 (4.8%) were involved in NCAA athletics. For those students who reported parents’ education level on the First-Day Survey, 690 indicated that they were first-generation students while 693 indicated that they were continuing-generation students. However, 45% of students did not indicate their first-generation status. Table 5 provides a cross-tabulation between gender and ethnicity, place of residence, first-generation status, and attendance at the university’s new student orientation program.

As identified in Table 5, women were more likely to attend orientation and to live on campus than were men. There was an approximately equal split in men and women that identified as first-generation students. More women also enrolled in the first-year seminar course and participated in the NSSE.
Table 5: Gender Cross-Tabulations

<table>
<thead>
<tr>
<th></th>
<th>% of Sample</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>89%</td>
<td>933</td>
<td>41%</td>
</tr>
<tr>
<td>African-American</td>
<td>7%</td>
<td>63</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
<td>28</td>
<td>42%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>1%</td>
<td>15</td>
<td>54%</td>
</tr>
<tr>
<td>Place of Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Campus</td>
<td>71%</td>
<td>712</td>
<td>40%</td>
</tr>
<tr>
<td>Off Campus</td>
<td>29%</td>
<td>327</td>
<td>44%</td>
</tr>
<tr>
<td>Attended Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>60%</td>
<td>550</td>
<td>36%</td>
</tr>
<tr>
<td>No</td>
<td>40%</td>
<td>489</td>
<td>49%</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>50%</td>
<td>263</td>
<td>38%</td>
</tr>
<tr>
<td>No</td>
<td>50%</td>
<td>270</td>
<td>39%</td>
</tr>
<tr>
<td>Enrolled in First-Year Seminar</td>
<td>90%</td>
<td>590</td>
<td>38%</td>
</tr>
<tr>
<td>Participated In NSSE</td>
<td>10%</td>
<td>47</td>
<td>28%</td>
</tr>
</tbody>
</table>

The mean high school GPA and ACT composite scores for the sample were 3.26 and 21.26, respectively. Men in the sample had a mean high school GPA of 3.114 and ACT composite score of 21.32 compared to women who had a mean high school GPA of 3.36 and ACT composite score of 21.22. Cumulative GPA at the end of the freshman year and at graduation from college was 2.74 and 3.24 respectively. Similarly, men had a cumulative spring 2003 GPA of 2.56 and cumulative GPA at college graduation of 3.07 compared to women who had means of 2.86 and 3.34 respectively. Of the 2531 students in the sample, 1862 (74%) persisted to the fall 2004 and 1209 (48%) graduated by spring 2008. These figures approximate those reported by Western Kentucky University of 72.4% persistence and 47.3% graduation (WKU, 2009). Table 6 provides a
cross-tabulation by gender and ethnicity for persistence, graduation, and cumulative GPA information for the sample.

Table 6: *Gender and Ethnicity Cross-Tabulations*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persist to Fall 2003</td>
<td></td>
<td></td>
<td>1862</td>
</tr>
<tr>
<td>White</td>
<td>667</td>
<td>995</td>
<td>1662</td>
</tr>
<tr>
<td>African American</td>
<td>48</td>
<td>87</td>
<td>135</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>26</td>
<td>46</td>
</tr>
<tr>
<td>Not Supplied</td>
<td>9</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Graduate by Spring 2008</td>
<td></td>
<td></td>
<td>1134</td>
</tr>
<tr>
<td>White</td>
<td>415</td>
<td>612</td>
<td>1027</td>
</tr>
<tr>
<td>African American</td>
<td>23</td>
<td>48</td>
<td>71</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>17</td>
<td>29</td>
</tr>
<tr>
<td>Not Supplied</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Mean Cumulative GPA at End of Freshman Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.56</td>
<td>2.86</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>2.25</td>
<td>2.59</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.49</td>
<td>2.79</td>
<td></td>
</tr>
<tr>
<td>Not Supplied</td>
<td>2.51</td>
<td>2.78</td>
<td></td>
</tr>
<tr>
<td>Mean Cumulative GPA at Graduation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3.07</td>
<td>3.34</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>3.09</td>
<td>3.36</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3.06</td>
<td>3.26</td>
<td></td>
</tr>
<tr>
<td>Not Supplied</td>
<td>3.17</td>
<td>3.35</td>
<td></td>
</tr>
</tbody>
</table>

A total of 167 (6.6%) students in this cohort completed the NSSE in spring 2003. Of these, 47 (28%) were male and 152 (91%) were White. Of the students who participated in the NSSE, 144 (86%) persisted to the next fall semester and 73 (43%) graduated within six years. Table 7 displays the mean ACT and GPA scores and t-test comparisons for NSSE participants and non-
participants. The table indicates that NSSE participants tended to outscore non-participants in all four categories. Significant differences were found on all four measures with NSSE participants scoring significantly higher than non-participants on high school GPA ($t(2497)=4.644$, $p<.001$), composite ACT score ($t(2392)=2.166$, $p<.05$), cumulative first-year GPA ($t(2327)=3.535$, $p<.001$), and cumulative GPA at graduation ($t(1142)=2.825$, $p<.05$). Effect size was calculated using Cohen's $d$. The results provided a $d=.18$ for ACT indicating no effect size and a $d=.38$ for high school GPA, a $d=.31$ for first-year GPA, and a $d=.34$ for GPA at graduation indicating small effect sizes (Cohen 1992). Thus, NSSE participants in this study do not appear to resemble non participants as closely as found in other comparisons conducted by Kuh (2003). Conversely, it might be that better prepared students were more likely to earn high GPAs while in college and were more likely to participate in the NSSE.

Table 7: NSSE t-test Comparison Table

<table>
<thead>
<tr>
<th>Measure</th>
<th>NSSE Participants $n=165$</th>
<th>Non-Participants $n=2337$</th>
<th>$t$</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School GPA</td>
<td>3.44</td>
<td>3.25</td>
<td>4.644**</td>
<td>2497</td>
</tr>
<tr>
<td>Composite ACT</td>
<td>21.90</td>
<td>21.21</td>
<td>2.166*</td>
<td>2392</td>
</tr>
<tr>
<td>Cumulative First-Year GPA</td>
<td>2.97</td>
<td>2.72</td>
<td>3.535**</td>
<td>2327</td>
</tr>
<tr>
<td>Cumulative Graduate GPA</td>
<td>3.37</td>
<td>3.22</td>
<td>2.825*</td>
<td>1142</td>
</tr>
</tbody>
</table>

* $p<.05$ two-tailed. ** $p<.001$ two-tailed.

Background Characteristics

The following section explores background characteristics related to first-generation status, gender, and ethnicity. Results related to academic
preparation, academic achievement, and persistence and graduation will be presented. Group differences in engagement will also be presented.

First-Generation Students

Only 55% of students indicated parental-education level on their first-year seminar survey. Table 8 displays the means for GPA and ACT scores and t-test comparisons between first-generation students and continuing-generation students. First-generation students had slightly lower ACT scores and high school and first-year cumulative GPAs than did continuing-generation students. However, first-generation students graduated with a slightly higher cumulative GPA than did continuing-generation students. Significant differences were found in ACT scores \( t(1394) = 3.31, p<.05 \) with continuing-generation students having a significantly higher ACT than first-generation students and in first-year GPA \( t(1365) = 2.156, p<.05 \) with continuing-generation students having a significantly higher GPA. Effect size was computed using Cohen's \( d \) with results indicating

<table>
<thead>
<tr>
<th>Measure</th>
<th>First-Generation Students</th>
<th>Continuing-Generation Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
</tr>
<tr>
<td>High School GPA</td>
<td>3.26</td>
<td>0.520</td>
</tr>
<tr>
<td>Composite ACT</td>
<td>20.87</td>
<td>3.831</td>
</tr>
<tr>
<td>Cumulative First-Year GPA</td>
<td>2.70</td>
<td>0.874</td>
</tr>
<tr>
<td>Completed Credits in First Year</td>
<td>24.78</td>
<td>7.919</td>
</tr>
<tr>
<td>Cumulative Graduate GPA</td>
<td>3.25</td>
<td>0.458</td>
</tr>
</tbody>
</table>
that in all three cases, the Cohen's $d$ was below .20 indicating no real effect size difference.

Overall, 495 (72%) of the 690 first-generation students persisted compared to 544 (78%) of the 693 continuing-generation students while 313 (45%) of first-generation students graduated within six years compared to 385 (56%) of continuing-generation students. First-generation students were also observed to have significantly lower cumulative GPAs at the end of the first year of college compared to continuing-generation peers. However, first-generation students actually graduated with a slightly higher GPA than did continuing-generation students. First-generation students also began college disadvantaged in terms of high school GPA and had significantly lower ACT. First-generation students completed an average of 24.78 credits at the end of the first year compared to continuing-generation students who completed an average of 26.21 with a $t(1369)=3.433$, $p<.001$. The effect size was $d=.19$ indicating that there was a small effect size. Thus, in terms of earned credits, first-generation students were also at a significant disadvantage compared to continuing-generation students.

A chi-square analysis was conducted on persistence and graduation for first-generation versus continuing generation students. The aggregate analysis for persistence yielded a significant $\chi^2(1 df)=7.614$, $p<.05$. Similarly, the analysis for graduation yielded a significant $\chi^2(1 df)=13.733$, $p<.05$. Thus, continuing-generation students were significantly more likely to persist and to graduate within six years than were first-generation students. Table 9 displays the
analysis for persistence and graduation for first-generation and continuing-generation students.

Table 9: *Comparisons for Persistence and Graduation*

<table>
<thead>
<tr>
<th></th>
<th>First-Generation</th>
<th>Continuing-Generation</th>
<th>$\chi^2$</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persist to Fall 2003</td>
<td>495</td>
<td>544</td>
<td>7.61</td>
<td>0.05</td>
</tr>
<tr>
<td>Graduate by Spring 2008</td>
<td>313</td>
<td>385</td>
<td>13.73</td>
<td>0.05</td>
</tr>
</tbody>
</table>

In terms of engagement, continuing-generation students reported slightly higher mean scores on all four dimensions of engagement except for Supportive Campus Environment. Likewise, continuing-generation students also reported a higher mean score on the derived measure of global engagement compared to first-generation students. However, an analysis of the means using the $t$ statistic did not yield any significant differences in engagement between first-generation and continuing-generation students.

**Ethnicity**

Differences in background characteristics on academic preparation (high school GPA, ACT), academic achievement, and engagement were examined using Analysis of Variance (ANOVA). The results comparing academic preparation and academic achievement indicated that on the whole, White students tended to be better prepared for college than African-American, Hispanic, or students from other ethnicities as evidenced by higher high school GPAs and ACT scores and earned higher GPAs while in college measured at the end of the first year and at graduation. An ANOVA was conducted on these
results finding the differences to be significant on all four measures. Specifically, the ANOVA for high school GPA yielded $F(3, 2495)=20.344, p<.05$ and for ACT $F(3, 2390)=57.77, p<.05$. Post hoc comparisons were conducted using the Scheffe’ test indicating that African American students had significantly lower high school GPAs and composite ACT scores compared to White and Hispanic students. The ANOVA for first-year GPA resulted in $F(3, 2325)=6.56, p<.05$ and for GPA at graduation resulted in $F(3, 1140)=9.728, p<.05$. Post hoc comparisons indicated that White students earned higher GPAs at the end of the first year of college and at graduation than did African American students, but there were no significant differences between other groups.

Differences in engagement were also examined. The results of the ANOVA yielded a significant $F(3, 167)=3.130, p<.05$ for the Enriching Educational Experiences dimension only. Post hoc comparisons were not conducted as one of the groups of NSSE participants had less than 2 members. However, an inspection of the means for this dimension indicate that African-American students reported higher levels of engagement compared to White students and students of other ethnicities. Contrast coefficients were assigned to compare engagement of White students to African-American and Hispanic students and students from other ethnicities as a single group. The contrast tests yielded a value of 26.73 with a $SD=9.689$ and a $t(163 df)=2.758, p<.05$, (two-tailed) confirming that students-of-color, as a group, in this sample were significantly more engaged than were White students. The effect size was computed using Cohen’s $d=.43$ indicating a small effect size.
Persistence and graduation were examined by conducting a Chi-Square. The analysis for persistence yielded a $\chi^2(3 \, df)=1.644$, $p=.649$. Thus, there was no significant difference in persistence rates across ethnicities. Likewise, the analysis for graduation yielded a $\chi^2(3 \, df)=5.355$, $p=.148$ indicating that there was no difference in graduation rates between students based upon ethnicity.

