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College Academic Engagement and First-Year Students' Intention to Persist

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College Academic Engagement and First-Year Students' Intention to Persist

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Abstract

To remain globally competitive, the United States continues to set forth federal initiatives to promote college retention, persistence, and graduation. While employers seek graduates who demonstrate strong collaboration, communication, and time management skills, research reveals the level of academic engagement on college campuses is low. Although several factors contribute to first-year student persistence, researchers suggest that academically engaged students who participate in educationally purposeful activities in college are more likely to intend to persist than disengaged students.

Combining national data from the Beginning College Survey of Student Engagement (BCSSE), National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module, the purpose of this quantitative, correlational study is to understand the extent to which academic engagement factors— specifically student-faculty interactions, learning strategies, and collaborative learning— influence college students' intention to persist.

Utilizing Tinto's (1975) Interactionist Theory of Student Departure and Astin's (1984) Theory of Student Involvement as theoretical frameworks, the study examines differences in population means for academic engagement variables based on demographic characteristics, and finds associations between intention to persist and various control variables. Further analysis shares insight on the relationship (or lack thereof) between intention to persist and academic engagement indicators, and provides recommendations on how institutions can play a key role in student success.

Keywords: college, academic engagement, faculty interactions, collaborative learning, study strategies, persistence

Dedication

To my late father,

Patrick Yuennong Ng,

for instilling in me the love of learning

and the power of hard work.

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Chapter 1

Introduction

With the United States continuing to trail behind eleven other countries in its degree attainment for college-age adults (OECD, 2016), the federal government has created initiatives to promote college retention, persistence, and graduation (White House, 2015). However, according to the National Student Clearinghouse Report (2016), six out of ten first-time, full-time undergraduate students who enroll at four-year degree granting institutions graduate in six years or less. Similarly, the national college retention rate—that is, the percentage of students returning the following fall—among first-time, full-time degree-seeking students who enrolled at four-year degree-granting institutions is 74%, with a range of 62% of these students at least selective institutions to 96% at highly selective institutions (IPEDS, 2016).

While college retention rates measure the percentage of first-time students returning the following fall, college persistence refers to student behaviors that lead them to continue toward the goal of degree completion (Arnold, 1999; Hagedorn, 2012). Both college retention and persistence are complex and significant issues that affect students, institutions, and society (Brunsden, 2000; Cabrera & Hengstler, 1990; Tinto, 2010). Researchers have found correlations between students who do not have a college degree and lower earnings over their lifetimes than college degree earners due to the fewer opportunities and career options afforded them (Vandenbroucke, 2015). In addition, studies show associations between students who have not graduated from college and lower self-esteem, less parenting skills, and poorer overall health and lifestyle choices (Watts, 2009). For colleges and universities, retention and graduation rates are key indicators of institutional effectiveness, and increasing graduation rates can improve institutional reputation and student satisfaction (DeBeard, 2004; National Survey of Student

Engagement, 2015). Conversely, student attrition decreases tuition revenue and affects financial budgeting and strategic planning (Raisman, 2013). There are also additional societal benefits to students holding a college degree, including decreased dependence on public assistance programs, increased federal revenue from taxes, stronger civic participation and entrepreneurship, and increased use of technology (Watts, 2009).

Although several factors contribute to first-year student persistence—including student characteristics, academic preparedness, psychological components, socioeconomic status, financial stress, and institutional elements (Bean, 1982; Braxton, Hirschy, & McClendon, 2004; Sparkman, Maulding, & Roberts, 2012; Styron, 2010; Tinto, 2010)—researchers have suggested that academically engaged students who participate in educationally purposeful activities are more likely to persist in and complete college than disengaged students (Christenson, Reschly, & Wylie, 2012; Kuh, 2007; Soria & Stebleton, 2012; Tinto, 2004, 2010; Trowler, 2010). Studies have also shown that how well a student integrates into the college environment, both academically and socially, can significantly affect their outcomes, including their persistence (Morrow & Ackerman, 2012; NSSE, 2017; Tinto, 2010).

Researchers define and measure academic engagement as the frequency with which students interact with faculty, contribute to course discussions, engage with peer study groups or tutoring, and exhibit effective study skills (Estell & Purdue, 2013; Kuh, 2007; Soria & Stebleton, 2012). Several studies have found strong correlations between positive student-faculty interactions, academic performance, and persistence (Kim & Sax, 2009; Kuh & Hu, 2001). Academic study skills, such as effective test preparation, strong time management skills, and efficient study habits, have also been found to be essential predictors of student success (Robins et al., 2004; Tuckman & Kennedy, 2011) to improve academic performance and persistence

(Hoops et al., 2015). Studies have also found that collaborative learning and peer tutoring can improve students' persistence and their academic outcomes (Chickering, 2006; Kuh, 2008).

Problem Statement

Research suggests that a lack of academic engagement can negatively influence the students' college experience, from their dissatisfaction to lower rates of persistence (Estell & Purdue, 2013; Kuh, 2007). Challenges and deficiencies in academic behaviors, collaborative learning, and learning strategies are amplified for first-generation students, underrepresented minority students, and students from lower socioeconomic backgrounds (Soria & Stebleton, 2012). Some of the negative outcomes of low academic engagement, specifically for young adults and at-risk students, include delinquency, aggression, and risky behaviors (Estell & Perdue, 2013). Institutions have addressed persistence and graduation rates through increased efforts towards academic engagement by promoting programs and courses that improve and increase learning strategies, peer tutoring, and student-faculty interactions (Cho & Karp, 2012; Robbins et al., 2004). However, studies have continued to report concerns over academic engagement on college campuses.

The National Student Satisfaction and Priorities Report (2014), conducted by the education firm Ruffalo Noel Levitz, examined the attitudes of over 600,000 college students nationwide. The report found that of the respondents, more than half (51%) of the undergraduate students enrolled in four-year institutions expressed dissatisfaction with faculty, including their lack of availability and untimely feedback. Students also conveyed disappointment with the low frequency of faculty interactions inside and outside of the classroom (Ruffalo Noel Levitz, 2014). Additionally, the first-year Higher Education Research Institute (2014) survey suggested that more than one-third of students have difficulty establishing study skills and adjusting to the

academic rigors of college (Eagan et al., 2014). Almost half of college students reported difficulty managing their time and spent less time studying or doing homework than previous cohorts (Babcock & Marks, 2010). Moreover, according to a 2016 Workforce-Skills Preparedness Report of over 64,000 business managers, 60% claim that new graduates lack critical thinking and problem-solving skills (Payscale, 2016). Similarly, 46% of supervisors suggest that new graduates need to improve their communication abilities, while 36% recommend a vast improvement in workforce teamwork skills. While institutions strive to improve their academic engagement and persistence rates, more research and assessment is required to better understand the extent to which academic engagement—such as student-faculty interactions, learning strategies, and collaborative learning—can influence student success.

Purpose

This study aims to expand existing knowledge pertaining to academic engagement and first-year student persistence, specifically as it relates to student-faculty interactions, learning strategies, and collaborative learning. Combining national data from the Beginning College Survey of Student Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module, the purpose of this study is to determine the extent to which academic engagement factors—specifically student-faculty interactions, learning strategies, and collaborative learning—influence college students' intention to persist at four-year institutions. Several studies have found that such an intention to persist is a significant predictor of actual persistence (Cabrera et al., 1993), and it has been used as an outcome variable in empirical research (Bean, 1982; Nora & Castaneda, 1992; Okun et al., 1996).

Combining and analyzing student information from BCSSE, NSSE, and FYE reports provide a comprehensive set of independent variables associated with academic engagement that

can help to provide an in-depth understanding of first-year students' persistence at four-year institutions. The BCSSE scales of student engagement provide significant control and demographic variables and support the rationale for my examination of academic engagement factors and persistence. The FYE module provides a clear outcome variable: intention to persist. For the purpose of this study, my focus in examining academic engagement will be on three of its main elements: (a) student-faculty interactions inside and outside of the classroom, (b) learning strategies and study skills, and (c) collaborative learning or peer tutoring.

Research Questions

To better understand the extent to which the academic engagement factors of student-faculty interactions, learning strategies, and collaborative learning influence first-year students' persistence at four-year institutions, two questions guide the study:

1. What are the levels of academic engagement and distribution of intention to persist for first-year college students at four-year institutions?
2. Controlling for all other factors, to what extent do academic engagement factors—specifically, student-faculty interactions, learning strategies, and collaborative learning— affect first-year students' intention to persist?

Defining Academic Engagement

Academic engagement refers to the observable behaviors that students engage in to become academically integrated into the college environment (Estell & Purdue, 2013; Fredericks et al., 2004). Academically engaged students report high interest in coursework, productive study habits, and strong time management skills (Astin, 1984). Students who are academically engaged also tend to seek faculty guidance and support actively and frequently interact with academic advisors and study groups (Flynn, 2014).

Academic engagement is defined in three ways (Fredericks et al., 2004). First, behavioral engagement focuses on the concept of participation, including involvement in academic and social experiences that are imperative to achieving positive academic outcomes (Karweit, 1989). Behavioral engagement includes involvement in academic tasks regarding persistence, effort, attention, and participation in classroom discussions (Birch & Ladd, 1997; Skinner & Belmont, 1993). Second, emotional engagement reflects students' attitudes and motivations towards faculty, classmates, and coursework (Epstein & McPartland, 1976). Finally, cognitive engagement encompasses the investment and commitment of devoting time and effort to mastering difficult academic tasks and skills (Zimmerman, Boekarts, Pintrich, & Zeidner, 2000). Researchers examining cognitive engagement have focused on student learning strategies, self-regulation, and use of metacognitive skills to accomplish tasks (Newmann, 1992; Pintrich & De Groot, 1992).

The multifaceted nature of engagement, meanwhile, assumes variability in intensity, duration, and malleability (Fredericks et al., 2004). The more students are academically engaged in "educationally purposeful activities, the more likely they are to persist through college" (Kuh, 2007, p. 1). The concept of educationally purposeful activities, meanwhile, stems from a combination of student practices that are positively related to the desired outcomes of academic engagement or activities inside and outside of the classroom that contribute to positive outcomes and personal development (Hu, 2011; Pascarella & Terenzini, 2005). Educationally purposeful activities include students' "level of involvement, quality of effort, the amount of energy, and time on task [that] students devote" to their academic performance and coursework (Grabowski & Sessa, 2014; Kuh et al., 2008, p. 542; Pascarella & Terenzini, 2005).

Academic educationally purposeful activities include asking questions in class and

contributing to discussions, explaining course material to classmates, group study, and applying study skills strategies. Study skills strategies include identifying the main topics in reading assignments, reviewing notes after class, and summarizing concepts from class lectures or supplemental materials (Grabowski & Sessa, 2014; Kuh et al., 2008; Pascarella & Terenzini, 2005).

Measuring Academic Engagement

In recent research, college administrators continue to pursue interventions which increase persistence rates by addressing predictors of academic success and assessing levels of student engagement. As institutional accountability continues to be a prominent issue in higher education, meanwhile, policymakers also seek valid assessment tools to examine student outcomes and college effectiveness (Campbell & Cabrera, 2011). One such tool, The Beginning College Survey of Student Engagement (BCSSE), collects information regarding college students' high school experiences, including their academic and co-curricular activities and their expectations for engagement in college. The BCSSE was designed to align closely with the administration of the National Survey of Student Engagement (NSSE), which is conducted at the end of the first year of college to provide a deeper understanding of student engagement. The BCSSE asks questions regarding students' academic and social engagement in high school and expectations of their involvement in educationally purposeful college activities.