Gender

Academic preparation measured by high school GPA and composite ACT score and academic achievement measured by first-year GPA and GPA at graduation were compared across gender. While men had a higher mean ACT compared to women (21.32 and 21.22 respectively) the difference was not found to be significant. Women, on the other hand, had a significantly higher mean high school GPA than did men (3.36 and 3.11 respectively) resulting in a $t(2497 \, df)=12.153$, $p<.05$ with a Cohen’s $d=.49$ indicating a medium effect size. Likewise, women also had higher GPAs than did men at both the end of the first year (2.86 and 2.56 respectively) and at graduation (3.34 and 3.07 respectively). The differences were significant with $t(2327 \, df)=8.355$, $p<.05$ with a Cohen’s $d=.35$ for first-year GPA and $t(1142 \, df)=10.007$, $p<.05$ with a Cohen’s $d=.61$ for GPA at graduation. The Cohen’s $d$ scores indicate a small effect size for first-year GPA and a medium effect size for GPA at graduation. Thus, while academic preparation for college was mixed, women showed higher levels of academic achievement at the end of the first year of college and at graduation than did men.
Engagement was also compared indicating that men reported higher mean engagement scores in Student-Faculty Interaction and Supportive Campus Environment. However, women reported higher engagement scores on Academic Challenge, Active and Collaborative Learning, Enriching Educational Experiences, and the derived measure of global engagement than did men. Significant differences were found on two dimensions of engagement. On the Academic Challenge dimension, men had a mean score of 42.77 compared to the mean score of 49.43 for women. This difference resulted in a significant $t(166 \, df)=2.734, p<.05$ with a Cohen's $d=.47$ indicating that women reported significantly higher scores on Academic Challenge than did men. On the Enriching Educational Experiences dimension, women reported a mean score of 44.99 compared to men who reported a mean score of 37.93 with a significant $t(166 \, df)=2.592, p<.05$ with a $d=.44$ indicating that women reported being significantly more engaged than men. Both effect sizes were measured with Cohen's $d$ indicating a small effect size.

Persistence and graduation differences between men and women were examined using a Chi-Square analysis. The analysis for persistence yielded $\chi^2(1 \, df)=3.484, p=.062$ indicating that there was no significant difference in persistence between men and women. The analysis for graduation, on the other hand, yielded a significant $\chi^2(1 \, df)=10.11, p<.05$ indicating that women graduated at a higher rate compared to men.
Reliability Analysis

Kuh reports reliability statistics for first-year and senior students on each of the five dimensions of engagement (NSSE, 2010). Results of the reliability analysis for the current sample in comparison to NSSE developers are presented in Table 10. In general, the reliability analysis on the current sample of first-year students approximates fairly closely the results found by NSSE developers. In the case of Academic Challenge, the current study yielded a slightly higher Cronbach’s alpha compared NSSE developers with a difference of .052. The largest discrepancy between NSSE developers and the current study was observed in the Active and Collaborative Learning dimension with a difference of .071. The observed Cronbach’s alpha ranged from .782 to .582 for the five individual dimensions. Field (2005) reports that measures with a Cronbach’s alpha in the .7 range and above generally indicate strong reliability however, as the observed alphas are very similar to those reported, the results indicate that the engagement measures for this sample should be as reliable as those reported by NSSE. Finally, the researcher-derived measure of global engagement consisting of all items within the individual dimensions computed by NSSE yielded a Cronbach’s α=.806. There is no comparison Cronbach’s alpha on a global measure of engagement provided by NSSE to compare with the observed alpha. The relatively strong observed alpha indicates that the instrument’s reliability in measuring engagement was considered acceptable.

An examination of the inter-item correlations indicates that responses to most items within each of the five dimensions of engagement are significantly
correlated with each other. Table 11 presents inter-item correlations for the items in the Academic Challenge dimension. Most items are significantly positively correlated as should be expected with the relatively high Cronbach's $\alpha=.782$. The only negative correlation (between study hard and writing papers less than 5 pages long) is unexplained as one would expect those two items to be highly and positively correlated. Similarly, a relatively low correlation between writing papers of more than 20 pages and analyzing information ($r=.008$) is also unexpected. The highest correlation between making judgments and synthesizing information ($r=.570$) is not surprising as the two stages in processing information are interrelated. The coefficient for determination for this relationship was .32 indicating that 32% of the variance in predicting the ability to synthesize material was accounted for in knowing how the student makes judgments about the material.

Table 12 presents the inter-item correlations for the items in the Active and Collaborative Learning dimension. Responses in this dimension tended to be significantly correlated with each other and remained fairly consistent between each other. The Cronbach's alpha for the Active and Collaborative Learning dimension was $\alpha=.589$ indicating a low reliability in the dimension.

Table 13 presents the inter-item correlations for the items on the Student-Faculty Interaction dimension. Surprisingly, the lowest correlations observed was between engaging in research with faculty and receiving feedback from faculty ($r=.107$) and discussing grades ($r=.145$). This is surprising as students engaged in research opportunities with faculty would be expected to be in a
position to benefit from greater than expected opportunities to receive feedback from faculty on class work and assignments and more likely to discuss grades with faculty. However, the largest observed correlation was between receiving feedback from faculty and discussing grades ($r=.496$). The computed coefficient of determination resulted in .25 indicating that 25% of the variance in receiving feedback was accounted for in how often students discussed grades with their

Table 10: Comparison of Reliability Coefficients

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
<th>Cronbach’s $\alpha$</th>
<th>NSSE Reported</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Challenge</td>
<td>Measures time spent preparing for class, reading and writing, and expectations for performance</td>
<td>.73</td>
<td>.782</td>
<td></td>
</tr>
<tr>
<td>Active and Collaborative Learning</td>
<td>Measures extent of class participation, collaborative work with others, tutoring, and involvement in community projects.</td>
<td>.66</td>
<td>.589</td>
<td></td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>Measures the quality and quantity of interaction with faculty including getting feedback, working with faculty outside of class, and research.</td>
<td>.71</td>
<td>.692</td>
<td></td>
</tr>
<tr>
<td>Enriching Educational Experiences</td>
<td>Measures extent of interaction with students from diverse social, ethnic, racial, and political backgrounds; utilization of technology; involvement in internships, community service, and study abroad; and co-curricular activities.</td>
<td>.59</td>
<td>.582</td>
<td></td>
</tr>
<tr>
<td>Supportive Campus Environment</td>
<td>Measures the extent to which students perceive that the campus environment helps them succeed academically and socially.</td>
<td>.79</td>
<td>.726</td>
<td></td>
</tr>
<tr>
<td>Global Engagement</td>
<td>A measure of engagement derived from the five dimensions developed by NSSE.</td>
<td>*</td>
<td>.806</td>
<td></td>
</tr>
</tbody>
</table>

* Global Engagement is a measure derived for the current study. Thus, NSSE does not report a similar Cronbach’s alpha.
faculty members. The Cronbach's alpha for the Student-Faculty Interaction dimension was $\alpha=.692$ indicating a moderate degree of reliability in the measure.

Table 14 presents the inter-item correlation matrix for items in the Enriching Educational Experiences dimension. As expected, there were fewer significant correlations attributable to a relatively low $\alpha=.582$. Negative relationships were observed between intent to study abroad and intent to engage in an internship ($r=-.075$) perhaps attributable to students' perception as freshman that they will have to choose between the two and might not be able to do both. Similarly, a negative correlation between engagement in a learning community and co-curricular activities ($r=-.075$) is intriguing but possibly attributable to a relatively low number of learning communities on this campus. Not surprisingly, having conversations with someone of a different race and someone from a different background was high correlated with a $r=.675$. The computed coefficient of determination resulted in 46% of the variance in interacting with people from diverse backgrounds was accounted for by interactions with people of other ethnicities.

Table 15 presents inter-item correlations for the items in the Supportive Campus Environment dimension. Most items in this dimension tended to be significantly correlated with each other consistent with a strong Cronbach’s $\alpha=.726$. The lowest correlations were observed between relationships with students and with faculty ($r=.115$) and administrators ($r=.112$). This suggests that students at this institution, at least during the first-year of college, do not believe they enjoy strong relationships with faculty and administrators.
Table 11: * Academic Challenge Inter-Item Correlations *

<table>
<thead>
<tr>
<th>Item</th>
<th>3a</th>
<th>3c</th>
<th>3d</th>
<th>3e</th>
<th>2b</th>
<th>2c</th>
<th>2d</th>
<th>2e</th>
<th>1r</th>
<th>9a</th>
<th>10a</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a-reading assignments</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3c-papers &gt;20 pages</td>
<td>.210**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3d-papers 5-19 pages</td>
<td>.239**</td>
<td>.356**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3e-papers&lt;5 pages</td>
<td>.229**</td>
<td>.172*</td>
<td>.350**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b-analyzing</td>
<td>.266**</td>
<td>.008</td>
<td>.144</td>
<td>.126</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2c-synthesizing</td>
<td>.180*</td>
<td>.051</td>
<td>.176*</td>
<td>.158*</td>
<td>.564**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2d-judgments</td>
<td>.188*</td>
<td>.053</td>
<td>.329**</td>
<td>.211**</td>
<td>.435**</td>
<td>.570**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2e-applying</td>
<td>.163*</td>
<td>.041</td>
<td>.261**</td>
<td>.159*</td>
<td>.386**</td>
<td>.477**</td>
<td>.539**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1r-work hard</td>
<td>.257**</td>
<td>.104</td>
<td>.267**</td>
<td>.311**</td>
<td>.353**</td>
<td>.444**</td>
<td>.373**</td>
<td>.358**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9a-prepared for class</td>
<td>.366**</td>
<td>.122</td>
<td>.256**</td>
<td>.243**</td>
<td>.240**</td>
<td>.154*</td>
<td>.160*</td>
<td>.202**</td>
<td>.384**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10a-study hard</td>
<td>.136</td>
<td>.047</td>
<td>.204**</td>
<td>-.025</td>
<td>.113</td>
<td>.237**</td>
<td>.251**</td>
<td>.234**</td>
<td>.288**</td>
<td>.087</td>
<td>1</td>
</tr>
</tbody>
</table>

*significant at the .05 level (2-tailed).
**significant at the .01 level (2-tailed).
### Table 12: Active and Collaborative Learning Inter-Item Correlations

<table>
<thead>
<tr>
<th>Item</th>
<th>1a</th>
<th>1b</th>
<th>1g</th>
<th>1h</th>
<th>1j</th>
<th>1k</th>
<th>1t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a-asked questions</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b-presentation</td>
<td>.204*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1g-in-class projects</td>
<td>.180*</td>
<td>.034</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1h-out-of-class projects</td>
<td>.222**</td>
<td>.124</td>
<td>.326**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1j-tutored others</td>
<td>.282**</td>
<td>.135</td>
<td>.195*</td>
<td>.293**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1k-service learning</td>
<td>.235**</td>
<td>.157*</td>
<td>.132</td>
<td>.141</td>
<td>.267**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1t-discuss ideas out of class</td>
<td>.336**</td>
<td>-.116</td>
<td>.151*</td>
<td>.201**</td>
<td>.167*</td>
<td>.136</td>
<td>1</td>
</tr>
</tbody>
</table>

*significant at the .05 level (2-tailed).
**significant at the .01 level (2-tailed).

### Table 13: Student Faculty Interaction Inter-Item Correlations

<table>
<thead>
<tr>
<th>Item</th>
<th>1n</th>
<th>1p</th>
<th>1o</th>
<th>1q</th>
<th>1s</th>
<th>7d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1n-discuss grades</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1p-discuss ideas</td>
<td>.398**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1o-career plans</td>
<td>.371**</td>
<td>.472**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1q-feedback</td>
<td>.496**</td>
<td>.352**</td>
<td>.310**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1s-other activities</td>
<td>.253**</td>
<td>.349**</td>
<td>.480**</td>
<td>.265**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7d-research</td>
<td>.145</td>
<td>.162*</td>
<td>.302**</td>
<td>.107</td>
<td>.270**</td>
<td>1</td>
</tr>
</tbody>
</table>

*significant at the .05 level (2-tailed).
**significant at the .01 level (2-tailed).
Table 14: Enriching Educational Experiences Inter-Item Correlations

<table>
<thead>
<tr>
<th>Item</th>
<th>1u</th>
<th>1v</th>
<th>10a</th>
<th>9d</th>
<th>1l</th>
<th>7a</th>
<th>7b</th>
<th>7c</th>
<th>7e</th>
<th>7f</th>
<th>7g</th>
<th>7h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1u-different race</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1v-different background</td>
<td>.675**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10a-encourage contact</td>
<td>.245**</td>
<td>.222**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9d-co-curricular</td>
<td>.135</td>
<td>.158*</td>
<td>-.021</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1l-electronic mediums</td>
<td>.285**</td>
<td>.281**</td>
<td>.130</td>
<td>.076</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7a-internship</td>
<td>.057</td>
<td>.077</td>
<td>.086</td>
<td>.036</td>
<td>.074</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7b-community service</td>
<td>.331**</td>
<td>.229**</td>
<td>.165*</td>
<td>.208**</td>
<td>.040</td>
<td>.303**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7c-learning community</td>
<td>.075</td>
<td>.053</td>
<td>.080</td>
<td>-.075</td>
<td>.045</td>
<td>.068</td>
<td>.120</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7e-foreign language</td>
<td>.029</td>
<td>.045</td>
<td>.065</td>
<td>-.031</td>
<td>.248**</td>
<td>.213**</td>
<td>.023</td>
<td>-.082</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7f-study abroad</td>
<td>.171*</td>
<td>.180*</td>
<td>.068</td>
<td>.156</td>
<td>.079</td>
<td>-.075</td>
<td>.036</td>
<td>.066</td>
<td>.044</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7g-independent study</td>
<td>.143</td>
<td>.124</td>
<td>.041</td>
<td>.109</td>
<td>.044</td>
<td>.022</td>
<td>.045</td>
<td>.147</td>
<td>-.087</td>
<td>.275**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7h-senior project</td>
<td>.028</td>
<td>.055</td>
<td>.090</td>
<td>.022</td>
<td>.243</td>
<td>.193</td>
<td>.090</td>
<td>.110</td>
<td>.088</td>
<td>.125</td>
<td>.214**</td>
<td>1</td>
</tr>
</tbody>
</table>

*significant at the .05 level (2-tailed).
**significant at the .01 level (2-tailed).
Table 15: *Supportive Campus Environment Inter-Item Correlations*

<table>
<thead>
<tr>
<th>Item</th>
<th>10e</th>
<th>10d</th>
<th>10b</th>
<th>8a</th>
<th>8b</th>
<th>8c</th>
</tr>
</thead>
<tbody>
<tr>
<td>10e-social support</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10d-non-academic support</td>
<td>.461*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10b-academic support</td>
<td>.581**</td>
<td>.544**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8a-student relationships</td>
<td>.213**</td>
<td>.149</td>
<td>.166*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8b-faculty relationships</td>
<td>.287**</td>
<td>.342**</td>
<td>.195*</td>
<td>.115</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8c-admin relationships</td>
<td>.275**</td>
<td>.318**</td>
<td>.203**</td>
<td>.112</td>
<td>.599**</td>
<td>1</td>
</tr>
</tbody>
</table>

*significant at the .05 level (2-tailed).  
**significant at the .01 level (2-tailed).