The National Survey of Student Engagement (NSSE) was presented by The Pew Charitable Trusts in 1998 as a comprehensive, alternative assessment to such "reputation- and resource-based ranking" services as *U.S. News & World Report* (Lerer & Talley, 2010, p. 355). Kuh et al. (2009) created the NSSE to measure the extent to which students participate in educationally engaging practices, which can then be used to infer institutional quality. Rooted in

educational theory that includes Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education," the rationale behind the NSSE explains that intentional classroom activities and specific peer and faculty interactions lead to improved student outcomes and institutional effectiveness (Pascarella, Seifert, & Blaich, 2010). The research suggests that there is a correlation between students' levels of participation, their academic engagement, and the quality of education that they receive (Kuh, 2009; NSSE, 2015). The NSSE defines student engagement in two ways. First, it provides a measurement of the time and effort that a student devotes toward improving his or her academic performance. Second, it gauges the students' perceptions of their institution's investment in campus resources.

Institutions can also opt to append various topical modules to the administration of the National Survey of Student Engagement (NSSE). The First Year Experience (FYE) module, in particular, includes a short set of questions adapted from the Beginning College Survey of Student Engagement (BCSSE) and is designed specifically for first-year students. Items on the FYE module include questions regarding "academic perseverance, help-seeking behaviors, and institutional commitment" (NSSE, n.d.), including a variable that measures the student's intention to persist at the institution. Of the 725 institutions that participated in the 2017 NSSE, 24% (*n*=175) opted to append the FYE module to their survey. Of these 175 institutions, 60% are privately controlled, as categorized by their Carnegie classification.

Several researchers have utilized the BCSSE, NSSE, and other academic engagement scales to find connections between student engagement and academic outcomes, including first-year students' persistence (Astin, 1993; Berger & Milem, 1999; Braxton et al., 2004; Hu & Kuh, 2002; Kuh, 2007; Pascarella & Terenzini, 2005). Several studies have also utilized the NSSE to provide evidence of a positive relationship between student engagement and college persistence

(Bonet & Walters, 2016; Hu, 2011; Hu & Kuh, 2002; Jones, 2013; Kuh et al., 2008). When controlling for demographic characteristics, other college experiences, academic achievement, and financial factors, Kuh et al. (2008) found a significant, positive relationship between student engagement and persistence.

Significance

Academic progress and skills developed in students' first-years can lay the foundation for success throughout college (Braxton, Hirschy, & McClendon, 2004; Pascarella & Terenzini, 2005). Examining student departures after their first year is important because most students drop out of college at the end of their freshman year (Kuh et al., 2008). Since first-year persistence rates can vary across colleges depending on institutional selectivity, studies that focus on specific academic engagement predictors can provide practical and effective strategies and interventions to improve first-year students' persistence.

Academic engagement is a significant topic to explore because academic behaviors are "malleable" and, therefore, policymakers, administrators, and educators can provide targeted interventions designed to focus on developing students' skills and minimizing student departure (Estell & Perdue, 2013, p.325; Fredericks et al., 2004). A study that profoundly explores academic engagement factors, including student-faculty interactions, learning strategies, and collaborative learning, could influence institutional policy and provide evidence of the need to shift financial and personnel resources toward implementing and improving academic support programs. Furthermore, the study could provide additional evidence to encourage faculty and administrators to apply collaborative learning models and methods inside and outside of classroom environments to improve first-year students' persistence.

As institutions continue to seek effective interventions to increase their persistence rates,

Kuh (2009) suggests that students who are more academically engaged in their college experiences are more likely to be retained. Kuh (2003) found that student engagement is determined both by the energy and time that students spend on educationally purposeful activities and by the investment that institutions make in effective educational practices. However, studies conducted on academic engagement primarily focus on adolescents rather than college-age students (Estell & Perdue, 2013), and many of the studies that have sought to find relationships between academic engagement and college persistence have yielded mixed results (Braxton et al., 2004; Kuh, 2007; Tinto, 2004).

Despite institutional efforts to measure and assess student engagement through large-scale surveys, there are few studies that combine the Beginning College Survey of Student Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module to determine the extent to which specific academic engagement factors influence academic outcomes, mainly first-year students' intention to persist (Campbell & Cabrera, 2011; Carini, Kuh, & Klein, 2006; Hu, 2011; Pascarella, Seifer, & Blaich, 2010; Tinto, 2010). This study is unique because it draws upon national data and student-level records from the BCSSE, NSSE, and FYE module to determine whether first-year student scores pertaining to academic engagement are correlated with intention to persist from the first to the second year. Prior research that has used the NSSE has not combined such an analysis with the BCSSE, which could provide a deeper understanding of the predictors of first-year student persistence. Furthermore, there is a gap in the research for one of the major predictors of college persistence in NSSE research: the student's level of financial stress. With the addition of financial stress variables from the BCSSE, we can gain a clearer understanding of the factors related to first-year students' persistence.

Summary

As college persistence and retention continue to be a national priority, studies that focus on understanding predictors of student success are significant and timely. While employers seek graduates who demonstrate strong collaboration, communication, and time management skills, research reveals that the level of academic engagement on college campuses is low (Babcock & Marks, 2010; HERI, 2014; Mancuso et al., 2010; Payscale, 2016). Since academic behaviors are malleable, however, educators and administrators can provide targeted interventions that focus on developing skills and increasing student persistence (Estell & Perdue, 2013; Fredericks et al., 2004)

A study that more thoroughly explores academic engagement factors could contribute to the limited research on this topic, influence institutional policy, and improve academic support programs. To better understand the relationship between academic engagement factors and college persistence, this study's aim is to examine student levels of academic engagement—specifically, student-faculty interactions, learning strategies, and collaborative learning—using national data gathered from the Beginning College Survey of Student Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module. This study is unique because previous studies have yet to combine all three datasets to examine the relationship between academic engagement factors and first-year students' intention to persist.

The dissertation is divided into five chapters. In Chapter 1, I provide an introduction to the study, including the problem statement, research questions, and an explanation of the significance of the study. Chapter 2 provides background theories and a conceptual framework outlining college student persistence and academic engagement that ground my study. Chapter 3

provides a clear outline of my research design and methodology, including the population and sample of the study, the instruments used for data collection, its data analysis procedures, and its limitations. Chapter 4 highlights the salient findings of my study. Finally, Chapter 5 provides a conclusion to my study, implications, and recommendations for future research.

Chapter 2

Literature Review

To understand the relationship between college academic engagement and first-year students' persistence, this chapter focuses on examining literature related to this topic and providing a conceptual framework. First, I identify how academic engagement and persistence are defined and theorized within the field of higher education. Second, I explain the significant variables and predictors in the prior literature that are associated with first-year college persistence. Third, I examine academic engagement by identifying the factors, approaches, and methods used to develop a conceptual framework for this study. Finally, I synthesize existing literature that attempts to explain the relationship between elements of academic engagement and student outcomes, specifically students' persistence.

Theories of College Engagement and Persistence

Over the past four decades, researchers have tried to provide further insights into what Braxton et al. (2004) described as the "student departure puzzle" (p. 62). Researchers have found that several factors contribute to first-year students' persistence, including student characteristics, academic preparedness, psychological factors, socioeconomic status, financial stress, social and academic integration, and institutional factors (Astin, 1975; Bean, 1983; Braxton, Hirschy, & McClendon, 2004; Sparkman, Maulding, & Roberts, 2012; Styron, 2010; Tinto, 2010). To better understand academic engagement and first-year students' persistence, I used two critical theories to ground my study: Tinto's (1975) Interactionist Theory of Student Departure and Astin's (1984) Theory of Student Involvement.

Tinto's Interactionist Theory of Student Departure

Influenced by Durkheim's (1951) theory of suicide and Spady's (1971) work on factors

related to college student persistence, Tinto (1975) created his Interactionist Theory of Student Departure to include three main dimensions that influence student departure and persistence: pre-college characteristics, student commitments and goals, and institutional experiences. Within each dimension, Tinto (1975) explained, there are specific attributes and measurements of student behavior before and throughout the college experience. Pre-college characteristics include such attributes as family background, socioeconomic status, demographic factors, high school achievement, and student dispositions. These pre-college attributes can be measured using the highest level of parental education attained, gender, race, motivation, self-efficacy, and high school grade point average (Tinto, 1975). Goals and commitments include such attributes as intentions and aspirations, which are measured by the level of dedication to attaining educational goals in the institution (Braxton et al., 2004). Finally, institutional experiences include the attributes of college academic performance, including interactions with faculty, staff, and peer groups. Tinto (1993) measured the outcomes of these attributes using grade point average, the frequency of interactions with staff and faculty inside and outside of the classroom, and the frequency of and satisfaction with social experiences, extracurricular activities, and outside commitments.

In addition to examining student attributes, Tinto (1993) identified two main constructs—academic and social integration—that play a substantial role in student satisfaction and in whether or not a student becomes acclimated to the institution. Tinto (1975) suggested that "lack of integration into the social system of the college will result in low commitment to the institution and increase the probability that individuals will drop out" (p. 37). Tinto (1975) and Braxton et al. (2000) defined academic integration as the extent to which a student is performing well academically as measured through grade point average, the estimate of the degree to which

a student feels s/he is developing academically and intellectually, and the student's perception of the faculty's role in the student's well being (Braxton & Brier, 1989; Cabrera, Casteneda, Nora, & Hengstler, 1992; Pascarella & Terenzini, 1983; Tinto, 2010). Social integration, meanwhile, is determined by measuring the student's level of psychological and social comfort within his/her institution, participation in co-curricular and extracurricular activities, and interactions with peers. Tinto (1993) concluded that students who are more academically or socially integrated into the institutional environment are more likely to stay, or be retained, in college.

Because Tinto's (1975) model stresses the significance of academic and social integration to students' persistence, it is important to distinguish between academic integration and academic engagement: "integration… and engagement are not identical" (Tinto, 2010, p. 78). Examining college student departure, Tinto (1975) introduced the concept of academic integration as how the students interact with the campus environment. Later, Pascarella and Terenzini (1983) operationalized academic integration with the following variables: first-year grade point average, student perception of intellectual development, student observation of faculty concern, and frequency of faculty contact. Kuh et al. (2005) and Stage (1989) furthered this operationalization of academic integration to include credits hours earned and hours spent involved in extracurricular academic activities, including professional clubs and organizations. Additionally, Kuh (2006) suggested that student satisfaction with academic progress and choice of major could be included in the concept of academic integration.

Academic engagement, on the other hand, has been described as one of the *antecedents*, or precursors, to academic integration (Hu, 2011). Academic engagement refers to the observable behaviors that students engage in to become integrated academically into the college environment. It is a "multidimensional, multifaceted meta-construct" that occurs when students

make an intentional investment in learning (Estell & Purdue, 2013, p. 326; Fredericks, Blumenfield, & Paris, 2004). Flynn (2014), for instance, found that academically engaged students "actively address academic issues," including interacting with faculty and academic advisors and participating in study groups (p. 489). Academically engaged students report elevated interest in coursework, productive study habits, and strong time management skills (Astin, 1984). The more students are academically engaged in "educationally purposeful activities," the more likely they are to persist through college (Kuh et al., 2008, p. 1).

Educationally purposeful activities include contributing to class discussions, explaining course material to classmates, group study, and utilizing study skills strategies, such as reviewing notes and summarizing class concepts or supplemental materials (Grabowski & Sessa, 2014; Kuh et al., 2008; Pascarella & Terenzini, 2005). Focusing on academic engagement instead of academic integration allows me to measure and understand how students approach behaviors that encourage success, including interacting with faculty, demonstrating strong study skills, and engaging in collaborative learning and peer tutoring.

Astin's Theory of Student Involvement

Based on Tinto's (1975) study of college attrition, Astin (1984) created his Theory of Student Involvement, which suggests that how much students invest in the academic and social aspects of college life determines their learning outcomes, development, and persistence. Astin (1984) described student involvement as "the amount of physical and psychological energy that [students] devote to the academic experience" (p. 518). Students who are highly involved or engaged in college are more likely to spend much of their time studying, actively participating in student organizations on campus, and frequently interacting with peers and faculty members (Astin, 1984). According to Astin (1984), involvement is related to the concept of student

behavior. He explained, “it is not so much what the individual thinks or feels, but what the individual does and how he or she behaves, that defines and identifies involvement” (p. 521). Astin’s Theory (1984) suggests that student effort and investment in energy is paramount to producing desired outcomes; students need to be active participants in the learning process. For that reason, Astin (1984) encouraged educators to focus on “how motivated the student is and how much time and energy the student devotes to the learning process” (p. 522).

Astin (1984) included five underlying assumptions, or postulates, in his Theory of Student Involvement. First, he suggested that involvement requires an investment of “physical and psychological energy,” both generally and specifically (p. 519). A student may be invested physically in the campus environment, spending several hours on campus, or engaged psychologically, preparing for an exam. Second, involvement works on a continuum, with different students expending different levels of energy. Third, the characteristics of involvement can be measured qualitatively and quantitatively (Astin, 1984). Therefore, involvement in studying can be measured by the number of hours that the student studies and the methods that the student uses to study. Fourth, there is a direct proportion to the benefits of student involvement in quality and quantity. That is, if a student puts forth more effort interacting with a faculty member, that student will receive more benefits from the interaction. Lastly, a direct relationship exists between the level of student involvement and the effort put in by an institution to increase the effectiveness of educational practice and policy (Astin, 1984).

Astin’s Theory of Student Involvement (1984) is rooted in the concept that a significant factor in college student learning and personal development is students’ academic and social engagement. Several studies, meanwhile, have provided evidence of a positive relationship between student engagement and college persistence (Davidson et al., 2013; Hu, 2011; Hu &

Kuh, 2002; Kuh et al., 2008). Conversely, studies have found a correlation between students leaving college and lower engagement (Huges & Pace, 2003; Hu & Kuh, 2002; Kuh et al., 2008).

Astin (1984) defined academic engagement as a complexity of "self-reported traits and behaviors, [including] the extent to which students work hard at their studies, the number of hours they spend studying, the degree of interest in their courses, [and] good study habits" (p. 525). Davidson et al. (2013) found that students who were more academically engaged and experienced higher academic achievement were more likely to persist in college than their counterparts after their first year. Researchers have found that the amount of time a student devotes to studying, interacting with peers and faculty members, and utilizing institutional resources such as tutoring centers or the library, has positive effects on academic outcomes (Astin, 1993; Chickering & Gamson, 1997; Pascarella & Terenzini, 1991). Academically engaged students were also more likely to interact with faculty members, participate in peer study groups and collaborative learning, and exhibit behaviors that improved their academic achievement, including implementing learning strategies and study skills, devoting adequate time to studying and reviewing material, and participating in active learning (Christenson, Reschly, & Wylie, 2012; Kuh, 2007; Soria & Stebleton, 2012; Trowler, 2010).

Conceptual Model

My conceptual model is based on Tinto's (1975) Interactionist perspective and Astin's (1984) Theory of Student Involvement. Tinto's (1975) Theory stressed that, although pre-college characteristics are significant predictors of academic persistence, academic engagement also plays a paramount role in the student's likelihood of acclimating to and staying in college. Several scholars have created revisions to Tinto's theories, including the addition of behavioral measures to better capture additional social and academic integration variables (Berger & Milem,

1999; Kuh, 2006; Nora & Rendon, 1990; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1980; Pike & Kuh, 2005; Tinto, 1993, 2010). Tinto's (1975) Interactionist Theory of Student Departure and Astin's (1984) Theory of Student Involvement both take into account the concept that student behavior is vital to academic engagement and integration. Tinto's (1975) Interactionist Theory, in particular, provides significant control variables to consider when testing for associations between academic engagement factors and first-year student persistence.

I chose to use Astin's (1984) Theory of Student Involvement because it focuses on the observable behaviors of students as they relate to student investment in and effort towards academic engagement, specifically student-faculty interactions, learning strategies, and collaborative learning. Based on the literature review of research studies focused on academic engagement and student persistence, the following conceptual model will guide my study. The model (Figure 1) is derived from Pike and Kuh's (2005) model of environmental influences, which is based on Astin's (1984) Theory of Student Involvement and Tinto's (1975) Interactionist Theory.

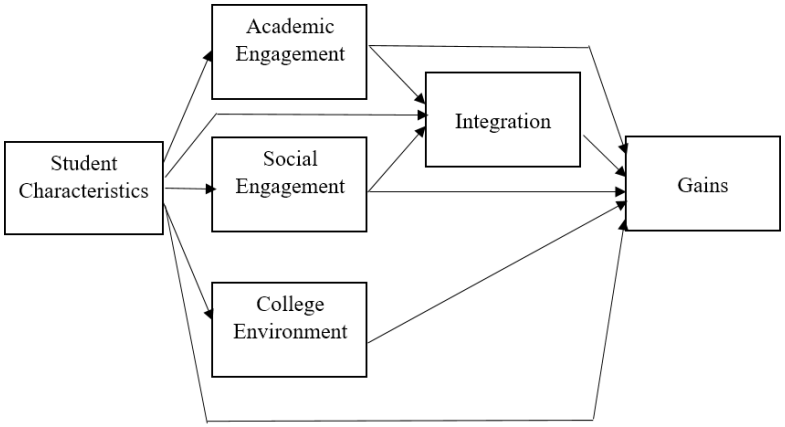

Figure 1. Pike & Kuh's (2005) Model of Environmental Influences.

Applying this framework, I constructed a similar model (Figure 2) to illustrate a

hypothesized relationship that predicts how student pre-college characteristics (academic preparation, level of parental education, financial stress, demographic factors) and college experiences (student-faculty interactions, learning strategies, collaborative learning, supportive campus environment) may affect first-year students' intention to persist. To justify my use of this conceptual model, the next section will provide a rationale for the variables selected in the conceptual model through a review of existing empirical studies.

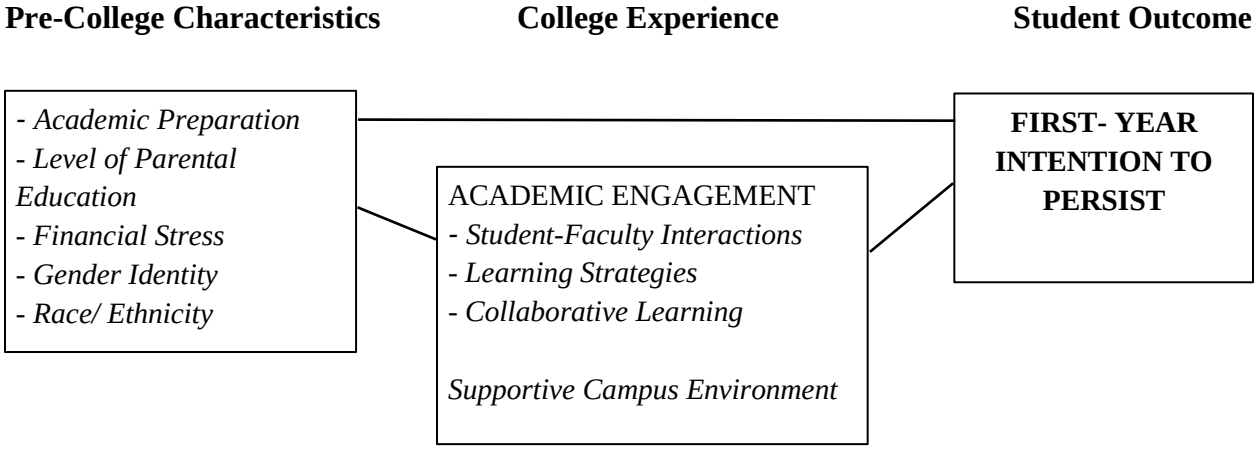

Figure 2. Conceptual Model, adapted from Pike & Kuh's (2005) Model of Environmental Influences.

Because my outcome variable examines first-year students' intention to persist, my literature review provides a synopsis of various factors that researchers have found to correlate to this measure. While the terms "persistence" and "retention" are often used interchangeably in higher education literature, there are differences between them (Hagedorn, 2012; NCES, 2016). Retention has been measured by the percentage of students returning the following fall among first-time, full-time degree-seeking students who have enrolled at four-year degree-granting institutions (NCES, 2016). College persistence refers to the result of student behaviors that lead them to continue towards the goal of degree completion (Arnold, 1999). Retention is an institutional measure while persistence is a student measure (Hagedorn, 2012). Data on

institutional first-year persistence rates were not available for this study; therefore, my outcome variable focused on first-year students' intention to persist. Several studies have found that intention to persist is a significant but moderate predictor of actual persistence and useful as an outcome variable (Cabrera et al., 1993; Morrow & Ackermann, 2012; Nora & Castaneda, 1992; Okun et al., 1996). For example, Cabrera et al. (1993) found that their model of persistence accounted for "42% of the variable observed in intention to persist and for 45% of the variance observed in persistence" (p. 132).

Factors Influencing Students' Persistence

Many factors contribute to first-year students' persistence, including student characteristics, academic preparedness, psychological factors, socioeconomic status, financial stress, social and academic integration, and institutional factors (Astin, 1975; Bean, 1982; Braxton, Hirschy, & McClendon, 2004; Sparkman, Maulding, & Roberts, 2012; Styron, 2010; Tinto, 2010). This section summarizes several factors that have been found to influence first-year students' persistence. Examples of background characteristics include gender, race, socioeconomic status, and level of high school preparation (Astin, 1984; Tinto, 1975). Goldin et al. (2006) found that female students outperform male students in high school grades and academic preparation towards college. Similarly, women outpace men in bachelor's, master's, and doctoral attainment, earning 57%, 60%, and 52% of these degrees, respectively (NCES, 2016). Therefore, researchers have found that women overall are more likely to persist in college after their first year than men (King, 2000; Kuh, 2006; Tinto, 2010).

There is also substantial evidence of differences in college persistence when considering race and ethnicity (Kuh, 2006; Strayhorn, 2010; Soria & Stebelton, 2012). Compared to White and Asian students, Hispanic and Black students are more likely to leave college after their first

year and are less likely to graduate (NCES, 2016). Between 1995 and 2015, there was also evidence of a widening gap in bachelor's degree attainment between White and Black students (+9 percentage points, to 22%) and White and Hispanic students (+7% percentage points, to 27%; NCES, 2016). Therefore, traditionally underrepresented groups continue to fall behind in college attainment rates.

Kuh (2006) suggested that racial and ethnic differences are amplified by socioeconomic status. Students who experience financial stress are more likely than their peers to drop out of college, while low-income students are more likely to leave college than their upper-income counterparts (Chen & DesJardins, 2008; Engle & King, 2000; Tinto, 2010). Conversely, scholarships, grants, and merit aid awarded to students are positively correlated with student persistence (Chen & DesJardins, 2010).

High school academic achievement, as measured by grade point average, is positively correlated with student persistence (DeBerard et al., 2004; Kuh, 2006). Similarly, parental educational attainment affects college attrition: First-generation students have lower persistence rates than students whose parents completed a bachelor's degree (Ishitani, 2006; Soria & Stebelton, 2012; Warburton, Bugarin, & Nunez, 2001). Institutional factors such as type and size have been analyzed in relation to student persistence (Astin, 1996; Chen, 2012; Kim, 2007; NCES, 2016). Descriptive studies show that private colleges and larger institutions tend to have higher student persistence rates than public or smaller institutions (Kim, 2007; NCES, 2016). Moreover, descriptive studies show that institutions with more selectivity and high research activity have greater rates of student persistence than their counterparts with lower selectively and less research emphasis (NCES, 2016).