The following section examines the results for each of the research questions.

**Analysis of Research Questions**

**RQ 1:** Is there a difference in parental importance of higher education for first-generation students compared to continuing-generation students?

\[ \text{H}_1: \] First-generation student will report lower parental importance of higher education than will continuing-generation students.

An independent samples t-test was conducted on 1347 students for whom complete data was available entering first-generation status as the independent variable and parental importance as the dependent variable. First-generation students had a mean importance of 4.40 on a five-point Likert-type scale compared to a mean importance of 4.47 for continuing-generation students. The analysis yielded a \( t(1345)=.590, p=.555 \). This was not found to be significant. Thus, there was no difference in the way first-generation students perceived the level of importance parents have placed on their education compared to continuing-generation students. Therefore, the directional hypothesis is rejected in favor of retaining a null hypothesis.
RQ2: Is there a difference in student’s own educational level expectations for first-generation students compared to continuing-generation students?

H$_2$: First-generation students will report lower expectations for educational level goal than will continuing-generation students.

The Mann-Whitney $U$ test was conducted on 1180 students for whom complete data was available entering first-generation status as the independent variable and degree aspiration as the dependent variable on an ordinal scale. Degree aspiration was coded as 1=associate degree, 2=bachelor’s degree, 3=master’s degree, 4=doctorate, and 5=professional degree. The analysis yielded a $U=224,779.000$, $p=.761$. Thus, the directional hypothesis that first-generation students would report lower degree aspirations compared to continuing-generation students was rejected in favor of a null hypothesis indicating that there is no difference in degree aspiration between the two groups. Table 16 provides the rank results for the Mann-Whitney test.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
<th>Mann-Whitney</th>
<th>sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Generation</td>
<td>672</td>
<td>670.99</td>
<td>450,907.00</td>
<td>224,779.000</td>
<td>.761</td>
</tr>
<tr>
<td>Continuing-Generation</td>
<td>675</td>
<td>676.99</td>
<td>4569,71.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1347</td>
<td></td>
<td>4569,71.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RQ3. Is there a difference in global engagement on the NSSE between first-generation students and continuing generation students?
$H_3$: First-generation students will report lower levels of engagement on the NSSE than will continuing-generation students.

An independent samples $t$-test was conducted on 158 students for whom complete data was available using first-generation status as the independent variable and the global measure of engagement derived from the NSSE as the dependent variable. The global measure of engagement was derived by converting the raw scores of the 42 items that comprise the five dimensions of engagement to a 100-point scale and computing the simple mean. This action is consistent with NSSE developer's method for computing the five individual dimensions of engagement and utilized scripts available from the developers. Item related to being unprepared for class were reverse coded to maintain the scoring methodology.

The analysis was conducted on 158 NSSE participants for whom first-generation status was reported. Of these, 83 were first-generation while 75 were continuing-generation students. The mean engagement score for first-generation students was 42.95 compared to the mean score of 44.80 for continuing generation students. The analysis of global engagement yielded a $t(155) = 1.01, p = .312$. Thus, the directional hypothesis that first-generation students would report lower scores on engagement measures was rejected in favor of retaining a null hypothesis that there is no difference in engagement between first-generation and continuing-generation students.

A series of $t$-tests was conducted to examine the difference in engagement on each of the five dimensions of engagement reported by the
NSSE between first-generation and continuing-generation students. As observed in table 17, there were no significant differences on any of the additional five dimensions of engagement between first and continuing-generation students. In observing the means, continuing-generation students had slightly higher mean scores than first-generation students on all five dimensions except for Supportive Campus Environment. First-generation students (55.924) reported a slightly higher mean than did continuing-generation students (55.796). However, this difference was not found to be significant.

<table>
<thead>
<tr>
<th>Measure</th>
<th>First-Generation Students n=83</th>
<th>Continuing-Generation Students n=75</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Challenge</td>
<td>46.98 14.39</td>
<td>48.23 14.76</td>
<td>0.537</td>
<td>155</td>
</tr>
<tr>
<td>Active-Collaborative Learning</td>
<td>37.01 13.25</td>
<td>38.03 13.32</td>
<td>0.485</td>
<td>156</td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>33.51 18.25</td>
<td>35.20 17.76</td>
<td>0.587</td>
<td>156</td>
</tr>
<tr>
<td>Supportive Campus Environment</td>
<td>55.92 16.98</td>
<td>55.80 14.49</td>
<td>0.050</td>
<td>155</td>
</tr>
<tr>
<td>Enriching Educational Experiences</td>
<td>41.35 15.47</td>
<td>46.33 16.55</td>
<td>1.950</td>
<td>155</td>
</tr>
<tr>
<td>Global Engagement</td>
<td>42.95 11.95</td>
<td>44.80 10.68</td>
<td>1.010</td>
<td>155</td>
</tr>
</tbody>
</table>

RQ4: What amount of variance in academic achievement is explained by engagement over and above demographic variables at the end of the first year of college for first-time full-time traditional age college students?
H₄: Controlling for student background characteristics, higher engagement scores on the NSSE will be associated with higher cumulative GPA at spring 2003.

A hierarchical multiple regression (MR) analysis was conducted using cumulative first-year GPA as the dependent variable. Background characteristics consisting of first-generation status, gender, ethnicity, high school GPA, ACT composite score, place of residence, and attendance at the university’s optional orientation program were entered as one block. The derived global measure of engagement was entered in the second block. A similar analysis was conducted using cumulative GPA at graduation as the dependent variable and adding first-year GPA to the second block with engagement. The analysis was conducted on 143 students for whom complete data was available.

Assumptions were tested by examining the normal probability plots and scatter plots of residuals versus predicted residuals. No violations of linearity, normality, or homoscedasticity were observed. There was also no evidence of outliers in the data.

Regression analysis for the background characteristics consisting of ACT composite score, participation in the university’s student orientation program, gender, first-generation status, ethnicity, high school GPA, and living on campus provided an $R^2=.496$ and adjusted $R^2=.470$. The analysis revealed that the model significantly accounted for 49.6% of the variance in first-year GPA, $F(7, 135)=18.97, p<.05$. When global engagement was entered into the model in the second block, the $R^2=.497$ and adjusted $R^2=.467$. The addition of engagement
increased the $R^2$ by only .001 and was not significant. In terms of individual relationship between background characteristics and engagement and first-year cumulative GPA, high school GPA ($t=7.79$, $p<.05$) and composite ACT score ($t=3.09$, $p<.05$) together accounted for 75.8% of the variance in first-year GPA. Specifically, high school GPA accounted for 53.8% of the variance in GPA while ACT composite score accounted for 23% of the variance. The final regression equation for model one, was:

(1)

$$\text{CumFYGPA} = -1.207 + .058\text{FIRSTGEN} + .095\text{GENDER} + .048\text{RACE} -.030\text{LIVESONCAMPUS} -.056\text{ORIENTATION} + .836\text{HSGPA} + .040\text{ACT}$$

When engagement was added in the second model, the final regression equation was:

(2)

$$\text{CumFYGPA} = -1.267 + .056\text{FIRSTGEN} + .095\text{GENDER} + .048\text{RACE} -.038\text{LIVESONCAMPUS} -.056\text{ORIENTATION} + .824\text{HSGPA} + .041\text{ACT} -.002\text{ENGAGEMENT}$$

Thus, while academic preparation was a significant predictor of academic achievement, engagement was not a significant predictor of first-year cumulative GPA. Therefore, the directional hypothesis that students with higher levels of
engagement would have higher GPAs was rejected in favor of a null hypothesis indicating that engagement does not predict first-year cumulative GPA. The full regression results may be found in Table 18.

Table 18: *Regression on Cumulative First-Year GPA*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-1.207</td>
</tr>
<tr>
<td></td>
<td>First-Generation</td>
<td>.058</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.095</td>
</tr>
<tr>
<td></td>
<td>Ethnicity</td>
<td>.048</td>
</tr>
<tr>
<td></td>
<td>Lives on Campus</td>
<td>-.030</td>
</tr>
<tr>
<td></td>
<td>Orientation</td>
<td>-.056</td>
</tr>
<tr>
<td></td>
<td>High School GPA</td>
<td>.836</td>
</tr>
<tr>
<td></td>
<td>ACT Composite</td>
<td>.040</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>-1.267</td>
</tr>
<tr>
<td></td>
<td>First-Generation</td>
<td>.056</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.095</td>
</tr>
<tr>
<td></td>
<td>Ethnicity</td>
<td>.048</td>
</tr>
<tr>
<td></td>
<td>Lives on Campus</td>
<td>-.038</td>
</tr>
<tr>
<td></td>
<td>Orientation</td>
<td>-.056</td>
</tr>
<tr>
<td></td>
<td>High School GPA</td>
<td>.824</td>
</tr>
<tr>
<td></td>
<td>ACT Composite</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td>Global</td>
<td>-.002</td>
</tr>
</tbody>
</table>

Depended variable: Freshman Year Cumulative GPA

A second hierarchical regression analysis was conducted using cumulative GPA for 80 graduates as the dependent variable and adding first-year cumulative GPA to the second block with engagement. Assumptions were checked and found to have been maintained in the data. The first model with
background characteristics yielded an $R^2=.509$ and adjusted $R^2=.462$ and accounted for 50.9% of the variance in cumulative GPA at graduation, $F(7, 73)=10.806, p<.05$. When engagement and first-year cumulative GPA were added to the equation, the model explained 68.1% of the variance in cumulative GPA at graduation, $F(9, 71)=16.868, p<.05$.

In terms of individual relationships, only composite ACT score ($t=3.72, p<.05$) and high school GPA ($t=4.45, p<.05$) were significant predictors of cumulative GPA at graduation accounting for 37.2% and 42.5% of the variance respectively. In the second model, only freshman year cumulative GPA ($t=6.61, p<.05$) was a significant predictor accounting for 64.7% of the variance in cumulative GPA at graduation. High school GPA and composite ACT score did not continue to be significant predictors of cumulative GPA at graduation in the second model. Thus, for cumulative GPA at graduation, the directional hypothesis was also rejected meaning that engagement was not a significant predictor of first-year cumulative GPA or cumulative GPA at graduation. The full regression analysis may be found in Table 19. The corresponding regression equation for the model consisting of background characteristics only was:

$$CUMGPAGRAD = .684 - .020FIRSTGEN + .107GENDER + .024RACE + .039LIVEONCAMPUS - .121ORIENTATION + .412HSGPA + .041ACT$$
When engagement and first-year cumulative GPA were added to the equation, the regression equation was as follows:

\[ \text{CUMGPAGRAD} = 0.934 + 0.009\text{FIRSTGEN} + 0.093\text{GENDER} - 0.010\text{RACE} + 0.087LIVEONCAMPUS - 0.124\text{ORIENTATION} + 0.157HSGPA + 0.006\text{ACT} - 0.002\text{ENGAGEMENT} + 0.516\text{FYGPA} \]

### Table 19: Regression on Cumulative GPA at Graduation

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. B</td>
<td>Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>.684</td>
<td>.379</td>
</tr>
<tr>
<td>First-Generation</td>
<td>-.020</td>
<td>.074</td>
</tr>
<tr>
<td>Gender</td>
<td>.107</td>
<td>.086</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.024</td>
<td>.033</td>
</tr>
<tr>
<td>Lives on Campus</td>
<td>.039</td>
<td>.112</td>
</tr>
<tr>
<td>Orientation</td>
<td>-.121</td>
<td>.100</td>
</tr>
<tr>
<td>High School GPA</td>
<td>.412</td>
<td>.092</td>
</tr>
<tr>
<td>ACT Composite</td>
<td>.041</td>
<td>.011</td>
</tr>
<tr>
<td>2 (Constant)</td>
<td>.934</td>
<td>.332</td>
</tr>
<tr>
<td>First-Generation</td>
<td>.009</td>
<td>.061</td>
</tr>
<tr>
<td>Gender</td>
<td>.093</td>
<td>.070</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-.010</td>
<td>.028</td>
</tr>
<tr>
<td>Lives on Campus</td>
<td>.087</td>
<td>.092</td>
</tr>
<tr>
<td>Orientation</td>
<td>-.124</td>
<td>.082</td>
</tr>
<tr>
<td>High School GPA</td>
<td>.157</td>
<td>.088</td>
</tr>
<tr>
<td>ACT Composite</td>
<td>.006</td>
<td>.011</td>
</tr>
<tr>
<td>Global Engagement</td>
<td>-.002</td>
<td>.003</td>
</tr>
<tr>
<td>Freshman Year</td>
<td>.516</td>
<td>.084</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Cumulative GPA at Graduation
RQ5: Are engagement and grade point average significant predictors of persistence controlling for student background characteristics, for first-time full-time traditional age college students in the 2002 reporting cohort?