Students' perceptions of the campus environment also influence their persistence (Astin,

1984; Kuh, 2007; Laird & Niskode-Dossett, 2010; Tinto, 2010). A campus that has a supportive, collaborative, and welcoming climate is more likely to have higher persistence rates than a campus that does not exhibit these characteristics (Lau, 2003). Institutions that promote first-year experience programs, academic support and active collaborative learning inside and outside of the classroom also have higher levels of student persistence than their counterparts (Kuh et al., 2008; NSSE, 2015). The next section provides a review of the literature on how academic engagement factors, including student-faculty interactions, learning strategies, and peer tutoring, affect student persistence.

Student-Faculty Interactions and Persistence

Researchers have found several benefits to student-faculty interactions in college, including higher academic achievement, more satisfaction with college, increased engagement, social and personal development, and greater career and educational aspirations (Astin, 1993; Bean, 1985; Kuh, 2003; Pascarella & Terenzini, 1978; Tinto, 1975). Similarly, several studies have found connections between student-faculty interactions inside and outside of the classroom and student persistence. Trosset and Weisler (2010), for instance, used longitudinal data from the Wabash National Study of Liberal Arts Education to understand how academic experiences inside and outside of the classroom influenced student outcomes at a small, liberal arts college in the northeastern United States. The study found that frequency and quality of faculty interactions outside of the classroom were reliable predictors of first-year persistence.

Similarly, Flynn (2014) utilized multivariate analysis of the 2004/09 Beginning Postsecondary Students Longitudinal Study to measure the frequency of such student behaviors as time spent interacting with faculty members inside or outside of class, the number of meetings held with academic advisors, and frequency of participation in study groups. Flynn (2014)

concluded that while both academic and social engagement are positively related to persistence for first-year students, social engagement was found to be a stronger predictor of student persistence than academic engagement.

To determine what relationships might exist between specific factors of student academic engagement and persistence from the first to the second year, Hu (2011) analyzed data from the National Survey of Student Engagement (NSSE), focusing on 832 at-risk students who participated in a scholarship program in the northwestern United States. To measure academic engagement, Hu (2011) used factors that included discussing ideas with faculty members and working hard to meet class expectations. Hu (2011) found that those first-year students who reported more student-faculty interactions were more likely to persist into their second year.

Similarly, Mitchell and Hughes (2014) found that students who reported a higher frequency of working with faculty members inside and outside of the classroom were more likely to indicate that they intended to persist at the institution. These findings support previous literature on the benefits of student-faculty interactions to academic performance and student satisfaction (Cotton & Wilson, 2006). The next section offers a review of the literature on the relationship between learning strategies and persistence.

Learning Strategies and Persistence

Learning strategies, or academic study skills, are core study habits meant to improve behavioral outcomes (Hoops et al., 2015; Tuckman & Kennedy, 2011). Several institutions have implemented Student Success Courses (SSC) or learning strategies workshops to help first-year students improve their academic performance and to foster student motivation (Cho & Karp, 2012; Hoops, Yu, Burridge, & Wolters, 2015; Tuckman & Kennedy, 2011; Wingate, 2006). Some institutions have opened a learning strategies course as an elective to all students while

others make the course a requirement (Zeidenberg, 2007). Effective course design in SSCs should include cognitive, metacognitive, and affective elements (Hattie, Biggs, & Purdie, 1996). Cognitive skills include note taking, test taking, reading comprehension, and presentation skills. Metacognitive skills include time management, assessing mental health and career options, and learning styles (Hoops et al., 2012). Affective skills include goal setting, self-advocacy, motivation, and attitude (Wingate, 2006). Many of the existing studies examined have focused on outcomes from learning strategies embedded in Student Success Courses (SSCs).

Robbins et al. (2004) examined 109 studies through a meta-analysis conducted to determine the relationship between college study skills and academic achievement. The study used educational persistence and motivation theory to categorize academic goal setting, self-efficacy, self-concept, and social support. The researchers, in their evaluation of college grade point averages (GPAs) and semester-to-semester persistence, found a strong correlation between academic skills and college GPA, academic motivation, and self-efficacy, as well as a moderate relationship between academic skills and persistence.

Tuckman and Kennedy (2011) analyzed the effects of a learning strategies course on the academic outcomes of grade point average, persistence, and graduation rates for 702 first-year students at a large, Midwestern university. Over four terms, the researchers compared results of 351 course takers to 351 non-course takers, matching students based on gender, ethnicity, academic profile, and entry date. While controlling for demographic and academic profiles, the study showed that course takers had statistically higher grade point averages than non-course takers. Course takers were six times more likely to persist year-to-year and graduated at a 50% higher rate. The results indicated that enrollment in a learning strategies course could help first-year students to achieve and persist in college.

Hoops et al. (2015) conducted a similar study at a large, public research university in the southwestern United States to find the effects of a Student Success Course (SSC) on academic outcomes (grades and persistence). The researchers used Tuckman and Kennedy's (2011) model to compare course takers with non-course takers. The course takers participated in the Learning and Study Strategies Inventory (LASSI) to gauge evidence of self-regulated learning behaviors. Although there was only a small relationship between course completion, grades, and graduation, Hoops et al. (2015) suggested that students who participated in the SSC demonstrated significantly higher self-regulated learning (SRL) strategies and improved motivation and behaviors than non-course takers.

There have been additional studies conducted in community colleges to find the relationship between Student Success Courses (SSCs) and academic outcomes. O'Gara et al. (2009), in one such study, conducted a qualitative review of 44 students and found that students who completed the SSC showed increased awareness of help-seeking behaviors and strong connections to campus resources and professors. Cho and Karp (2012) utilized logistic regression to analyze 14,807 community college students who enrolled in a SSC in the southeastern United States and found that community college students who completed the course the first semester were more likely to earn credits, persist to their second year, and earn associate's degrees than those who did not take the course.

Some researchers have argued that because learning strategies are a dynamic and complex concept to measure, studies that focus broadly on academic interactions do not accurately portray students' "actual engagement behaviors" (Handelsman, Briggs, Sullivan, & Towler, 2005; Svanum & Bigatti, 2009, p. 120). To address this issue, Svanum and Bigatti (2009) analyzed data from 225 students in an undergraduate psychology course at a large,

commuter public institution. To isolate learning strategies factors, the researchers examined variables including the number of textbook readings for the course, lecture attendance, and hours reported studying for exams. Svanum and Bigatti (2009) found a statistically significant relationship between high levels of learning strategies and semester-to-semester persistence. Furthermore, academic course engagement was an indicator not only of degree completion but also of using self-reported learning strategies in subsequent courses. The next section will review the literature associated with collaborative learning and persistence.

Collaborative Learning and Persistence

Researchers define collaborative learning as student interactions with peers regarding academic matters, including working in study groups and tutoring (Bowman-Perrott et al., 2013; Leung, 2015; Topping, 2005). Hu and Kuh (2002) suggested that peers have a significant influence on how students spend their time and their level of satisfaction with the institution. Peer tutoring, in particular, is rooted in the Vygotskian perspective, which holds that students achieve mastery and establish cognitive skills by learning from more knowledgeable learners who provide differing viewpoints (Fawcett & Garton, 2005; Vygotsky, 1978). The academic benefits of tutoring include positive effects on academic achievement for the tutor and tutee, an increase in metacognitive skills and cognitive processing, enhanced conceptual understanding, and higher test scores (Bowman-Perrott et al., 2013, Leung, 2015; Topping, 2005). Psychological factors attributed to peer tutoring include increased group achievement motivation, self-efficacy (Bandura, 1989), active learning and participation (Benware & Deci, 1984), improved college engagement (Kuh et al., 2008), and a decrease in stress and test anxiety (Pintrich, 2004). Students participating in peer tutoring have also reported increased social motivation and an enhanced sense of integration and course satisfaction while expressing fewer feelings of isolation

in the college environment (Wentzel & Watkins, 2002). However, evidence also suggests that students who are in need academic support and tutoring the most do not tend to seek the services offered (Sidelinger, Frisby, & Heisler, 2016; Ticknor, Shaw, & Howard, 2014).

Academic benefits, such increased grade point average and persistence, have been linked to tutoring programs. Colardarci, Willett, and Allen (2013), for instance, evaluated the effects of a peer-tutoring program for first-year, full-time students at a medium-sized, public university in the northeastern United States. Using a regression analysis, the researchers evaluated the outcomes of 414 tutees who received tutoring. The results indicate a modest, but statistically significant increase in term grade point average (GPA) from the fall to the spring. The persistence rate was also reported to be higher for those who participated in the tutoring program, compared to those who did not.

Similarly, Cooper (2010) assessed the effectiveness of a peer-tutoring program at a large, public university in the northwestern United States. Using data on persistence rates, academic status, and grade point average (GPA), Cooper (2010) found a correlation between students' number of visits to the tutoring center and their GPAs. First-year students who visited the tutoring center more than ten times in a quarter had statistically higher rates of persistence and higher grade point averages than those who did not attend.

Ticknor et al. (2014) evaluated the effectiveness of a tutoring program at a medium-sized, public university in the southeastern United States and found converse results. The researchers merged tutoring usage data from 1,110 students with their grade point averages and final course grades. Their results showed that there was not sufficient evidence to draw a correlation between those students who attended tutoring and an increase in end-of-term grades or persistence. The results also showed evidence of self-selection bias, with high-performing students tending to

utilize the tutoring program more often than at-risk students.

Academically at-risk students do benefit from the effects of tutoring, however. Laskey and Hetzel (2011), for instance, found that peer tutoring was a better predictor of college success than ACT and SAT scores, especially for at-risk students. Fowler and Boylan (2010), meanwhile, studied 887 academically at-risk students in at a public, two-year rural institution in the southern United States. They found that, along with intentional advising, intensive tutoring and mandatory study hall hours both increased the likelihood of first-year persistence for at-risk students. With an increased emphasis on student success, peer tutoring is an essential and effective academic intervention strategy implemented in higher education to promote collaborative learning (Topping, 2005). The literature supports a positive correlation between tutoring, academic outcomes, and persistence (Bowman-Perrott et al., 2013, Leung, 2015; Topping, 2005).

Summary of Academic Engagement and Persistence

Several studies have found associations between academic engagement and student behaviors, learning strategies, tutoring, and college persistence. Some of these studies have focused on extensive national surveys such as the NSSE, while others have focused on self-reported behaviors at specific institutions or classrooms. The relationship between student-faculty interactions inside and outside of the classroom have been analyzed using institutional longitudinal data (Trosset & Weisler, 2010), national data sets (Flynn, 2014), the NSSE (Hu, 2011), and individual courses (Svanum & Bigatti, 2009). The majority of these approaches have yielded similar positive results. Students who exhibited student-faculty interactions—including classroom attendance, increased interactions with faculty members inside and outside of the classroom, and more hours studying—were more likely to persist than those who did not (Flynn,

2014; Hu, 2011; Svanum & Bigatti, 2009; Trosset & Weisler, 2010). Since there is a wide range in the amount and type of interactions students that can have with faculty members inside and outside of the classroom, it is difficult to find a causal relationship between student-faculty interactions and student persistence (Hu, 2011).

In the same way, the research shows a positive relationship between learning strategies, study skills, and improved academic achievement and college persistence (Cho & Karp, 2012; Hoops et al., 2015; Robbins et al., 2004; Tuckman & Kennedy, 2011). Researchers have used various methods to analyze the relationship between learning strategies and outcomes, including meta-analysis (Robbins et al., 2004), logistic regression (Cho & Karp, 2012; Hoops et al., 2015; Tuckman & Kennedy, 2011), and qualitative analysis (O'Gara et al., 2009). The majority of studies reviewed focused on the impact of Student Success Courses (SSC) on college persistence at individual institutions. While various studies of Student Success Courses have shown positive associations between learning strategies and persistence (Hoops et al., 2015; O'Gara et al., 2009; Robbins et al., 2004; Tuckman & Kennedy, 2011), there are differences in their design, delivery, and content. Since there is not a single standard in SSC curriculum development, therefore, it is difficult to find a causal relationship between learning strategies and persistence.

Placing an increased emphasis on academic interactions amongst peers, tutoring programs have also been found to have strong influences on academic outcomes, including persistence. The research concludes that semester-to-semester persistence was correlated with the frequency of peer tutoring visits (Colardarci et al., 2013; Cooper, 2010; Fowler & Bolan, 2010). However, the results are mixed. Ticknor et al. (2014), for example, did not find a correlation between tutoring and persistence. Instead, the researchers found a self-selection bias for students who participated in tutoring. Additionally, Sidelinger et al. (2016) proposed that

students who need tutoring the most tend to exhibit less help-seeking behavior than those who attend tutoring.

Limitations of Previous Literature

While the studies examined have found correlations between academic engagement and student persistence, there are several limitations to discuss. Although some previous studies have found substantial evidence that connects student-faculty interactions with first-year persistence, much of the research has only examined small sample sizes at individual institutions. In Trosset and Weisler's (2010) study, the sample size was less than fifty students and the "progressive" (p.85) college that they examined promoted an alternative curriculum and unconventional measures of student success, including no reported grades. Hu's (2011) study provided data from a larger group of students; however, the measure used to indicate persistence was self-reported student data. Since student-faculty interactions inside and outside of the classroom vary based on frequency and quality, researchers have argued whether or not specific classroom activities, such as class attendance and number of hours studying, portray a more accurate picture of how students exhibit academic behaviors.

Though the examined studies on learning strategies show relationships between college study skill development and academic outcomes—including increased grade point average (Robbins et al., 2004), motivation, help-seeking behavior (Hoops et al., 2005; O'Gara et al, 2009), and persistence (Cho & Karp, 2012; Tuckman & Kennedy, 2011)—the current literature suffers from self-selection bias and program structure problems. First, each of the studies identified focused on Student Success Courses (SSC) in individual institutions. While their results can provide insight, they are not generalizable. Effective SSC course designs should include cognitive, metacognitive, and affective elements (Hattie et al., 1996). When intentional

designs and the use of active study strategies are encouraged in a study skills course, participants have been shown to improve their academic performance and persistence (Cho & Karp, 2012). However, because there is not one "standard" for the development of a Student Success Course (SSC), their effects can vary with their design, delivery, and impact across institution types. Therefore, it is difficult to draw concrete conclusions regarding their effects, especially on student persistence.

Furthermore, although some institutions require students to enroll in a Student Success Course (SSC), many offer SSCs as an optional class (Zeidenberg, 2007). Therefore, self-selection bias can skew the magnitude of the academic outcomes shown (Ticknor et al., 2014; Tuckman & Kennedy, 2011), which may present "uncontrollable motivational differences" between the comparison groups (Tuckman & Kennedy, 2011, p. 500). Specifically, unless an institution mandates enrollment in an SSC, the students who choose to enroll may not necessarily be deficient in their study skills. Wingate (2006) suggested that SSCs have an inherent flaw because the learning strategies approach assumes that their study skills are "context-independent [and] generic" (p. 458). Instead, Wingate (2006) argued, study skills are "complex tasks that require subject knowledge and, above all, an understanding of the nature of knowledge in the specific discipline" (p. 461). Therefore, institutions should incorporate study skills into the context of their courses to connect the student to the subject matter using the appropriate learning strategies.

While the research suggests there is a relationship between the frequency of participating in tutoring programs and student persistence (Colardarci et al., 2013; Cooper, 2010; Fowler & Bolan, 2010), tutoring programs are not all the same. The design and implementation of each tutoring program affects the success of its participants. Therefore, tutoring models cannot be

generalized to all schools and institutions. Comparing tutoring usage to academic outcomes also presents a self-selection bias in the quasi-experimental model because the sample is not randomized: Students who are performing well academically are more likely to attend tutoring sessions than those who are not (Ticknor et al., 2014). It is also difficult to isolate academic variables that can be attributed to college grade point averages and persistence rates. Academic preparation, self-efficacy, and motivation have all been linked to positive student outcomes (Kuh, 2007). Therefore, the frequency of tutoring visits is only one variable that contributes to academic success and persistence.

While academic engagement has been found to affect persistence, their mitigating factors still need to be addressed in the research. First, the relationship between academic engagement and persistence is not linear. Indeed, Hu's (2011) study has suggested that although students with high academic engagement are more likely to persist than students with low academic engagement, students who identified as having middle-level academic engagement were found to have the highest persistence rates. Additionally, increased levels of academic engagement, when not complemented by high levels of social engagement, were found to have a negative relationship to student persistence. Hu's (2011) finding echoes Astin's (1984) work, which supported the view that intense academic involvement can stunt student development in other forms of social engagement, including peer relationships. Flynn (2014) also found that the "interaction of both academic and social engagement indicates that these engagement behaviors act independently of one another" (p. 490). Although Astin (1984) concluded that students who are heavily involved academically show high levels of satisfaction, they tend to show signs of isolation from their peer and are less likely to integrate socially. Kuh (2007) explained that students who spend exorbitant amounts of time and effort on academic activities but not much on

other social activities report lower student gains and persistence.

Many of the studies presented in this literature review utilized data and outcomes from the National Survey of Student Engagement (NSSE). The NSSE survey is supported by a robust theoretical framework and contains calculated, reflective measures to ensure validity, reliability, and quality. However, there are limits to the NSSE survey. Lerer and Talley (2010) suggested that the population and sampling frames of the NSSE are geared towards traditional students at four-year institutions and do not, therefore, adequately capture the college experiences of non-traditional students, including older students and commuter, transfer, or part-time students. They argued that college engagement is not a "one-size fits all scheme" (p. 355) and, therefore, should report their results based on these cohorts. In addition, Porter and Umbach (2006) have challenged the variance in NSSE response rates across institutions, suggesting that student characteristics of non-responders should also be taken into account to provide a clearer view of the institution. Lastly, some respondents may be influenced by social desirability bias, which Groves (2009) defined as the "tendency to present oneself in a favorable light" (p. 168). Therefore, students may not respond with complete truthfulness on the NSSE survey.

As noted, several factors contribute to first-year students' persistence, including student characteristics, academic preparedness, psychological factors, socioeconomic status, financial stress, and institutional factors (Bean, 2005; Braxton et al., 2004; Sparkman et al., 2012; Styron, 2010; Tinto, 2010). Therefore, it is difficult to isolate the variables that are attributable to college persistence and graduation rates. Financial concerns, absenteeism, personal challenges, poor transition to college, and lack of academic preparation have all been linked to lower retention and persistence rates (Kuh et al., 2008). Academic engagement through student-faculty interactions, learning strategies, and peer tutoring are just a few variables that contribute to

student persistence. My conceptual model will attempt to control for a variety of student variables, including academic preparation, financial stress, and demographic factors.

Finally, the studies reviewed in the literature that used the NSSE dataset for analysis did not combine additional datasets, such as the BCSSE or the FYE module. My study aims for a better understanding of the extent to which academic engagement factors, such as student-faculty interactions, learning strategies, and collaborative learning influence student intention to persist by combining three datasets to provide a more holistic perspective.

Summary

As the United States continues to struggle with persistence, retention, and graduation rates, higher education administrators and policymakers seek more evidence on specific interventions that improve academic outcomes. This literature review provided a critical examination of the research on specific elements of academic engagement—including student-faculty interactions, learning strategies, and collaborative learning—to further understand its relationship with academic outcomes, mainly first-year students' persistence.

By conceptualizing the relationship between academic engagement and student outcomes, Tinto's Interactionist Theory of Student Departure (1975) and Astin's Theory of Student Involvement (1984) provided the theoretical foundation of this literature review. Within the fields of higher education and psychology, researchers define academic engagement as an observable set of behaviors that students exhibit which include interactions inside and outside of the classroom, learning strategies and study skills, and participation in study groups and tutoring (Astin, 1984; Estell & Perdue, 2013; Fredricks et al., 2004). Pre-college predictors such as demographic characteristics, financial stress, and academic preparedness are essential to consider when defining academic engagement, as are various measurements of engagement, including the

National Survey of Student Engagement (NSSE).

The literature reviewed provided substantial evidence of relationships between academic engagement and student persistence shown in studies that included such factors as student-faculty interactions, learning strategies, and collaborative learning. Academic behaviors—including the frequency and quality of faculty interactions inside and outside the classroom, class attendance, discussions, and the number of textbook readings—all have a statistically positive relationship with student persistence. The learning strategies embedded in Student Success Courses (SSCs)—including note taking, test taking, and time management—also have a positive correlation with student persistence. Lastly, peer tutoring in various programs had a small but significant relationship with academic outcomes, including persistence. Although the majority of the research found connections between academic engagement and student persistence, several limitations, including small sample sizes, un-generalizable results, and self-selection bias, were uncovered and discussed. The next chapter provides an outline of my research design and methodology, including the population and sample of the study, the instruments used for data collection, the data analysis procedures, and the limitations of the study.

Chapter 3

Research Design and Methodology

In this chapter, I provide a clear outline of my research design and methodology, including the population and sample, the instruments used for data collection, the data analysis procedures, and the limitations of the study. First, I restate the problem statement, purpose, research questions, and conceptual model. Second, I identify and provide a rationale for the data sources used in the study, including a description of the population and sample. Third, I define the variables in the model based on previous research. Fourth, I discuss the study's analytic method, research design, and analytical plan. Finally, I discuss the limitations and boundaries of the study.

Problem Statement

To remain globally competitive, the United States continues to set forth federal initiatives that promote college retention, persistence, and graduation (NCES, 2016). While employers seek graduates who demonstrate strong collaboration, communication, and time management skills, the research reveals that the level of academic engagement on college campuses is low (Babcock & Marks, 2010; HERI, 2014; Mancuso et al., 2010; Payscale, 2016). While several researchers have studied various factors of student engagement to improve student success, there is still limited research on the extent to which academic engagement factors—specifically, student-faculty interactions, learning strategies, and collaborative learning—affect first-year students' persistence (Campbell & Cabrera, 2011; Carini, Kuh, & Klein, 2006; Hu, 2011; Pascarella, Seifer, & Blaich, 2010; Tinto, 2010).

Purpose

Combining student-level records from the Beginning College Survey of Student

Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module, the purpose of this study was to determine the extent to which the academic engagement factors of student-faculty interactions, learning strategies, and collaborative learning influence students' intention to persist from the first to second year at four-year institutions. By analyzing national BCSSE, NSSE, and FYE student-level data, a clearer understanding of the relationship between academic engagement and first-year students' persistence can be presented.

Research Questions

To better understand the extent to which the academic engagement factors of student-faculty interactions, learning strategies, and collaborative learning influence first-year students' intention to persist at four-year institutions, two questions guided this study:

1. What are the levels of academic engagement and distribution of intention to persist for first-year college students at four-year institutions?
2. Controlling for all other factors, to what extent do academic engagement factors—specifically, student-faculty interactions, learning strategies, and collaborative learning—affect first-year students' intention to persist?

Conceptual Model

Based on the literature review of academic engagement and student persistence, the following conceptual model (Figure 2) guides this study. The model illustrates a hypothesized relationship for how student pre-college characteristics (academic preparation, level of parental education, financial stress, and demographic factors) and college experiences (student-faculty interactions, learning strategies, collaborative learning, and supportive campus environment) may affect first-year students' intention to persist.