H$_5$: Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative first-year GPA will be associated with greater likelihood of persistence to fall 2003.

A hierarchical logistic regression was conducted with persistence coded dichotomously (Yes=1, No=0) as the dependent variable. Background characteristics including gender, ethnicity, first-generation status, high school GPA, ACT composite score, place of residence, and attendance at the university's optional freshman orientation program entered in the first block. The derived global measure of engagement and first-year cumulative GPA were entered in the second block. The results of the analysis of 153 cases with complete data are presented in Table 20.

Unexpectedly, the constant-only model was statistically significant with a residual $\chi^2(7, 143)=7.647$ suggesting that the predictors as a set do not significantly contribute to the predictive power of the model when entered into the equation. A close inspection of each of the demographic components listed under the variables not in the equation printout, however, indicated that high school GPA emerged as a significant predictor with a $\chi^2(1, 143)=6.0, p<.05$. In other words, with the exception of high school GPA, adding these demographic components to the equation did not contribute to predicting persistence in this model. This outcome was confirmed in the non-significance of the first model
consisting of only the demographic variables against the intercept-only model, 
\( \chi^2(7, 143) = 93.028, p > .05 \). The amount of variance explained in this model is small (Cox & Snell \( R^2 = .049 \), Nagelkerke \( R^2 = .097 \)), indicating that only 5 to 10% of the variance in persistence was explained by the intercept and high school GPA.

The next full model in which engagement and first-year cumulative GPA were entered in the second block was also not significant, \( \chi^2(9, 143) = 85.942, p > .05 \). The correct classification percentage remained at 88.8% indicated that engagement did not add predictive power to the model. First-year GPA, however, did emerge as a significant predictor of persistence with a \( B = 1.344 \) and \( \text{Exp}(B) = 3.835 \) indicating that for every unit increase in first-year cumulative GPA, students were 3.835 times more likely to persist. A negative \( B = -0.004 \) for engagement indicates that an increase in engagement results in a decrease in the likelihood of persistence. However, this effect is not significant. The logistic regression equation for persistence in the first model was:

\[
\text{PERSISTENCE}_{\text{Likelihood}} = -2.984 + .216 \text{FIRSTGEN} + .059 \text{GENDER} \\
+ .009 \text{RACE} - .162 \text{LIVEON} + .461 \text{ORIENTATION} + 1.024 \text{HSGPA} \\
+ .059 \text{ACT}
\]
Table 20: Logistic Regression on Persistence

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>S.E.</td>
<td>sig</td>
<td>$Exp(B)$</td>
<td>$B$</td>
<td>S.E.</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.984</td>
<td>2.219</td>
<td>.179</td>
<td>.051</td>
<td>-1.67</td>
<td>0.45</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>.216</td>
<td>.607</td>
<td>.722</td>
<td>1.241</td>
<td>0.041</td>
<td>0.631</td>
</tr>
<tr>
<td>Gender</td>
<td>.059</td>
<td>.656</td>
<td>.928</td>
<td>1.061</td>
<td>-0.049</td>
<td>.005</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.009</td>
<td>.195</td>
<td>.963</td>
<td>1.009</td>
<td>-0.037</td>
<td>.035</td>
</tr>
<tr>
<td>Live on Campus</td>
<td>-.162</td>
<td>.832</td>
<td>.846</td>
<td>.851</td>
<td>-0.098</td>
<td>.013</td>
</tr>
<tr>
<td>Orientation</td>
<td>.461</td>
<td>.758</td>
<td>.543</td>
<td>1.586</td>
<td>0.594</td>
<td>.580</td>
</tr>
<tr>
<td>High School GPA</td>
<td>1.024</td>
<td>.614</td>
<td>.096</td>
<td>2.784</td>
<td>-0.082</td>
<td>.009</td>
</tr>
<tr>
<td>Composite ACT</td>
<td>.059</td>
<td>.078</td>
<td>.453</td>
<td>1.061</td>
<td>0.027</td>
<td>.108</td>
</tr>
<tr>
<td>First-Year GPA</td>
<td>1.344</td>
<td>6.472</td>
<td>.011</td>
<td>3.835</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Engagement</td>
<td>-0.004</td>
<td>0.022</td>
<td>0.881</td>
<td>0.996</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 2 log likelihood  | 93.028           |          |          | 85.942           |          |          |
chi square          | 7.200            |          |          | 14.286           |          |          |
$df$                | 7                |          |          | 9                |          |          |
When engagement and first-year GPA were added to the model, the resulting regression equation was:

\[
\text{PERSISTENCE}^{\text{Likelihood}} = -1.670 + .041\text{FIRSTGEN} - .049\text{GENDER} - .037\text{RACE} - .098\text{LIVEON} + .594\text{ORIENTATION} - .082\text{HSGPA} + .027\text{ACT} + 1.344\text{FYGPA} - .004\text{ENGAGEMENT}
\]

Thus, the hypothesis that increased engagement would predict persistence is rejected in favor of a finding that engagement as measured by the NSSE is not a significant predictor of persistence.

RQ6: What is the significance of student background characteristics, global measure of engagement on the NSSE, and grade point average on predicting graduation by spring 2008 for first-time full-time traditional age college students in the 2002 reporting cohort?

H6: Controlling for student background characteristics, higher engagement scores on the NSSE and higher cumulative spring 2003 GPA will be associated with increased likelihood of graduation by spring 2008.

A hierarchical logistic regression was conducted with graduation by spring 2008 coded dichotomously (Yes=1, No=0) as the dependent variable.

Background characteristics including gender, ethnicity, first-generation status, high school GPA, ACT composite score, place of residence, and attendance at
the university's optional freshman orientation program were entered in the first block. The derived global measure of engagement, first-year cumulative GPA, and persistence to the second year of college were entered in the second block. The results of the analysis of 143 subjects with complete data are presented in Table 21.

The first model consisting of the intercept constant yielded a significant $\chi^2(7, 143)=29.145, p<.05$. This suggests that the background predictors, as a set, do not add significant predictive power to the likelihood of graduation. An inspection of the printout for variables not in the equation indicates that only high school GPA ($\chi^2(1, 143)=22.78, p<.05$) and ACT ($\chi^2(1, 143)=17.198, p<.05$) add significant predictive value to the likelihood of graduation. Other demographic variables did not add significantly to the model.

The first model consisting of the intercept and demographic variables resulted in a significant $\chi^2(7, 143)=161.844, p<.05$ with Cox & Snell $R^2 = .196$ and Nagelkerke $R^2 = .265$ indicating that model accounted for between 19.6% and 26.5% of the variance in predicting the likelihood of graduation. A closer inspection of the variables in the equation indicates that high school GPA ($B=1.520$) and ACT ($B=.123$) emerged as the significant contributors to predicting the likelihood of graduation. Specifically, for every unit increase in GPA, likelihood of graduation increased by 4.57 times and for every unit increase in ACT, likelihood of graduation increased 1.13 times. The constant only model correctly predicted graduation 68.5% of the time. The final regression equation for the background characteristics only model was:
When engagement, persistence, and first-year GPA are added to the
equation, the resulting $\chi^2(10, 143)=126.025$, $p<.05$ with Cox & Snell $R^2 =.374$ and
Nagelkerke $R^2 =.505$ indicating that between 37.4% and 50.5% of the variance in
predicting the likelihood of graduation was accounted for in the model. The
omnibus test for model coefficients yielded a significant $\chi^2(10, 143)=67.087,$
$p<.05$. A close inspection of the printouts indicated that persistence ($B=3.190$)
and first-year GPA ($B=1.953$) were significant predictors of the likelihood of
graduation. Specifically, persistence, a dichotomous yes or no variable,
increased the likelihood of graduation by 24.3 times. Likewise, for every unit
increase in first-year GPA, likelihood of graduation within six years increased by
7.05 times. Engagement, however, did not emerge as a significant predictor in
the model. The final regression equation for the final model with engagement,
first-year GPA, and persistence added in the second block was:

\[
\text{GRAD}^{\text{Likelihood}} = -10.324 + .340\text{FIRSTGEN} - .231\text{GENDER} - \\
.076\text{ETHNICITY} - .635\text{LIVEON} + .759\text{ORIENTATION} + \\
.098\text{HSGPA} + .079\text{ACT} + 3.190\text{PERSIST} + 1.953\text{FYGPA} + \\
.015\text{ENGAGEMENT}
\]

(7)
Engagement in the first year did not add significant value to predicting graduation. Thus, the hypothesis that increased engagement in the first year of college would predict graduation is rejected in favor of a hypothesis that engagement does not contribute significantly to predicting graduation.

**Conclusion of Results**

The following chapter presents a discussion and the implications based upon the aforementioned results. Specific attention is paid to discussing the non-significance of the findings related to engagement despite other research that indicates otherwise. Strengths and weaknesses of the current study are also explored. Finally, recommendations for further research are provided.
Table 21: *Logistic Regression on Graduation*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
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<tbody>
<tr>
<td></td>
<td>B</td>
<td>S.E.</td>
</tr>
<tr>
<td>Constant</td>
<td>-.7807</td>
<td>1.957</td>
</tr>
<tr>
<td>Gender</td>
<td>-.010</td>
<td>.462</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.029</td>
<td>.159</td>
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<tr>
<td>Lives on Campus</td>
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<td>.578</td>
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<td>Orientation</td>
<td>.549</td>
<td>.519</td>
</tr>
<tr>
<td>High School GPA</td>
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<td>.476</td>
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<tr>
<td>Composite ACT</td>
<td>.123</td>
<td>.058</td>
</tr>
<tr>
<td>Persistence</td>
<td>3.190</td>
<td>1.173</td>
</tr>
<tr>
<td>First-Year GPA</td>
<td>1.953</td>
<td>.520</td>
</tr>
<tr>
<td>Global Engagement</td>
<td>.015</td>
<td>.019</td>
</tr>
<tr>
<td>- 2 log likelihood</td>
<td>161.844</td>
<td></td>
</tr>
<tr>
<td>chi square</td>
<td>31.268</td>
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<tr>
<td>Df</td>
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</tbody>
</table>
CHAPTER FIVE
DISCUSSION

Most of the published research on the impact of engagement on academic achievement and persistence has utilized student self-report data for grades and large national data sets. Fewer studies, however, have examined the longitudinal impact of engagement in the first year of college on academic achievement, persistence, and graduation (Pascarella, Seifert, & Blaich, 2010). These studies suggest that the more students are engaged in meaningful educational experiences both inside and outside the classroom, the more contact they have with faculty, and the more time spent on academic-related tasks, the more likely a student will earn higher grades and persist to graduation (Kuh, et al., 1991; Pascarella & Terenzini, 1991, 2005).

Similarly, the current research on first-generation students suggests that they are likely to be academically underprepared for college and at greater risk for departure prior to completing their educational goals. Engagement, according to Kuh and associates (1991) and Astin (1977, 1984, 1993b) should result in first-generation students overcoming these hurdles to their success (Carini, Kuh, & Klein, 2006; Pascarella & Terenzini, 1979a, 1979b).

In the current study, first-generation students appeared to be at least partially academically underprepared compared to continuing-generation
students. But, instead of engagement functioning as a compensatory or accentuating influence on academic achievement or persistence and graduation, engagement had no significant impact for either first-generation or continuing-generation students. Instead, consistent with numerous other studies (Pascarella & Terenzini, 1991, 2005), academic preparation measured by high school GPA and ACT scores and academic achievement emerged as the significant predictors of persistence and graduation. Other background characteristics such as gender, ethnicity, and parents’ education did not have a significant influence on the educational outcomes in this study.

The purpose of the present study was to examine the differences in engagement between first-generation and continuing-generation college students. Differences in ethnicities and by gender were also considered. Differences in degree aspiration and perceived parental support between first-generation and continuing-generation students were also examined. The longitudinal panel study approach combined engagement scores collected using the National Survey of Student Engagement and perceived parental support and degree aspiration collected from students on the first day of classes. Rather than using student self-reported data for academic achievement and preparation, the study utilized data from the institution’s student information and advising system. The cohort was tracked through the six-year graduation reporting period as required by state and federal legislation.

Analysis of the data using SPSS indicated that there was no significant difference in degree aspiration, perceived parental support, or engagement
between first-generation and continuing-generation students. Regression analyses conducted on the data indicated that engagement was not a significant predictor of academic achievement, persistence to the second year of college, or graduation within six years.