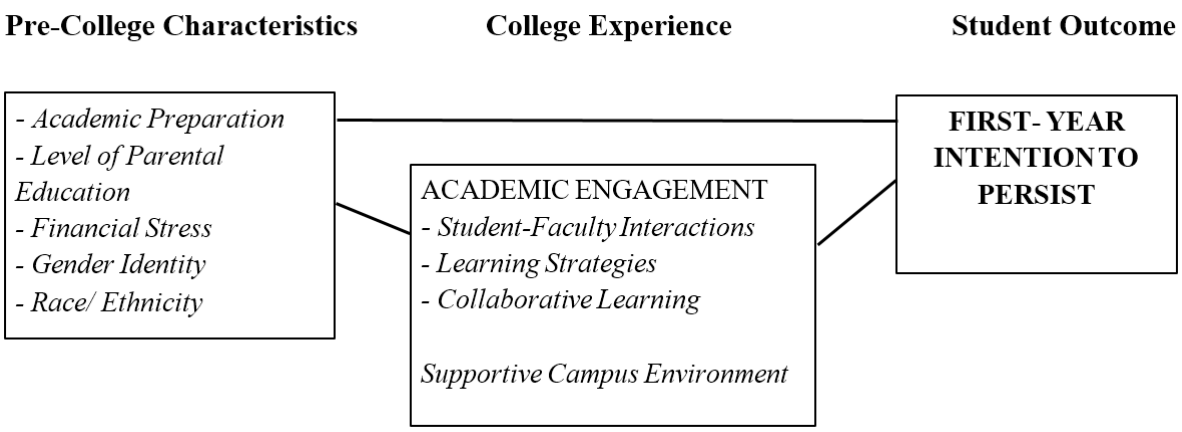

Figure 2. Conceptual Model, adapted from Pike & Kuh's (2005) Model of Environmental Influences.

Data Sources

For this study, I combined the Beginning College Survey of Student Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module at four-year institutions to determine the extent to which academic engagement factors have an effect on academic outcomes, specifically first-year students' intention to persist. The next section describes each of the data sources used for this research.

Beginning College Survey of Student Engagement (BCSSE)

The first data source for my study was the Beginning College Survey of Student Engagement (BCSSE). Launched in 2007, the BCSSE collects information regarding students' high school experiences and their expectations during their first year of college at four-year institutions. Designed to align closely with the administration of the National Survey of Student Engagement (NSSE) to provide a deeper understanding of student engagement, the BCSSE is administered at the end of the last year of high school. Questions on the BCSSE relate to college expectations and include items on financial stress and socioeconomic status. To date, more than 741,000 first-year students at 464 institutions in the United States and Canada have completed

the BCSSE (2017).

National Survey of Student Engagement (NSSE)

The second dataset used for this research was the National Survey of Student Engagement (NSSE), which measures the extent to which students are participating in educationally-engaging practices. Rooted in educational theory that includes Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education," the rationale behind the NSSE suggests that intentional classroom activities and specific peer and faculty interactions lead to improved student outcomes and institutional effectiveness (Pascarella, Seifert, & Blaich, 2010). The research suggests there is a correlation between the level of student participation, academic engagement, and the quality of education that students receive (Kuh, 2009; NSSE, 2015). NSSE defines student engagement in two ways. The first is with a measurement of time and effort that students devote to improving their academic performance. The second speaks to students' perception of their institution's investment in resources toward student learning (Kuh et al., 2011). The NSSE Benchmarks of Effective Educational Practice highlight five developed constructs of undergraduate student engagement:

- Level of Academic Challenge (rigor of coursework, study skills, critical thinking);
- Active and Collaborative Learning (reflecting and applying learning with peers);
- Enriching Educational Experiences (study abroad, research activities);
- Student-Faculty Interaction (contact with faculty in and outside of classroom); and
- Supportive Campus Environment (use of campus resources, emphasis on services).

The NSSE collects information from first-year and senior-level students across four-year institutions in the United States and Canada annually to gauge student engagement. The NSSE's survey instrument is called *The College Student Report*. The 80-item survey takes approximately

fifteen minutes to complete. In 2015, NSSE received data from 300,543 students at 560 institutions. Since 2000, over 1,600 schools and 5 million students have participated in the NSSE survey (NSSE, 2015). The institution decides whether the method of survey delivery will be via email, regular mail, or both. Institutions have the option to customize their surveys and reports based on their needs. They provide NSSE with student contact information, and the institutions' project service teams assist in administering the survey. Upon completion of the NSSE's administration, the institution receives a variety of reports and data files.

The First Year Experience (FYE) Module

The third data source used for this study was the First Year Experience (FYE) module. The FYE's optional Topical Modules includes areas of academic advising, civic engagement, transferable skills, perspectives on diversity, learning with technology, experiences with writing and literacy, global learning and perspectives, and first-year and senior transitions (NSSE, 2015). The First Year Experience (FYE) module includes a short set of questions specifically for first-year students that are adapted from the Beginning College Survey of Student Engagement (BCSSE). The items on the FYE module comprise questions on "academic perseverance, help-seeking behaviors, and institutional commitment" (NSSE, n.d., par. 4), including a variable that measures the student's intention to persist at the institution.

For this study, I used variables and student-level data from the 2014 BCSSE Survey, the 2015 NSSE Survey, and the 2015 FYE Topical Module. This longitudinal dataset follows the same cohort of students before college (2014) and during their first year of college (2015). My population and the original sample included 2,970 students across sixteen U.S. institutions. To obtain these data, I submitted a formal written request via email to the NSSE Project Manager from the Indiana University Center for Postsecondary Research (IUCPR). The policies regarding

obtaining and sharing data include the following:

- Data are only available two years after participating institutions have received their reports (the most recent data set for this study is from 2014-2015);
- all respondent and institutional identifiers are masked, and no open-ended responses are provided;
- no individual schools are identified, and continuous variables are "collapsed" into categories; and
- a copy of all papers and publications are submitted to IUCPR.

Rationale for Data Sources

Although other large-scale national student surveys focus on the first-year college experience, I chose to utilize the BCSSE, NSSE, and FYE Topical Module for their comprehensive items related to academic engagement. The goal of this study was to better understand the extent to which academic engagement factors—such as student-faculty interactions, learning strategies, and collaborative learning—influence intention to persist. I also researched other national surveys, including the Beginning Postsecondary Students Longitudinal Study (BPS) from the National Center for Education Statistics (NCES). The BPS is a longitudinal survey that reviews a cohort of students over the course of their academic experience, beginning at the end of their first year and then, subsequently, three and six years later. The data collected includes information on the students' overall experiences and their expectations for degree attainment. The BPS: 2012/14 study surveyed over 24,000 respondents at over 7,000 institutions. Although the BPS included a large sample and institution size, there are not enough specific questions related to academic engagement to satisfy my research questions. While reviewing the codebook, variable list, and survey questions, and comparing the BPS and

NSSE variables, the NSSE asked more questions related to academic engagement, specifically student-faculty interactions, learning strategies, and collaborative learning. A list showing the differences in variables associated with academic engagement can be found in Appendix A.

The variable list in Appendix A shows that it is apparent that there are clearly more variables in the NSSE related to academic engagement than in the BPS. The independent variables in the BPS ask three questions that focus on academic engagement, including two questions on student-faculty interactions and one question on collaborative learning. However, none of the questions focus on learning strategies or study skills, which are central academic engagement predictors that I researched. Conversely, the NSSE provides four questions on student-faculty interactions, three questions on learning strategies, and three questions on collaborative learning with peers. The limitations of the NSSE will be discussed at the end of this section, specifically concerns regarding self-selection bias in its administration. However, by focusing on specific questions related to academic engagement in the NSSE (student-faculty interactions, learning strategies, and collaborative learning), my study provides a substantial contribution to research examining the relationships between academic engagement and intention to persist.

Validity and Reliability

Groves et al. (2009) described construct validity as the extent to which a test measures what it is intended to measure. Several forms of validity are considered when constructing the NSSE. The NSSE Design Team conducted interviews and held focus groups on understanding how respondents interpreted their survey questions. Experts were consulted to prove that the survey questions had a valid theoretical framework, covered the intended construct or facets, and could provide implications for student learning (NSSE, 2015). NSSE also applies other quality

indicators to decrease the risk of error and bias while increasing precision. Factor analysis was applied using construct validity (NSSE, 2015).

Groves et al. (2009) suggested that reliability and internal consistency are both essential quality indicators that test against self-selection and item bias as well as measurement and sampling error. Reliability, or the "consistency or stability of measurement" (NSSE Reliability, 2015, par. 1), is considered to help ensure that the study's results can be reproduced. Reliability and internal consistency are measured through the use of Cronbach's alpha, which gauges the similarity of a group of items. Litwin (2003) suggested that this measure indicates how well various items on a survey are correlated and complement each other. Cronbach's alpha values that are closer to 1.0 indicate higher internal consistency (Groves et al., 2009). The Cronbach alpha values for the NSSE are relatively high across all NSSE engagement indicators. For the three engagement indicators—student-faculty interactions, learning strategies, and collaborative learning—the 2015 NSSE average Cronbach's alpha was 0.84, 0.78, and 0.82, respectively.

Data Collection

As a part of the NSSE Participation Agreement, the institution must use the NSSE's web-portal, the Institution Interface, and approved outreach messages to recruit participants. The Indiana University Bloomington Institutional Review Board (IUB IRB) limits the number of direct student contacts to five. The IUB IRB also provides the institution with guidelines on NSSE promotion and the use of incentives. In 2015, NSSE data showed that 59% of participating schools used incentives for survey participation. Incentives, which can increase response rates by up to 6%, were provided through a lottery system and ranged from gift cards to electronic devices (NCES, 2015). Since completing the NSSE survey is voluntary, the data collected and reported are not conditions of federal funding. Participants were notified that refusing to

participate or choosing to discontinue participation in the NSSE will involve no loss of benefits or penalty to them.

When requesting these data, I submitted a "Data Sharing Agreement" in February 2017; for a fee, I obtained access to a single copy of the BCSSE-NSSE dataset for non-commercial use. The dataset was encrypted and excluded the Unit Code identifier, any unique school or student identifiers, and any other variables that NSSE chose to exclude at their discretion. No identifying data on subjects are recorded, so that no one will be able to link the data to any individual. All student records are confidential. To accept the terms of the agreement, I obtained signatures from various administrators at my university, including a representative from the University Assessment Office and faculty members in the Department of Education Leadership, Management and Policy who serve on the dissertation committee. A copy of the Data Sharing Agreement is attached as Appendix B.

To ensure objectivity and integrity, the Indiana University Center for Postsecondary Research and the Indiana University Center for Survey Research serves as a third-party organization to administer the survey (NSSE, 2015). I submitted the proper documentation to my institution's Internal Review Board (IRB) for approval. According to the Institutional Review Board (IRB) guidelines, data for the research study was stored on a USB memory key and kept locked in my office desk. A copy of the IRB Approval Form is attached as Appendix C.

Population and Sampling Frame

The target populations for NSSE are students who attend a public or private four-year bachelor's degree-granting college or university in the United States. Community colleges and other two-year programs are excluded in order to compare institutions with similar educational missions. The NSSE population of interest is first-year students "who have attended the

institution for at least two terms" (NSSE Origins and Potential, 2015, par. 12). The students in the population complete the NSSE survey in the spring of their first year. NSSE focuses on this population to capture the college experience at distinct points in a student's academic career. Once the institution submits all first-year student contact information to NSSE, the organization then selects a sampling frame based on either a census of students or random sampling and institution size. In 2015, approximately 1.4 million students were invited to participate in the NSSE survey; of these, 300,543 students responded. Among this group, 43% were first-year students (*n*=129,223). Random sampling ensures that every student in the target population has an equal chance of being selected for the survey (Groves et al., 2009). Since this study's focus was on first-year student experiences, the NSSE sample of 129,333 students was drawn from the appropriate population.

In 2015, the overall NSSE institutional response rate was 29% (*n*=560). Sixty percent of the institutions had a 25% NSSE response rate. Sixty-two percent of institutions were private while 38% were public. Based on their Carnegie Classifications, 48% were classified as master's degree institutions and 33% as bachelor's degree only universities. Of respondents, 66% were female, and 32% were male; 62% identified as White, 9% identified as Hispanic or Latino, 8% identified as Black or African American, and 7% identified as Asian. Twelve percent of the 2015 NSSE respondents self-identified in the race/ethnicity category as "other," "multiracial," or "prefer not to respond." Since I am comparing the First Year Experience (FYE) module for an outcome variable, 127 (23%) of the 560 institutions opted for the additional module. The profile of institutions that opted for the additional module compared to non-participants showed a larger number of "bachelor's degree only" institutions (38% compared to 33%) and private institutions (68% compared to 62%).

I combined the Beginning College Survey of Student Engagement (BCSSE), National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module to determine the extent to which academic engagement factors influence first-year students' intention to persist. Of the 2,970 total students in this sample, 65.9% identified as White, 9.2% Hispanic or Latino, 6.2% Black or African American, 6.7% Asian, and 12.1% either Native American, Native Hawaiian or other Pacific Islander, Other, Two or more races/ethnicities, or Unknown. Of the sample, 71.7% were female, and 28.3% were male. In addition, 42.5% reported that paying for college expenses would be very difficult and 40.1% are considered first-generation students, where neither of their parents completed a bachelor's degree. Of the population, 30.9% reported having seriously considered leaving their institutions while 69.1% had not. This figure is comparable to 2015 national persistence to degree rates across all institutions. According to ACT (2016), 68.5% of students nationwide persisted from their first year to their second year at four-year colleges.

Of the 2,970 students sampled, 29.3% were at a private institution while 70.7% were at a public institution. The majority (56%) of students were from institutions classified under Carnegie as larger "Master's Colleges and Universities." Thirty-two percent of students were enrolled at institutions classified as very high research universities. Of the sample, 61.7% were enrolled at institutions with 10,000 or more students in the student body. Sixty-five percent reported earning grades of mostly "A" and "A-minus" in high school.

To account for institutional differences, I included a series of variables indicating where each student was enrolled. NSSE provided a "masked" institutional variable, which I recoded into 16 separate variables. The reference group was the institution with the largest number of students participating in the NSSE, which was classified as a large, public institution with 20,000

students or more. Of the 16 institutions included in the study, only one classified as a very high research university.

Variables for the Model

Dependent Variable

Intent to persist. College persistence refers to behaviors that lead students to continue towards the goal of degree completion (Arnold, 1999). The literature review revealed that such academic engagement factors as student-faculty interactions, learning strategies, and collaborative learning have a positive influence on college persistence (Flynn, 2014; Hoops et al., 2015; Hu, 2011; Leung, 2015; Trosset & Weisler, 2010; Tuckman & Kennedy, 2011). Given the data available, the outcome variable emphasizes first-year students' intention to persist. To measure intention to persist, a question was identified from the First Year Experience (FYE) module that asked whether or not the student had seriously considered leaving the institution. Table 1 explains the nature and source of the *intent to persist* dependent variable.

Table 1

Dependent Variable for the Model

Variable	Definition
Intent to Persist	This dichotomous variable is measured in the First Year Experience (FYE) module by the student's response to the question "During the current school year, have you seriously considered leaving this institution?" This variable will be recoded to "*intend to persist*?" An answer of "*yes*" will be coded as "1"; an answer of "*no*" will be coded as "0."

Control Variables

Researchers have found several factors that contribute to first-year student persistence, including student characteristics, academic preparedness, psychological factors, socioeconomic status, financial stress, and institutional factors (Astin, 1975; Bean, 1982; Braxton, Hirschy, & McClendon, 2004; Sparkman, Maulding, & Roberts, 2012; Styron, 2010; Tinto, 2010). The

control variables for my study were derived from my literature review and found in the Beginning College Survey of Student Engagement (BCSSE) and the National Survey of Student Engagement (NSSE). Several of the control variables focus on pre-college characteristics, including academic preparation reflected in high school grades. The BCSSE includes financial factors like expectations of paying for college. Parental education is determined by the highest level of education that the parents have attained. The NSSE also provides demographic information on gender and race/ethnicity. The NSSE questions focus on the extent to which students feel that the institution is contributing to a supportive campus environment. Research based on NSSE data has found that a campus with a supportive, collaborative, and welcoming climate likely has higher persistence rates than a campus that does not exhibit these characteristics (Lau, 2003). Table 2 provides an overview and definitions of the control variables used in this study.

Table 2

Control Variables for the Model

Variable	**Definition**
Academic Preparation	An ordinal variable on the BCSSE-measured student responses to the question, "What were most of your high school grades (select only one)." The scale ranged from 1=*C- or lower* to 8=*A*. This variable was recoded into three groups, grades of mostly *"A"* (reference group), *"A-minus"* and *"B or below."*
Financial Stress	This variable on the BCSSE measured responses to two questions. The first question asked, "During the coming college year, how difficult do you expect paying for college expenses to be?" The six-point ordinal Likert scale ranged from *1*, which indicated *Not at all difficult*, to *6*, which indicated *Very difficult*. This variable was recoded to *high difficulty paying*, *medium difficulty paying*, and *low difficulty paying* (reference group).
Parental Education	This variable on the NSSE measured responses from students to the question, "What is the highest level of education completed by either of your parents (or those who raised you)?" The original scale was a seven-point response ranging from 1=*did not finish high school* to 7=*doctoral or professional degree*. This variable was recoded to indicate whether the student was considered a first-generation student. Based on the definition from the U.S. Department of Education, students were recoded as having *parents with a bachelor's degree or higher*=1 and *parents without a bachelor's degree*=0.

Gender Identity	This categorical variable on the NSSE measured gender identification by the institution as either female (reference group) or male. The following codes were used *male*=0; *female*=1.
Race/Ethnicity	This categorical variable on the NSSE divided racial identification by students into six ethnic groups (Native American or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, and White). Students also had the option to choose *Other, Multiracial*, or *Prefer Not to respond*. *White* was used as the reference group.
Supportive Campus Environment	Topics were measured on the NSSE on a four-point Likert scale from 1=*very little* to 4= *very much*. Questions in this ordinal scale measure student perceptions on whether or not the institution emphasizes "spending significant amounts of time studying and on academic work," "providing support to help students succeed academically," and "using learning support services (tutoring, writing center)." An additional variable for the total score was created from the NSSE to indicate the averaged and weighted student scores. The NSSE items with four response options were recoded by NSSE on a 60-point scale with values of 0, 20, 40, or 60.

Independent Variables

Academic engagement. Academic engagement refers to the observable behaviors that students engage in to become integrated academically into the college environment (Astin, 1984). Academic engagement is defined by how often the student participates in educationally purposeful activities inside and outside the classroom (Estell & Purdue, 2013, p. 326; Fredericks et al., 2004). Academic educationally purposeful activities include asking questions in class, contributing to class discussions, interacting with faculty and academic advisors, and participating in study groups (Flynn, 2014, p. 489).

The NSSE provides several questions on the survey to address student-faculty interactions, learning strategies, and collaborative learning. Student-faculty interaction is defined as the level of participation that a student has, inside and outside of the classroom, with a faculty member. To measure student-faculty interactions, I reviewed items related to how often a student (a) discussed career plans, (b) worked on activities, such as committees, outside of the classroom, (c) reviewed class concepts outside of class, and (d) discussed academic performance with a faculty member.

Learning strategies, or academic study skills, are identified as core study habits that improve behavioral outcomes (Hoops et al., 2015; Tuckman & Kennedy, 2011). Study skills strategies include identifying main topics from reading assignments, reviewing notes after class, and summarizing concepts from class lectures or supplemental materials (Grabowski & Sessa, 2014; Kuh et al., 2008; Pascarella & Terenzini, 2005). Items that address learning strategies in my study include how often a student (a) identified key information from reading assignments, (b) reviewed notes after class, and (c) summarized what was learned in class (NSSE, 2015). Table 3 provides the overview and definitions of the independent variables used in this study.

Table 3

Independent Variables for the Model

Variable	**Definition**
Student-faculty interactions	Topics were measured on the NSSE on a four-point Likert scale from 1=*never* to 4=*very often*. Questions in this ordinal scale measure students' answers to the question, "During the current school year, about how often have you done the following?" The responses include, "talked about career plans with a faculty member," "worked with a faculty member on activities other than coursework (committees, student groups, etc.), "discussed course topics, ideas, or concepts with a faculty member outside of class," and "discussed your academic performance with a faculty member." An additional variable for the total score was created from NSSE to indicate averaged and weighted student scores. The NSSE items with four response options were recoded by NSSE on a 60-point scale with values of 0, 20, 40, or 60.
Learning Strategies	Topics were measured on the NSSE on a four-point Likert scale from 1=*never* to 4=*very often*. Questions in this ordinal scale measure students' answers to the question, "During the current school year, about how often have you done the following?" The responses include, "identified key information from reading assignments," "reviewed your notes after class," and "summarized what you learned in class or from course materials." An additional variable for the total score was created from NSSE to indicate the averaged and weighted student scores. The NSSE items with four response options were recoded by NSSE on a 60-point scale with values of 0, 20, 40, or 60.

Collaborative Learning	Topics were measured on the NSSE on a four-point Likert scale from 1=*never* to 4=*very often*. Questions in this ordinal scale measure students' answers to the question, "During the current school year, about how often have you done the following?" The responses include "asked another student to help you understand course material," "explained course material to one or more students," "prepared for exams by discussing or working through course material with other students," and "worked with other students on course projects or assignments." An additional variable for the total score was created from NSSE to indicate the averaged and weighted student scores. The NSSE items with four response options were recoded by NSSE on a 60-point scale with values of 0, 20, 40, or 60.

Researchers have defined collaborative learning as student interaction with peers regarding academic matters, including working in study groups and participating in peer group tutoring (Bowman-Perrott et al., 2013, Leung, 2015; Topping, 2005). The NSSE items used to explore learning strategies include how often a student (a) asked a peer for help or clarification on course topics, (b) explained course materials to other students, (c) worked in a study group, and (d) participated in group work or presentations.

Research Design

The purpose of this study was to determine the extent to which academic engagement factors—specifically, student-faculty interactions, learning strategies, and collaborative learning— influence student intention to persist, controlling for all other factors. Employing a quantitative, correlational research design, this study investigated the relationships between college persistence and indicators from the Beginning College Survey of Student Engagement (BCSSE), the National Survey of Student Engagement (NSSE), and the First Year Experience (FYE) module on academic engagement. There are two primary purposes of correlational research. The first purpose is to better understand and explain phenomena or human behavior (Haller & Klein, 2001). The second is to predict likely outcomes by identifying correlations, or relationships among variables (Haller & Klein, 2001; Wallen & Fraenkel, 2001). In a correlational design, "both variables are measured, and a score on each is obtained for each

individual studied" (Wallen & Fraenkel, 2001, p. 155). For this study, I investigated three variables of academic engagement— student-faculty interactions, learning strategies, and collaborative learning—to find predictors of the complex variable of students' intention to persist. If a significant relationship of significant magnitude is found between areas of academic engagement and first-year college student intention to persist, it may be possible to predict a score on each variable that relates to persistence (Wallen & Fraenkel, 2001).

I analyzed NSSE scores from each theme to determine if specific variables were significantly related to first-year college students' intention to persist, and then I examined the extent and magnitude of these relationships. Because correlations can be either positive or negative, I assumed that academic engagement—specifically, student-faculty interactions, learning strategies, and collaborative learning—have a positive relationship with first-year college students' intention to persist. Although "correlation does not prove causality," correlational data can assist researchers with identifying and examining variables that may affect outcomes (Haller & Klein, 2001, p. 98). I chose a quantitative, correlational research design because other studies predicting students' intention to persist with several independent variables used a similar approach (Baier et al., 2016; Mitchell & Hughes, 2014).

Analytical Plan

I utilized Statistical Package for the Social Sciences (SPSS), a software package frequently used in the social sciences for statistical analysis, to calculate the correlation data and run a regression analysis. To answer my first research question, "What are the levels of academic engagement and distribution of intention to persist for first-year college students at four-year institutions?" I implemented data management, which includes data recoding, checking for multicollinearity, and descriptive analysis.