**General Characteristics of First-Generation Students**

Approximately half of the students in the sample provided information concerning parental education level. Of those, half, or 26% of the total sample, were labeled as first-generation students as they indicated that their parents had not completed at least an associate degree. First-generation students in the sample tended to mirror those described in the research (Choy, 2001; Choy, Horn, Nunez, & Chen, 2000; Filkins & Doyle, 2002; Grayson, 1997; Horn & Nunez, 2000; Ishitani, 2006; Ishitani & DesJardins, 2002; Longwell-Grice & Longwell-Grice, 2008; Nunez & Cuccaro-Alamin, 1998; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pike & Kuh, 2005; Warburton, Bugarin, & Nunez, 2001) as arriving at college with lower ACT scores and slightly lower, though not significantly lower, high school GPAs. First-generation students were also less likely to persist and less likely to graduate than were continuing-generation students. These findings were consistent with most of the research concerning first-generation students (Choy, 2001; Ishitani, 2006; McMahon, 1999; Nunez & Cuccaro-Alamin, 1998).

Specifically, consistent with Choy (2001), Ishitani (2006) and studies that examined large national data sets such as Horn and Nunez (2000), first-generation students in this sample had lower grade point averages and lower
ACT scores. The difference in ACT scores was significantly lower for first-generation students compared with continuing-generation students. Consistent with numerous studies cited by Pascarella and Terenzini (1991, 2005) first-generation students also had significantly lower first-year cumulative GPAs. However, in contradiction to many of those studies, academic achievement differences disappeared by the time of graduation. First-generation students who persisted to graduation, did so with a slightly higher cumulative GPA compared to their continuing-generation colleagues.

Despite catching up in terms of GPA, first-generation students in this study were less likely to persist and less likely to graduate compared to their continuing-generation peers. These findings were similar to those reported by Pascarella and Terenzini (1991, 2005), Choy (2001), and Nunez and Cuccaro-Alamin (1998) who all found that first-generation students were less likely to graduate. One reason for decreased rates of persistence and graduation for first-generation students might be attributed to significantly lower high school GPAs reported for first-generation students compared to continuing-generation students. Since high school GPA was a significant predictor of first-year GPA and persistence and persistence was likewise a significant predictor of graduation, the initial disadvantage (lower high school GPA) may have translated to decreased persistence in the first year.

Engagement measures did not contribute to the variance in predicting the likelihood of persistence and graduation or to the variance in GPA for either first-generation or continuing-generation students. These findings conflict with other
studies that demonstrate that engagement can have a compensatory effect for disadvantages associated with first-generation status on student outcomes including GPA, persistence, and graduation (Carini, Kuh, & Klein, 2006; Hurtado, Carter, & Spuler, 1996; Pascarella & Terenzini, 1979a, 1979b). Instead, engagement in the present study as measured by the NSSE did not add significant power to predicting GPA, persistence, or graduation for either first-generation or continuing-generation students. Negative $\beta$ weights, however slight, indicate that engagement may have an undetermined influence on persistence and graduation.

First-generation and continuing-generation students both reported similar degree aspirations and a uniformly strong perception that their education was important to their parents. Findings concerning parental importance bode well for the prospects of increasing numbers of first-generation students enrolling in postsecondary education institutions. Historically, researchers were concerned that first-generation students did not enjoy the same level of moral support from parents who might not have understood the value or rigor of college. Similar concerns were observed concerning degree aspiration (McMahon, 1999). However, non-significant findings in these two areas suggest that first-generation students might enjoy similar support from parents and family despite decreased experience with postsecondary education. Similarities in degree aspiration suggest that first-generation students at this institution were as motivated to complete the bachelor's degree as continuing-generation students.
Background Characteristics

The results of the present study mirror other published research related to gender and ethnicity differences. Specifically, consistent with research cited by Pascarella and Terenzini (1991, 2005) women tended to persist and graduate at higher rates than did men and tended to graduate with higher grade point averages despite mixed differences in academic preparation. Women in the current study also tended to be slightly more engaged compared to men on all measures of engagement with significant differences emerging on the Academic Challenge and Enriching Educational Experiences dimensions of engagement. Thus, women not only appear to report being more academically challenged in the classroom, but also appear to more actively seek out experiences that contribute to their academic and social experiences on campus such as interacting with people different from themselves and attending educational programs and events. This is an interesting result in view of Hu and Kuh’s (2002) finding that women tend to be more moderated in their engagement compared to men who are either very engaged or disengaged in their educational environments.

For the most part, White students in this study appeared to be academically better prepared for college and to earn better grades while in college compared to African-American and Latino students. Interestingly, African-American and Hispanic students tended to be more engaged compared to White students. Contrary to Seidman (2005) and the Consortium for Student Retention Data Exchange (CSRDE, 2003), there was no significant difference in
either persistence or graduation between White students and students-of-color. In terms of engagement, students of color tended to report higher engagement scores than White students. One dimension of engagement, Enriching Educational Experiences, yielded a significant difference in observed engagement. This is consistent with findings by Hu and Kuh (2002) indicating that students of color tend to be more engaged compared to White students.

**Engagement**

Kuh (1995, 2001, 2003) and Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) reported significant findings for the impact of engagement on academic achievement and persistence. However, the same was not observed in the current study. Although first-generation students had lower GPAs at the end of the first year of school, this difference disappeared at graduation. Engagement, for this population, had almost no predictive value on grades, persistence or graduation. These findings conflict with those of other researchers. For instance, Carini, Kuh, and Klein (2006) found that increased engagement led to higher GPA and increased likelihood of graduation, particularly for first-generation students. Ethington and Horn (2007), Henry (2005), and Kuh, Pace, and Vesper (1997), to name a few, all published findings indicating that increased engagement led to improved persistence and graduation rates.

In comparing NSSE composite scores along the five dimensions of engagement, first-year participants in this sample scored well below the national sample for first-year students in all areas. This contrast is striking for a number of reasons. First, students at this institution may not have had suitable
engagement opportunities presented during the first year of study. As a result, early measures of engagement, while low, may yield to increased engagement later on in college as students enter into their major courses of study. This is an important consideration as Woosley (2003) reported that experiences in the first weeks of college predicted extent of engagement later in the student's academic career. Thus, fewer comparative engagement opportunities in the first year may correspond with decreased engagement later.

Second, the NSSE focuses on engagement activities with faculty and staff and engagement with students on very specific dimensions related to "meaningful conversations" and interacting with people from other cultures. Very few questions focus on engagement outside the classroom with peers in student activities and similar types of settings. For first-year students, these outside the classroom contacts with staff and students may be more essential to predicting persistence than contact with faculty inside the classroom. Thus, an expanded definition of engagement that accounts for more co-curricular components may be warranted.

A subsequent review of the literature on engagement finds great variability in how researchers have measured engagement. For instance, while several of the studies discussed in chapter two use the NSSE as the measure of engagement (Carini, Kuh, & Klein, 2006; Carter, 2006; Filkins & Doyle, 2002; Gordon, Ludlum, & Hoey, 2008) others use the College Student Experiences Questionnaire (Hu & Kuh, 2002; Kuh, Pace, & Vesper, 1997). Still other researchers have used the University of California's Undergraduate Experiences
Survey (Pace, 1984; Brint, 2008), the Community College Student Experiences Questionnaire (Ethington & Horn, 2007), and a variety of other instruments (Henry, 2005; Hurtado, Carter, & Spuler, 1996; Milem & Berger, 1997; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pascarella & Terenzini, 1979a, 1979b; Russell, Hancock, & McCullough, 2007). Some researchers have used interviews or other qualitative approaches in their studies on engagement (Kuh, 1995; Kuh, Schuh, Whitt, Andreas, Lyons, Strange, et al, 1991; Longwell-Grice & Longwell-Grice, 2008). The common theme, however, focuses on engagement with faculty and in classroom and class-related activities such as writing papers, reading, studying, spending time in the library, and participating in research or study groups. The CSEQ, however, includes more questions related to co-curricular activities compared to the NSSE, which may also influence results in those studies. As a result, a clearer examination of the impact of life outside of the classroom and library appears to be lacking within the engagement literature.

The diversity of instruments and methodologies available adds richness to the study of engagement. But each takes a different approach to measuring engagement. For instance, the NSSE focuses on academic related questions and has only three questions related to out-of-the-classroom experiences. These three questions include exercising or participating in physical fitness activities, attending church or other spiritual activities, and attending an art exhibit or performance. In comparison, the College Student Experiences Questionnaire (CSEQ) asks over 30 questions on these and similar topics. Likewise, while the NSSE asks a few questions related to interaction with faculty, those questions
focus on formal interaction through research, the classroom, or advising. In comparison, the CSEQ asks questions related to talking with faculty about subjects not related to class, socializing with faculty outside of the classroom, and other interactions that may have an impact on the overall faculty-student relationship.

**Academic Achievement**

The majority of research conducted on academic achievement while in college supports the theory that increased time and energy focused on academic pursuits such as research with faculty, discussing assignments or class topics with peers, writing papers, and reading predict GPA. These findings support Astin's (1984, 1993b) theoretical approaches to the allocation of time and energy compared to the outcomes that students achieve. However, the current study is less clear on that matter. Grade point average was examined at the end of the first year of college and again at graduation. The regression analyses indicated that the predictors of first-year GPA tended to be background characteristics consisting solely of composite ACT and high school GPA. This general finding is consistent with the literature as summarized by Pascarella and Terenzini (1991, 2005), Grayson (1997), and Murtaugh, Burns, and Schuster (1999). Likewise, first-year GPA was found to be a predictor of cumulative GPA at graduation. However, when engagement was added to the model, there was no significant change in the amount of variance accounted for in the analysis. This was in stark contrast to literature that overwhelmingly supported engagement as a predictor of academic achievement (Brint, 2008; Carini, Kuh, & Klein, 2006;
Carter, 2006; Ethington & Horn, 2007; Filkins & Doyle, 2002; Gordon, Ludlum, & Hoey, 2008; Henry, 2005; Hurtado, Carter, & Spuler, 1996; Hu & Kuh, 2002; Kuh, Pace, & Vesper, 1997; Milem & Berger, 1997; Pace, 1984; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pascarella & Terenzini, 1979a, 1979b; Russell, Hancock, & McCullough, 2007). This may again be related to the nature of the NSSE participants in this sample. Rather than NSSE participants benefitting from engagement, they may have been predisposed to earn higher grades independent of engagement-related factors. Had the differences in GPA emerged only at the end of the first year of college or at graduation, we might have seen different results for the impact of engagement on academic achievement. But since NSSE participants also had higher high school GPAs, the difference in academic achievement in college may not have been attributable to engagement, at least for the students in this sample.

While most published studies in this area have used student-reported information on grades, the present study used GPA information as recorded by the institution. Only two other studies linked institutional reported GPA with engagement scores. LaNasa, Olson, and Alleman (2007) conducted such a study finding that increased engagement with faculty and in academic-related activities positively influenced GPA. Carini, Kuh, and Klein (2006) found similar results with a larger sample of liberal arts institutions indicating that increased engagement was linked with academic achievement. However, while the Carini, Kuh, and Klein study found that engagement was overwhelmingly tied to
academic achievement, LaNasa, Olson, and Alleman were more conservative in their reporting indicating smaller differences in the effect.

Finally, many researchers found that engagement also had a compensatory effect for first-generation and other at-risk students. Essentially, according to Carini, Kuh, and Klein (2006) increased engagement can help students with lower measures of academic preparation such as high school GPA and ACT increase the likelihood of earning higher grades and graduating. Pascarella, Pierson, Wolniak, and Terenzini (2004) and Pascarella and Terenzini (1979a, 1979b) found that first-generation students with higher engagement scores showed greater likelihood to persist and to graduate. Hurtado, Carter, and Spuler (1996) found similar results with under-represented students. Ishitani (2006) and Ishitani and DesJardins (2002), on the other hand, found that first-generation students who simply persisted to the third year of college are just as likely as continuing-generation students to graduate, regardless of engagement. While first-generation students in this study started with lower preparation scores and lower first-year GPAs than continuing-generation students, that deficit was erased by graduation.

Persistence and Graduation

Engagement has become the new hallmark in higher education used to predict persistence and graduation. Recent research has indicated that engagement can predict both persistence and graduation and can also have a compensatory effect for first-generation students (Brint, 2008; Carini, Kuh, & Klein, 2006; Carter, 2006; Ethington & Horn, 2007; Filkins & Doyle, 2002; Henry,
2005; Hurtado, Carter, & Spuler, 1996; Hu & Kuh, 2002; Kuh, Pace, & Vesper, 1997; Milem & Berger, 1997; Pace, 1984; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pascarella & Terenzini, 1979a, 1979b; Russell, Hancock, & McCullough, 2007). However, the present study did not yield similar results. Instead, engagement did not yield significant results in predicting the likelihood of persisting from the first-year to the second year.

Similar to the results for persistence, the findings in the current study do not support the literature related to graduation. Specifically, while other researchers have found connections between engagement and likelihood of graduation, the present study found no such direct link. Engagement had no significance in predicting the likelihood of graduation whether measured as one global measure or five individual dimensions.

In terms of graduation in particular, engagement may change over time. Hypothetically, the longer a student is enrolled in college, the more likely engagement is to increase over time. Thus, an early measure of engagement obtained in the first year of studies may not hold the predictive value for graduation simply because students have not had the opportunity to take full advantage of the opportunities with which they are presented. A measure of engagement taken in the junior or senior year may improve understanding of the connection between engagement and graduation.

The findings that measures of engagement provided by the NSSE may not be significant in predicting persistence and graduation were consistent with Gordon, Lumley, and Hoey's (2008) similar findings with a much larger dataset.
linking institutional data with NSSE responses. The results of the present study, taken in context with Gordon, Lumley, and Hoey’s findings suggest that there may be some question as to the validity of using NSSE data for predicting student outcomes related to persistence and graduation. Instead, the NSSE may best be utilized solely for its intended purposes in measuring and comparing student engagement as part of overall institutional improvement purposes.

Most published studies examining the impact of engagement on persistence utilize large datasets. Others, however, have used instruments other than the NSSE or more qualitative approaches to draw the link between engagement and persistence and graduation. Pascarella and Terenzini’s (1979a, 1979b) early studies, for instance, measured engagement by assessing the quality and quantity of contact with faculty in both academic-related and non-academic-related contexts. Henry (2005) and Russell, Hancock, and McCullough (2007) found that involvement with research, as a specific form of engagement, was directly related to increased understanding and mastery of discipline content and a strong predictor of persistence, graduation, and intention to pursue post-baccalaureate studies. Similar approaches using very narrowly tailored scalelets (Pike, 2006) were found to have validity and reliability in measuring engagement with smaller groups of students. However, use of such scalelets is a relatively new approach and research utilizing them in predicting persistence and graduation has not been widely published to date.
Limitations

There are several limitations to this study. Specific limitations associated with both the First-Day Survey and the NSSE will be addressed individually in separate sections. More general limitations related to the overall study methodology, including a further critique of the sample, will follow.

First-Day Survey Limitations

First, the analysis consists of using existing data some of which was collected for other purposes. For instance, the first-day survey is an instrument used to gather information about students enrolled in the freshman seminar course. The instrument includes information on several variables of interest, but the measurement is imprecise at best. Three main questions examining family importance, parental education, and degree goal were examined in the current study.

The question related to family importance could mean several different things to students whereas a more comprehensive series of questions might yield a very different measure of importance. Importance could be interpreted by students according to conversations they have had with their parents about college or in how parents or siblings have expressed interest or concern for the student upon leaving for college. Additional items, for instance, could examine the level of importance placed on grades compared to co-curricular activities. Importance, for the student, may also be related to the direct monetary support provided by the student’s parents. For example, students may attribute the quantity of direct funding from parents as a proxy for importance. Finally, the
question asks the student about his or her perceived understanding of the importance placed on college graduation by the student’s parents. This, in itself, is also a nebulous construct as it forces the student to determine for himself or herself how important the student’s college education is to his or her parents. This calls for a subjective analysis based upon interpreting the unique dimensions of the relationship between the parent and the student. This could add greater complexity to the meaning of “support” and result in confusion on the part of the student than can be accurately measured with one question.

Similarly, the measure for parental education is imprecise as it asks one question about the educational attainment of “parents.” Separate questions for mother’s or father’s educational attainment may produce greater variability in response and a more precise measure consistent with that called for by Horn and Nunez (2000), Ishitani (2006), Choy (2001), and Choy, Horn, Nunez, and Chen (2000). There may also be very different findings for students from single-parent homes or for students raised by care-givers other than their natural parents.

NSSE Limitations

The NSSE is generally used to measure engagement for the purpose of assessing institutional quality. While the instrument’s psychometric properties have been analyzed on very large samples, there is little information available from smaller institutional-based samples. Porter (2009) questions the validity of student surveys used for measuring educational and developmental outcomes. His review of the NSSE suggests that the instrument, and similar others, suffer from questions that are poorly worded and use research and intellectual jargon.
that may not be fully understood by students. Likewise, the response set may be confusing for students participating in the instrument. These, and other concerns cited by Porter, may result in inadequate measures of student behavior that yield questionable findings. Pascarella, Seifert, and Blaich (2010) cite similar concerns with validity of the NSSE, but in their analysis comparing the data to other instruments for the Wabash Study, found that NSSE provides a good proxy for measures of student growth and development related to critical thinking and intercultural effectiveness.

The present study, while providing intriguing findings for a cohort of students across its college career, may have been limited by the size of the sample. Only two other studies were found that used similar methodology with the NSSE (Carini, Kuh, & Klein, 2006; LaNasa, Olson, & Alleman, 2007). Carini, Kuh, and Klein (2006) used similar methodology to track the outcomes of first-year engagement on academic achievement, persistence, and graduation. They found that increased engagement led to higher grades and greater likelihood of persistence and graduation. LaNasa, Olson, and Alleman (2007) also found that engagement was associated with increased GPA at the end of the first year. In the case of the Carini, Kuh, and Klein study, the researchers used a sample of over 1000 students from 14 institutions. Conversely, the LaNasa, Olson, and Alleman (2007) study examined responses from 731 students at one institution. This is in comparison to the relatively few participants (167) in the current study.

Most other published NSSE studies (for example, Filkins & Doyle, 2002; Gordon, Ludlum, & Hoey, 2008; Kuh, 2003; Kuh, Cruse, Shoup, Kinzie, &
Gonyea, 2005; Pike & Kuh, 2005; Zhao & Kuh, 2004) used large datasets drawn from multiple institutions to conduct their studies. These studies also tend to use student-reported data to measure grade point average (Pascarella, Seifert, & Blaich, 2010) to establish relationships between academic achievement and engagement. Pascarella, Seifert, and Blaich (2010) cite similar concerns with using student self-report data and call for further studies utilizing institutional data to examine the relationship between NSSE measures of engagement and academic achievement.

The present study, in comparison, utilized a smaller sample of only 167 first-year students. Of these, only 73 graduated within the six-year timeframe examined. A larger sample of NSSE participants in the first-year may have yielded results that approached other published data by increasing the potential variance in responses to the NSSE questionnaire or greater variability in educational outcomes. A survey return rate of less than 7%, on the other hand, does not meet the generally desired return rates for survey research (Bickman & Rog, 1998; Dillman, 2000).

Yet, the results are of interest, and there may be a number of reasons why the current study did not support other published research. The NSSE has been in use for nearly ten years which means that only 4 cohorts, at most, have reached the six-year graduation point for reporting. As more cohorts achieve that six-year mark, more studies utilizing the NSSE may be published.

A comparison of means between the sample and the national data set indicates that students in the present study reported much lower levels of
engagement on each of the five dimensions. This could be related to either a lack of actual engagement in the activities measured by the instrument or an error in the instrument. Extensive pre-testing and analysis of individual items with students across the country makes the latter possibility unlikely unless students in the present sample, as a whole, misinterpreted the meaning of the individual items. As Porter (2009) points out, the NSSE uses terminology and jargon that have multiple meanings and may not be readily and accurately interpreted by students. Porter, for instance, suggests that the question “To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas...Thinking critically and analytically?” (NSSE question 11, item C, 2007) may use terminology that is unfamiliar or confusing to some students. Do students, according to Porter, understand what thinking critically and analytically really means and does that understanding correspond with the intended understanding of the researcher?

Engagement, the primary independent variable, was measured at only one point in time for the current cohort of students. Unfortunately, there were no repeated measures for this sample when the NSSE was administered again during their senior year of college. Thus, the measure of engagement in the present study is incomplete at best and potentially skewed toward lower scores. A repeated measures design on engagement may help to complete the picture related to the impact of engagement on academic achievement, persistence, and graduation as engagement is hypothesized to increase as a student spends more time in college.
Other Limitations

The analysis consists of using existing data some of which was collected for other purposes. While the NSSE is customarily used for measuring student engagement and assessing quality of educational experiences, it was not necessarily intended to be used as a variable in predicting academic achievement, persistence, or graduation. As a consequence of this, measures associating NSSE data with outcomes such as persistence and graduation may be stretching the use of the data. Likewise, the first-day survey was not intended to provide variables for social science and educational outcomes research. The methodology also did not intentionally attempt to re-administer the NSSE to freshman participants as they approached graduation nor did it attempt to increase the response rate amongst those surveyed. Instead, participation in the NSSE was left primarily to the individual. A more direct and intentional effort to gather NSSE, or similar engagement measures, during the first-year and again in the semester prior to graduation may yield very different results in examining the impact of engagement on persistence and graduation.

Also, as discussed earlier, the NSSE is only one instrument used to measure engagement. An inspection of the NSSE indicates that the instrument consists primarily of activities that are classroom or academically focused such as research, writing papers, and reading books. This yields a narrow definition of engagement that does not account for the influence of activities such as intramural sports, non-academic related clubs and organizations, attending residence hall programs and activities, or congregating with students in the
student union. These activities, while not directly academically focused, may play a significant role in the transition and incorporation into the culture of the institution described by Tinto (1988, 1993) and Astin (1993b). While the NSSE is popular and gaining a foothold in some state coordinating authorities, there may be better instruments that more effectively and holistically examine engagement.

The circumstances surrounding the sample are also a limitation. Specifically, this study examined the impact of engagement on outcomes related to academic achievement, persistence, and graduation. The intent was to determine if there were significant differences in engagement and educational outcomes between first-generation and continuing-generation students. However, the actual sample of NSSE participants was very small in comparison to the overall population. Complicating matters, the group of NSSE participants may not have been as similar to the population as desired in this type of research. Specifically, the NSSE participants, as a group, enrolled at the university with significantly higher high school GPAs and ACT scores. As a result, the very small group of NSSE participants may not have been truly representative of the population of first-year students that enrolled in the fall of 2002.

Similarly, the overall sample for this study focused on first-year degree-seeking students enrolled fulltime at the university as freshman in fall 2002. This methodology eliminated international students, part-time students, and those seeking associate's degrees. The sample was also restricted to traditional aged students under the age of 24 further eliminating adult and non-traditional
learners. While an inspection of the NSSE participants indicates that no adult-learners participated in this administration, the overall methodology did intentionally eliminate a significant number of students. Thus, the comparisons between a small subset of students and the larger population should be conducted with caution.

Finally, this study focused on differences related to first-generation status. Tinto (2004), however, reports that a significant number of first-generation students begin their college career at community colleges. As a result a large proportion of first-generation students who might otherwise have been available for this study may not have been tapped as they likely may have enrolled at community colleges in Kentucky rather than at the focal institution.

**Recommendations for Further Research**

Researchers interested in the academic achievement, persistence, and graduation of first-generation students should consider the following recommendations for further study. The current study examined engagement and background characteristics that may predict grades, persistence, and graduation. Future studies, however, might place the focus on factors, whether with the individual or with the environment, that predict premature departure prior to degree completion. Such factors might include family or individual finances, satisfaction with the environment, course registration timing and policies, or faculty feedback on dimensions related to individual students’ fit in the environment to name only a few. Faculty, in particular, might be an untapped resource of information related to early warnings of premature departure.
Further exploration of individual characteristics that signal likelihood for student success and graduation also warrant continued research. Engagement factors that inhibit success or promote early departure should also be explored. These factors might examine the amount of time students spend at the recreation center on campus, the number of clubs or activities in which they are involved, and the number of times they visit the library or log into library resources remotely.

Most research has focused on the student side of the engagement equation. A greater understanding of student behavior is important in predicting outcomes. However, additional research on faculty and staff behaviors that promote or inhibit engagement may be of interest in completing the picture. Kuh and his associates (1991) and Kuh, Schuh, and their associates (2005) have examined this element at the macro level, but further studies at the micro level may help to improve understanding of both sides of the engagement equation. For instance, a greater understanding of faculty behaviors and attitudes toward working with students both inside and outside the classroom may help institutions identify specific activities that faculty use to help students. Likewise, such research may help to identify internal or external barrier that inhibit faculty from pursuing greater engagement opportunities with students. Such information would then be useful in developing faculty training and development programs.

Researchers may also wish to further explore differences in engagement between first-generation and continuing-generation students. An eye toward this line of research may consider the impact of engagement of first-generation
students at community college that leads to increased matriculation to baccalaureate granting institutions. Increased understanding of differing patterns of engagement is necessary for continued development of programs to assist students in being successful.

This study reveals that a first-year measure of engagement appears to be incomplete in predicting GPA, persistence, and graduation. Quite simply, first-year students may not have had the opportunity to take advantage of research projects, informal discussions with faculty, and similar types of educational experiences. These types of opportunities may not present themselves until the student has entered into his or her major course of studies which typically occurs in the second part of the sophomore and the beginning of the junior years. Thus, measures of engagement taken during these time periods may elicit greater significance in predicting graduation and academic achievement at graduation.

Further study could also examine the different ways that first-year students engage compared to sophomores and juniors. There may be a stark difference in the patterns of engagement as first-year issues related to incorporation at the institution associated with peer interaction evolve to greater interest in pursuing opportunities with faculty. This two-pronged approach to understanding engagement may help to clarify the importance of the co-curricular opportunity on the overall success of the student, particularly during the transition phase to college.

The present study examined engagement strictly from a quantitative perspective. Future studies that include a qualitative examination of engagement
as a predictor of academic success and graduation should be conducted. Individual interviews, focus groups, and observations both in and out of the classroom may help administrators and faculty members develop a better understanding of how students engage and the conditions that both promote and inhibit engagement. Qualitative studies may be particularly useful at the institutional level as researchers can examine what is and is not working in very specific instances. Similarly, future studies may examine the risks of over-engagement related to academic struggles and challenges in budgeting time and energy.

Engagement may be an important component in the educational experience, but a greater understanding of why some students choose to engage and some students choose not to engage may also help clarify the dynamics related to student success. While examining student background characteristics related to academic achievement and graduation are common, fewer studies have examined in more detail the characteristics of an engaged or disengaged student. Brint (2008), for example, found that patterns of engagement differ depending upon in which academic college students are enrolled. Similar patterns may emerge when examined according to academic major. Also, GPA as a dependent variable in this study may have been influenced by academic major. Since some majors may be more difficult than others, GPA may be influenced more by course load and major rather than engagement. One potentially significant background characteristic that was absent from the engagement literature was the effect of individual motivation. Engagement itself
may be more of an intervening variable that is influenced more by an individual student's motivation to become involved and to excel in college.

Very few published studies focus on the psychometrics of the NSSE. Additional studies that examine the quality benchmarks such as that of LaNasa, Cabrera, and Trunsgard (2009) may help to clarify measures of engagement. Likewise, few independent analyses of the NSSE psychometrics have been conducted to determine the validity and reliability. Increased research in this area will be important in determining effectiveness of the instrument in assessing engagement and clarify the value of the instrument for other researchers and practitioners. While the NSSE benchmarks have been used in several studies, fewer have utilized the smaller scales developed by Pike (2006). Researchers who have smaller NSSE samples with which to work may benefit from continued development and study of scales as described by Pike.

Further studies could also focus on examining the time-frame in which students, particularly first-generation students, leave the institution. Such studies similar to that by Ishitani (2006) that track the timing of voluntary withdrawal decisions might help institutions develop specific interventions designed to engage students more fully during those critical timeframes.

**Implications for Practice**

Student affairs administrators and faculty should consider the following implications in their work with college students. Results concerning first-generation students should remind administrators and faculty that students are best addressed as individuals and not as collective labels. Assuming that all
first-generation students are predisposed to the same challenges or that all continuing-generation students enjoy the same advantages does not account for individual differences. As point of reference, the present study observed significant differences between first-generation students and their continuing-generation peers in terms of preparation (ACT) and first-year cumulative GPA. However, those differences disappeared at graduation when first-generation students actually graduated with a slightly higher GPA than did continuing-generation students. This was despite no significant difference in engagement measures on either a global measure or any of five different individual dimensions of engagement.

Despite similarities between first-generation and continuing-generation students, differences in educational outcomes were present. First-generation students in this sample, despite similar preparation, exhibited the same trend toward lower rates of persistence and graduation as in other published research. Despite the differences in persistence and graduation rates, however, first-generation status did not have a significant effect on academic achievement, persistence, or graduation in the regression analyses conducted in this study.

Finding that high school GPA and ACT tend to be strong predictors of GPA in college, persistence, and graduation, colleges and universities should consider initiatives on how they might influence academic achievement at the high school level. Instead of simply increasing GPA or ACT requirements for enrollment, universities might develop relationships with high schools that promote greater understanding of developing strong academic skills at the
secondary education levels. Programs that promote college attendance might
target middle school students with this information as a means to encourage
study habits that positively influence high school academic performance.

Just because engagement did not yield significant results in the present
study does not mean institutions or administrators should cease their efforts
toward meaningful interaction with students. Indeed, a wealth of data and
research studies have been conducted that highlight the importance of
engagement in educationally purposeful activities on student success (Pascarella
& Terenzini, 1991, 2005). However, institutional review of the current measures
of engagement may be warranted due to the major differences between this
sample and the national samples.

While the focus of this research was traditional-aged students,
engagement efforts should also reflect the needs of adult learners and non-
traditional students. Increasing numbers of adult learners with competing
priorities means that institutions must also develop programming opportunities
that appeal to older students. For instance, faculty should be encouraged to
engage in research activities during early evening hours in order to make these
opportunities more available to adult learners who may have work obligations
during normal business hours. Likewise, planning co-curricular programs that
engage adult learners, and perhaps their families, with institutional experiences
such as sporting events, family weekends, and so forth may also help adult
learners more fully and successfully integrate with the institution.
Greater collaboration between academic affairs and student affairs is also important. Leadership of both divisions should routinely meet to share relevant information about programs, initiatives, and research that could be helpful to the other. Greater collaboration and intentional planning efforts that include both student affairs and academic affairs professionals should be encouraged. As highlighted in *The Student Learning Imperative* (ACPA, 1996), the greater the collaborative effort between academic affairs and student affairs, the greater the likelihood that students will reap the full potential of benefits of their college experience. Such collaboration may also help staff and faculty develop a better understanding of the whole individual, rather than just the student in the classroom versus the student on the intramural field.

Faculty and student affairs staff must remember that engagement takes on many forms. Engagement is not only the activity inside the classroom and with the professor, nor is it only the activity in the residence hall, the student union, or at the fraternity or sorority house. Instead, engagement is a multifaceted variable that encompasses the totality of the student experience within the college environment. Narrow views by either faculty or student affairs professionals can cause needless competition for resources that result in a detriment to the organization, and the student body, as a whole. Instead, greater collaborative efforts that bring faculty into the rest of the campus environment and student affairs professionals into the classroom may yield a greater impact than the two groups can accomplish separately.
There are also considerations for faculty in student affairs preparation programs. Consistent with the Council for the Advancement of Standards in Higher Education (CAS, 2006), coursework should include subject matter related to program development and assessment. While many programs include coursework on assessment, much of the focus is on the co-curricular environment. This may leave new professionals at a disadvantage in understanding and utilizing the results of instruments similar to the NSSE or other academic-based tools commonly used by institutional research departments. Similarly, while a keen understanding of theory is important, meaningful experiential assignments that provide students with the opportunity to engage with faculty and administrators across disciplines will aid in their overall professional growth. Such assignments may not only teach students about the importance of engagement, but may also provide a real example for both faculty and new student affairs professionals on how to work together.

Faculty in student affairs preparation programs may also utilize this data to prepare their students for the reality of working in higher education. Use of NSSE data, regardless of the exact results, can help young professionals develop an understanding of the faculty perspective and language related to student success. With that knowledge, administrators can continue to inject student affairs perspectives into the faculty dialogue on engagement to develop more collaborative relationships and opportunities. Such a common language might decrease the air of competition for resources and attention that is present on some campuses.
Conclusion

First-generation students tend to be an at-risk population of students for several reasons related to lack of academic and social preparation for college. As a group, they tend to earn lower GPAs, fewer credits in their first year of study, are more likely to withdraw from college and less likely to graduate. According to McMahon (1999), this trend results in decreased opportunities for economic gain for both the individual and for society.

Universities have begun to focus greater attention and effort to helping first-generation students succeed in college. Among these opportunities, institutions have begun to examine the impact of engagement not only on the student body but also in terms of perceived institutional quality. Engagement, as a measure of institutional quality, has been used by state higher education coordinating bodies and media sources as a method to evaluate the effectiveness of colleges and universities. Likewise, engagement has been linked to greater intellectual gains such as problem solving, critical thinking, and subject matter mastery. Engagement has also been linked to improved academic performance, increased persistence, and the likelihood of graduation.

One instrument that has gained recent attention in the assessment of engagement is the National Survey of Student Engagement (NSSE). But questions remain about the use of the NSSE in measuring engagement. The analysis conducted within the present study provides additional evidence for the reliability of the NSSE. Such evidence concerning the psychometric properties including reliability and validity of the instrument in measuring student
engagement is sparse in published studies. The reliability findings in the present study mirror fairly closely those reported by the developers, which adds evidence to support continued use of the instrument.

The findings concerning first-generation students were also of note. First-generation students in this sample were disadvantaged in terms of preparation, persistence, and graduation. However, there were no observed significant differences in engagement between first and continuing-generation students as was expected. Few differences in engagement emerged in this population and tended to favor students-of-color and female students. Despite significant differences in GPA at the end of the first year of college, first-generation students were found to graduate with slightly higher GPAs than continuing-generation students despite no difference in engagement.

Parental and family support and the importance that family members place on a student's education may be a factor in how the student feels about his or her chance to succeed. In this study, only six students reported that their education was of little or no importance to their parents. Instead, overwhelmingly, parents appear to be supportive of their children's educational aspirations and convey those feelings to their students. This finding was consistent with both first-generation and continuing-generation students. Similarly, while first-generation students typically report a lower degree aspiration, there was no significant difference in this study with nearly all students indicating overwhelmingly that they intended to earn at least a bachelor's degree.
Although the present study did not produce the type of results that were expected, the results are nonetheless intriguing. Engagement has been touted as a key variable in helping students succeed. But, at least in this sample, engagement appears to have very little and undetermined effect. Astin (1984) suggests that engagement is a major component of the environment that promotes student behavior. Other researchers (Kuh, Kinzie, Schuh, Whitt, & Associates, 2005; Pascarella & Terenzini, 1979a, 1979b) support the findings that student engagement in educational activities promotes student growth, but that institutions must provide the opportunities for students to become involved.

An early measure of engagement that focuses on academic-related experiences obtained in the first year may be insufficient to understand the dynamics that lead to persisting for another year or early departure. While the academic experience most certainly plays a role, it may not be the most important variable in the persistence equation. Other factors that were not accounted for in the present study such as motivation, socialization with peers, involvement in co-curricular activities, and leadership opportunities may be more important to first-year students in general and to first-generation students in particular.

Student success continues to be an important goal for higher education administrators and faculty. Retention and graduation, on the other hand, are measureable outcomes used by governing bodies and ranking groups to quantify institutional quality and effectiveness. The findings in this study suggest that academic engagement alone is not the only key to predicting academic
achievement, persistence, or graduation. Instead, other factors are also at work that may have greater significance in helping students succeed.
REFERENCES


Purswell, K. E., Yazedjian, A., & Toews, M. L. (2008). Students' intentions and social support as predictors of self-reported academic behaviors: A


Appendix A

First Day Survey

Western Kentucky University
# University Experience Questionnaire Fall 2006

Participation in this survey is voluntary.

1. Please fill in your 9-digit WKU ID number.

<table>
<thead>
<tr>
<th>119x701</th>
<th>120x701</th>
<th>120x564</th>
<th>120x447</th>
<th>121x353</th>
<th>121x331</th>
<th>122x162</th>
<th>122x156</th>
<th>121x132</th>
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</tbody>
</table>

2. What is the highest degree you plan to achieve?
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Professional School

3. The highest level of education obtained by either of your parents:
- Did not graduate high school
- GED
- Bachelor's degree
- 2 year college degree
- 4 year college degree
- Graduate/Professional degree

4. How do you plan to finance your education? (Mark all that apply)
- Full-time job during college
- Grants and/or loans
- Military resources
- Parents or family
- Part-time job off campus
- Savings
- Scholarships
- Spouse
- Other

5. What are your reasons for going to college? (Choose the 3 most important)
- Become more cultured
- Become more well-rounded
- Contribute to society
- Find a spouse
- Family influence
- Get away from home
- Have better job choices
- Make more money
- Make new friends
- Prepare for graduate/professional school
- Uncertain

6. Why did you choose WKU? (Mark all that apply)
- Academic reputation
- Affordability
- Athletic reputation
- Attractive campus
- Attended a campus event
- Faculty reputation as teachers
- Family influence
- Financial assistance
- Friendly faculty and staff
- Fun college experience
- Good website
- Graduates get good jobs
- My friends were coming to WKU
- Party reputation
- Safety
- Scholarship/Financial Aid package
- Size of university
- Strong in my Academic Program
- Wanted to live near home
- Other

7. To how many other colleges/universities did you apply?
- None
- One
- Two
- Three
- Four or more

8. The racial composition of your high school was:
- Completely non-white
- Mostly non-white
- Half white
- Mostly white
- Completely white

9. How important is it to your family that you graduate from college?
- Of utmost importance
- Very important
- Neutral
- Not very important
- Not at all important

10. For students living in Residence Halls: Other than school breaks, (e.g., Fall Break, Thanksgiving) how many weekdays do you plan to go home each month?
- 0 - 1 time
- 2 times
- 3 times
- Every weekend

11. How many hours do you expect to work in a job per week?
- None
- 1-10 hours
- 11-20 hours
- 21-30 hours
- 31-40 hours
- 41+ hours

12. How many hours per week do you expect to study outside class?
- 0-2 hours
- 3-5 hours
- 6-8 hours
- 9-11 hours
- 12-14 hours
- 15 or more hours

13. My degree plan is:
- Take a few courses at WKU
- Transfer to another college
- Complete a 2-year degree at WKU
- Complete a 4-year degree at WKU
- Complete a graduate degree at WKU
- Graduate of Professional degree elsewhere

14. How many years do you expect to take to earn your undergraduate degree?
- N/A
- 2 years or less
- 3 years or less
- 4 years
- 5 years or more
- More than 6 years

15. In the past year, how often have you done volunteer work or community service?
- Very often
- Often
- Sometimes
- Very little
- Never

16. In the next year, how often do you plan to participate in volunteer or community service?
- Very often
- Often
- Sometimes
- Very little
- Never

17. How likely are you to participate in a campus club or organization?
- Very likely
- Likely
- Somewhat likely
- Not likely
- Unsure

18. Why did you choose to take the University Experience course? (Select only one)
- Advisor recommended it
- For an easy "A"
- Parents influence
- Thought it was required
- Thought it would be helpful
- Other

Survey continues on next page...
What is your level of personal concern about the following areas:

19. Academic & Vocational Areas
   a. Reading skills
   b. Study skills
   c. Time management skills
   d. Procrastination
   e. Math anxiety
   f. Test-taking strategies
   g. Test anxiety
   h. Adjusting to campus
   i. Selecting a major
   j. Career choice issues
   k. Job search strategies

20. Personal Areas
   a. Self-confidence
   b. Dating
   c. Becoming more assertive
   d. Motivation to succeed in school
   e. Loneliness
   f. Fear of failure
   g. Anxiety & nervousness
   h. Anger management
   i. Stress-related headaches or stomachaches
   j. Discomfort in social situations
   k. My thinking
   l. My use of drugs other than alcohol
   m. Weight control
   n. Depression
   o. Problems with parents
   p. Managing multiple responsibilities (e.g. family, job, etc.)
   q. Addressing concerns about my sexual identity
   r. Dealing with being the first in my family to go to college

21. Campus Issue Areas
   a. Dealing with conflicts over values & morals
   b. Dealing with sexual harassment issues
   c. Coping with prejudice due to racial/ethnic background
   d. Coping with prejudice due to sexual orientation
   e. Coping with prejudice due to religious beliefs
   f. Developing a racial/ethnic identity
   g. Drinking on campus
   h. Drug use on campus

22. Compared to the average student entering college, rate yourself on the following:

   - Average
   - Above Average
   - Below Average
   - Would you like to discuss in class?

23. How comfortable are you:
   a. Working effectively in a group
   b. Talking with faculty members
   c. Asking for assistance from other students
   d. Making friends
   e. Living away from home for the first time

Thank you for completing this survey. Please write any comments you may have on the back of this sheet.
Appendix B

National Survey of Student Engagement
# The College Student Report 2003
## National Survey of Student Engagement

1. In your experience at your institution during the current school year, about how often have you done each of the following? Mark your answers in the boxes. Examples: \( \text{X} \) or \( \text{O} \)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
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<tbody>
<tr>
<td>a. Asked questions in class or contributed to class discussions</td>
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<td>b. Made a class presentation</td>
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<tr>
<td>c. Prepared two or more drafts of a paper or assignment before turning it in</td>
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<tr>
<td>d. Worked on a paper or project that required integrating ideas or information from various sources</td>
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<td>e. Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments</td>
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<td>f. Came to class without completing readings or assignments</td>
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<td>g. Worked with other students on projects during class</td>
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<td>h. Worked with classmates outside of class to prepare class assignments</td>
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<tr>
<td>i. Put together ideas or concepts from different courses when completing assignments or during class discussions</td>
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<td>j. Tended or taught other students (paid or voluntary)</td>
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<td>k. Participated in a community-based project as part of a regular course</td>
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<td>l. Used an electronic medium (list-serv, chat group, Internet, etc.) to discuss or complete an assignment</td>
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<td>m. Used e-mail to communicate with an instructor</td>
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<tr>
<td>n. Discussed grades or assignments with an instructor</td>
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<tr>
<td>o. Talked about career plans with a faculty member or advisor</td>
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<td>p. Discussed ideas from your readings or classes with faculty members outside of class</td>
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<td>q. Received prompt feedback from faculty on your academic performance (written or oral)</td>
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<td>r. Worked harder than you thought you could to meet an instructor's standards or expectations</td>
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<td>s. Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)</td>
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<tr>
<td>t. Discussed ideas from your readings or classes with others outside of class (students, family members, coworkers, etc.)</td>
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<tr>
<td>u. Had serious conversations with students of a different race or ethnicity than your own</td>
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<tr>
<td>v. Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values</td>
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</table>

2. During the current school year, how much has your coursework emphasized the following mental activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form</td>
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<tr>
<td>b. Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components</td>
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<tr>
<td>c. Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships</td>
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<td>d. Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions</td>
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<tr>
<td>e. Applying theories or concepts to practical problems or in new situations</td>
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</table>
3 Mark the box that best represents the extent to
which your examinations during the current
school year have challenged you to do your
best work.

<table>
<thead>
<tr>
<th>Very little</th>
<th>Very much</th>
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<tbody>
<tr>
<td>☐ 1 2 3 4 5 6 7</td>
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</tbody>
</table>

4 During the current school year, about how much reading and writing have you done?

<table>
<thead>
<tr>
<th>Between 1 and 4</th>
<th>Between 5 and 10</th>
<th>Between 11 and 20</th>
<th>More than 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

- a. Number of assigned textbooks, books, or book-length packs of course readings
- b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment
- c. Number of written papers or reports of 20 pages or more
- d. Number of written papers or reports between 5 and 19 pages
- e. Number of written papers or reports of fewer than 5 pages

5 In a typical week, how many homework problem sets do you complete?

<table>
<thead>
<tr>
<th>None</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
<th>More than 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
</tr>
</tbody>
</table>

- a. Number of problem sets that take you more than an hour to complete
- b. Number of problem sets that take you less than an hour to complete

6 In a typical week, how many homework problems take you more than 15 minutes each to complete?

<table>
<thead>
<tr>
<th>None</th>
<th>1-3</th>
<th>4-6</th>
<th>7-10</th>
<th>More than 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
</tr>
</tbody>
</table>

- a. Number of problems that take you more than an hour to complete
- b. Number of problems that take you less than an hour to complete

7 Which of the following have you done or do you plan to do before you graduate from your institution?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐</td>
<td>☐ ☐</td>
<td>☐ ☐</td>
</tr>
</tbody>
</table>

- a. Practicum, internship, field experience, co-op experience, or clinical assignment
- b. Community service or volunteer work
- c. Participate in a learning community or some other formal program where groups of students take two or more classes together
- d. Work on a research project with a faculty member outside of course or program requirements
- e. Foreign language coursework
- f. Study abroad
- g. Independent study or self-designed major
- h. Culminating senior experience (comprehensive exam, capstone course, thesis, project, etc.)

8 Mark the box that best represents the quality of your relationships with people at your institution.

- a. Other Students
- b. Faculty Members
- c. Administrative Personnel and Offices

<table>
<thead>
<tr>
<th>Friendly, Supportive, Sense of Belonging</th>
<th>Available, Helpful, Sympathetic</th>
<th>Helpful, Considerate, Flexible</th>
<th>Unfriendly, Unsupportive, Sense of Alienation</th>
<th>Unavailable, Unhelpful, Unsympathetic</th>
<th>Unhelpful, Inconsiderate, Rigid</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
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<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>Question</td>
<td>Response Options</td>
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</tr>
<tr>
<td>About how many hours do you spend in a typical 7-day week doing each of the following?</td>
<td>0</td>
<td>1-5</td>
<td>6-10</td>
<td>11-15</td>
<td>16-20</td>
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<tr>
<td># of hours per week</td>
<td></td>
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<tr>
<td>a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)</td>
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<tr>
<td>b. Working for pay on campus</td>
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<tr>
<td>c. Working for pay off campus</td>
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<tr>
<td>d. Participating in co-curricular activities (organizations, campus publications, student government, social fraternity or sorority, intercollegiate or intramural sports, etc.)</td>
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<tr>
<td>e. Relaxing and socializing (watching TV, partying, exercising, etc.)</td>
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<tr>
<td>f. Providing care for dependents living with you (parents, children, spouse, etc.)</td>
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<tr>
<td>g. Commuting to class (driving, walking, etc.)</td>
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<tr>
<td>To what extent does your institution emphasize each of the following?</td>
<td>Very much</td>
<td>Quite a bit</td>
<td>Some</td>
<td>Very little</td>
<td></td>
</tr>
<tr>
<td>a. Spending significant amounts of time studying and on academic work</td>
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<tr>
<td>b. Providing the support you need to help you succeed academically</td>
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<tr>
<td>c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds</td>
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<tr>
<td>d. Helping you cope with your non-academic responsibilities (work, family, etc.)</td>
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<tr>
<td>e. Providing the support you need to thrive socially</td>
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<td>f. Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)</td>
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<tr>
<td>g. Using computers in academic work</td>
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<tr>
<td>To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?</td>
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<tr>
<td>a. Acquiring a broad general education</td>
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<tr>
<td>b. Acquiring job or work-related knowledge and skills</td>
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<td>c. Writing clearly and effectively</td>
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<tr>
<td>d. Speaking clearly and effectively</td>
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<tr>
<td>e. Thinking critically and analytically</td>
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<td>f. Analyzing quantitative problems</td>
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<td>g. Using computing and information technology</td>
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<td>h. Working effectively with others</td>
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<tr>
<td>i. Voting in local, state, or national elections</td>
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<td>j. Learning effectively on your own</td>
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<tr>
<td>k. Understanding yourself</td>
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<tr>
<td>l. Understanding people of other racial and ethnic backgrounds</td>
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<tr>
<td>m. Solving complex real-world problems</td>
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<td>n. Developing a personal code of values and ethics</td>
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<tr>
<td>o. Contributing to the welfare of your community</td>
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<tr>
<td>Overall, how would you evaluate the quality of academic advising you have received at your institution?</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>How would you evaluate your entire educational experience at this institution?</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>If you could start over again, would you go to the same institution you are now attending?</td>
<td>Definitely yes</td>
<td>Probably yes</td>
<td>Probably no</td>
<td>Definitely no</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Response Options</td>
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<tr>
<td><strong>15</strong> Write in your year of birth:</td>
<td>19</td>
<td></td>
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<tr>
<td><strong>16</strong> Your sex</td>
<td>Male, Female</td>
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<tr>
<td><strong>17</strong> Are you an international student or foreign national?</td>
<td>Yes, No</td>
<td></td>
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</tr>
<tr>
<td><strong>18</strong> Are you of Hispanic, Latino, or Spanish origin?</td>
<td>Yes, No</td>
<td></td>
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</tr>
<tr>
<td><strong>19</strong> What is your racial or ethnic identification? (Mark all that apply.)</td>
<td>American Indian or other Native American, Asian American or Pacific Islander, Black or African American, White, Other: Specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>20</strong> What is your current classification in college?</td>
<td>Freshman/first-year, Senior, Sophomore, Junior, Unclassified</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>21</strong> Did you begin college at your current institution or elsewhere?</td>
<td>Started here, Started elsewhere</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>22</strong> Since high school, which of the following types of schools have you attended other than the one you are attending now? (Mark all that apply.)</td>
<td>Vocational-technical school, Community or junior college, 4-year college other than this one, None, Other: Specify</td>
<td></td>
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</tr>
<tr>
<td><strong>23</strong> Thinking about this current academic term, how would you characterize your enrollment?</td>
<td>Full-time, Less than full-time</td>
<td></td>
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</tr>
<tr>
<td><strong>24</strong> Are you a member of a social fraternity or sorority?</td>
<td>Yes, No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>25</strong> Are you a student-athlete on a team sponsored by your institution's athletics department?</td>
<td>Yes, No</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>26</strong> What have most of your grades been up to now at this institution?</td>
<td>A, B-, C+, A-, B+, C, C+, C+ or lower, B</td>
<td></td>
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</tr>
<tr>
<td><strong>27</strong> Which of the following best describes where you are living now while attending college?</td>
<td>Dormitory or other campus housing (not fraternity/sorority house), Residence (house, apartment, etc.) within walking distance of the institution, Residence (house, apartment, etc.) within driving distance, Fraternity or sorority house</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>28</strong> What is the highest level of education that your parent(s) completed? (Mark one box per column.)</td>
<td>Father: Did not finish high school, Graduated from high school, Attended college but did not complete degree, Completed an Associate's degree (A.A., A.S., etc.), Completed a Bachelor's degree (B.A., B.S., etc.), Completed a Master's degree (M.A., M.S., etc.), Completed a Doctoral degree (Ph.D., J.D., M.D., etc.), Mother: Did not finish high school, Graduated from high school, Attended college but did not complete degree, Completed an Associate's degree (A.A., A.S., etc.), Completed a Bachelor's degree (B.A., B.S., etc.), Completed a Master's degree (M.A., M.S., etc.), Completed a Doctoral degree (Ph.D., J.D., M.D., etc.)</td>
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</tr>
<tr>
<td><strong>29</strong> Please print your primary major, or your expected primary major.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>30</strong> If applicable, please print your second major or your expected second major (not minor, concentration, etc.).</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**THANKS FOR SHARING YOUR VIEWS!**

After completing this form, please put it in the enclosed postage-paid envelope and deposit it in any U.S. Postal Service mailbox. Questions or comments? Contact the National Survey of Student Engagement, Indiana University, Ashton Akey Hall, 1213 East Seventh Street, Bloomington IN 47405 or nss@indiana.edu or www.iub.edu/~nss. Copyright © 2002 Indiana University.
CURRICULUM VITAE AND ADMINISTRATIVE RESUME

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           University of Wisconsin, Oshkosh

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           Eastern Michigan University

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           Academic Achievement and Persistence of First-Year
           Students

PROFESSIONAL EXPERIENCE: Assistant Dean of Students
                          University of Wisconsin, Oshkosh
                          Oshkosh, Wisconsin

                          Director, Residence Life and Housing
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                          Western Kentucky University
                          Bowling Green, Kentucky

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                          Valparaiso University
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                          Assistant Hall Director
                          Eastern Michigan University
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NATIONAL MEETING PRESENTATIONS:


INVITED PRESENTATIONS AND WORKSHOPS:


*Exercising Ethical Leadership.* IU Southeast Student Leadership Conference 2008.

*Rethinking Student Affairs Leadership.* Workshop facilitated for executive level administrators, Western Kentucky University.