Handling missing data is vital to the data preparation process (Baraldi et al., 2010, Pallant, 2010). I used listwise deletion to eliminate cases with missing data based on the dependent, independent, and control variables. I used missing values analysis in SPSS to determine the patterns of the missing values. The missing values analysis (Appendix D) shows that there are no variables with missing values of 5% or more. Researchers have concluded that, although imputation is the preferred method of handling missing data, a missing rate of 5% or less can be "inconsequential" (Dong & Peng, 2013, p. 2). I chose listwise deletion because of the low percentage of missing values and the intent to analyze cases that provided a full set of results (Pallant, 2010). Choosing listwise deletion did not affect the size of my sample significantly.

I compared the missing and non-missing cases to determine if there were significant differences in terms of demographics and NSSE scores. For the dependent variable "intention to persist," there were fifteen missing cases, and no significant differences were found among the missing cases of the dependent variable and the original sample. The original sample consisted of 2,970 students. After listwise deletion had been implemented through SPSS, the analytic sample of 2,420 students remained. I then used descriptive analysis to determine whether there were significant differences in the demographic characteristics of the missing data and the analytic sample (Appendix E). I also isolated the missing cases and ran additional statistical analysis. Through ANOVA tests, I found no significant relationships in the missing data for the engagement variables (learning strategies, student-faculty, collaborative learning, and supportive campus environment) for race/ethnicity, high school grades, financial stress, or institutional characteristics. I also conducted independent *t*-tests and found no significant relationships in the missing data for gender, institutional control, intention to persist, or first-generation status. Additionally, Appendix F shows the differences in demographic characteristics between the

analytic sample and the original sample. Based on these analyses, the analytic sample and original sample do not differ significantly in their profiles.

Analytical Sample

Of the weighted sample of 2,420 students from sixteen institutions, the majority (72.7%) were female while 27.3% were male. Racial and ethnic groups were 67% White, 9.2% Hispanic/Latino, 6.5% Asian, and 5.8% Black/African American. Given the low frequency of the remaining racial/ethnic groups, the "other" category, which makes up 11.5%, includes "multiracial," "other," or "unknown" race/ethnicity. Of the sample, 39.9% of students are considered first-generation students (i.e., neither of their parents earned at least a bachelor's degree).

Morgan et al. (2013) also reported that a common issue with regression is multicollinearity, which occurs when two or more predictors measure the same information. A multicollinearity test was conducted for this study, and no problems showed in the variance inflation factor (VIF) test, indicating that two or more predictors have not measured overlapping or similar information (Hinkle et al., 2013). All VIFs results were less than three (3). Consistent with the literature (Baier et al., 2016; Mitchell & Hughes, 2014), a weight variable was used to preserve the overall sample size and institutional proportion within the United States population.

NSSE (2017) developed "Engagement Indicators" to represent "information about a distinct aspect of student engagement by summarizing students' responses to a set of related survey questions" (par. 2). The academic engagement indicators represented in my study are student-faculty interactions (SF), learning strategies (LS), and collaborative learning (CL). An additional engagement indicator, Supportive Environment (SE), was used as a control variable in the study because it is an institutional measure. Through factor analysis, NSSE (2017) concluded

that engagement indicators have "sufficiently strong construct validity evidence to support their use for college and university assessment efforts" (par. 5). The scoring for each engagement indicator provides differentiation over time and examinations "between groups of students within or between institutions" (NSSE, 2017, par. 6). The NSSE items with four response options—*never*, *often*, *sometimes*, *very often*—were recoded by NSSE on a 60 point scale with the values of 0, 20, 40, or 60, where "0" represents *never,* and "20" represents *often*. The recoded values were then averaged. Finally, the total engagement indicator score showed the "weighted averages of the student-level scores" (par. 6c).

The individual variable responses for academic engagement on the NSSE were recoded from 1 to 4, where 1 is *never,* 2 is *sometimes,* 3 is *often,* and 4 is *very often*. This method takes into account the ordinal nature of the Likert scale. Ordinal variables have a clear order. With the NSSE, *never* indicates no participation or engagement in educationally purposeful activities, while *very often* indicates a high level of participation or engagement. The dependent variable *intent to persist* was coded as a binary variable and recoded as 0 or 1, where 0 indicates *does not intend to persist* and 1 indicates *intends to persist.*

To answer the second research question—"Controlling for all other factors, to what extent do academic engagement factors, specifically student-faculty interactions, learning strategies, and collaborative learning, affect first-year students' intention to persist?"—I used binary logistic regression analysis, examining the relationship between the dependent variable, which is college students' intent to persist, and the predictors, which are the independent variables of student-faculty interactions, learning strategies, and collaborative learning. The control variables in this study include gender, race/ethnicity, academic preparation, financial stress, first-generation status, institutional characteristics, and perception of a supportive campus

environment.

Binary logistic regression is used when the dependent or outcome variable is dichotomous, and there are several independent variables (Alison, 1999; Mitchell & Hughes, 2014). When logistic regression is utilized for statistical analysis, there is not a linear relationship between *x* and *y*; there is also no assumption of constant variance (Hinkle et al., 2003). In logistic regression, the beta is interpreted as the exponential of beta, which is called the "odds ratio" (Morgan et al., 2013, p. 141). For my logistic regression, an effect of the independent variables on the odds ratio was observed.

Two sets of analysis were used to determine the extent to which academic engagement factors influenced student intention to persist. To validate whether or not NSSE engagement indicators are related to student outcomes, prior research has proposed conducting analyses on the total *and* individual scores of each engagement indicator (Fuller & Tobin, 2011; Gordon et al., 2007; Griffith, 2011; Kuh et al., 2006). Total scores were created from NSSE to indicate the averaged and weighted student scores on individual scales. The NSSE items, with four response options, were recoded by NSSE on a 60-point scale with values of 0, 20, 40, or 60. The individual variable responses for academic engagement on the NSSE were recoded from 1 to 4, where 1 is *never*, 2 is *sometimes*, 3 is *often*, and 4 is *very often*. The purpose of conducting two sets of analysis was, first, to determine if any of the total scores of the engagement indicators were significant and, then, to further analyze individual scores. Research using the NSSE has supported the use of both total and individual scores to conduct sensitivity tests and to extrapolate additional information (Gordon et al., 2007). Sensitivity tests are meant to identify those subsets of predictors that showed the strongest correlations to the outcomes (Hussain, 2009).

Limitations

There are limitations and boundaries to this study on college academic engagement and student intention to persist, particularly related to the use of secondary survey data and the outcome variable.

Secondary Data

Although the NSSE survey is backed by a robust, theoretical framework and contains calculated, reflective measures to ensure validity, reliability, and quality, Lerer and Talley (2010) have suggested that since the NSSE population and sampling frame is geared towards traditional students, it does not adequately capture the college experience for non-traditional students, including older students, commuter, transfer, or part-time students. They argued that college engagement is not a "one-size fits all scheme" (p. 355), but is based on individual and institutional factors.

External validity determines whether or not the "results for the sample can be generalized to other groups or populations" (Alison, 1999). Since I used a combination of three datasets—the BCSSE, NSSE, and FYE module—the sample size was limited to 2,420 students across sixteen institutions. Although the sample is randomized and the regression uses weighting to account for the overall sample size and institutional proportions within the United States population, the demographic breakdown of NSSE participants also presents a limitation. Women, white students, students who achieved high SAT scores, and traditional, full-time students responded to the NSSE at higher rates and were overrepresented in my sample (NSSE, 2015). These statistics indicate that the NSSE may not be as representative or generalizable to the entire college population as other national surveys (Lerer & Talley, 2010; Pike, 2013). However, because my study focuses specifically on academic engagement factors and the extent to which those factors

relate to student persistence, the combination of the BCSSE, NSSE, and FYE module provided the most comprehensive set of items and data points.

Researchers have challenged the variance in NSSE response rates across institutions, suggesting that the student characteristics of non-responders should also be taken into account to provide a clearer view of the institution (Porter & Umbach, 2006). However, NSSE conducted additional studies that found no significant differences between responders and non-responders (NSSE, 2012). Furthermore, some respondents may be influenced by social desirability bias, which Groves et al. (2009) explain as the "tendency to present oneself in a favorable light" (p. 168). Therefore, students may not respond completely truthfully on the NSSE survey. It is also assumed that students responded truthfully to the questions posed on the BCSSE, NSSE, and the FYE module. As noted, social desirability bias and self-selection bias are limitations to this study. Finally, this study analyzed only one year of cross-sectional NSSE data, from 2014-2015. The results may have differed if the study utilized a longitudinal approach across additional NSSE years.

Outcome Variable

The outcome variable of intention to persist also represents a limitation to this study. Since data of actual first-year persistence rates were not available, my outcome variable focused on first-year students' intention to persist. Researchers concluded that intention to persist is a significant but moderate predictor of actual persistence, and it has been used as an outcome variable in other studies (Bean, 1982; Cabrera et al., 1993; Nora & Castaneda, 1992; Okun et al., 1996). However, several empirical studies that examined factors and relationships associated with persistence use actual persistence as their dependent variable, with stronger correlations (Astin, 1975; Bean, 1982; Braxton, Hirschy, & McClendon, 2004; Sparkman, Maulding, &

Roberts, 2012; Styron, 2010; Tinto, 2010).

Chapter 3 has provided an outline of my research design and methodology, including the population and sample of the study, the instruments used for data collection, its data analysis procedures, and its limitations. The next chapter discusses the findings of my data analysis on academic engagement and first-year students' intention to persist.

Chapter 4

Presentation of the Findings

In this chapter, I present the findings of my research and demonstrate the answers to my research questions, supported by the data. The findings address each research question, which are consistent with the quantitative research approach, theoretical orientation, and conceptual framework. I first provide descriptive statistics for the sample, including ANOVA analysis, cross-tabulations, and chi-square tests. I also present the results of the binary logistic regression data analysis through explanations, tables, and figures. Finally, I provide a summary of the most significant and salient findings of my study on academic engagement and first-year students' intention to persist.

The objective of this quantitative, correlation study was to find the extent to which academic engagement factors—including student-faculty interactions, learning strategies, and collaborative learning—affect students' intention to persist. Given the nature of the outcome variable (intention to persist or not), binary logistic regression was utilized. The control variables in my study include gender, race/ethnicity, academic preparation, financial stress, first-generation status, institutional characteristics, and perception of a supportive campus environment. I combined longitudinal data from 2,420 students who took the 2014 Beginning College Survey of Student Engagement, the 2015 National Survey of Student Engagement, and the 2015 First Year Experience module.

Descriptive Statistics

Tables 4 and 5 provide descriptive statistics for the dependent variable (intention to persist), the control variables, and the independent variables in the model.

Dependent and Control Variables

Table 4 summarizes the percentages and standard deviations across the dataset for the dependent and control variables.

Table 4

Descriptive Statistics-Percentage and Standard Deviation of the Sample

Descriptive Statistics (*n*= 2,420)		
	Percent	**Standard Deviation**
Dependent variable		
Intends to persist	69.8	0.459
Does not intend to persist	30.2	0.459
Control Variables		
High school grades (B or below)	34.6	0.475
High school grades (A-minus)	24.3	0.429
High school grades (A)	41.1	0.492
Low difficulty paying	23.2	0.422
Medium difficulty paying	34.3	0.475
High difficulty paying	42.5	0.494
First-generation	39.9	0.49
Non first-generation	60.1	0.49
Female	72.7	0.446
Male	27.3	0.446
White	67	0.47
Asian	6.5	0.246
Hispanic/ Latino	9.2	0.288
Black/ African American	5.8	0.233
Other race	11.5	0.32

Private institution	29.4	0.455
Public institution	70.6	0.455
Doctoral/ research	44	0.497
Masters/bachelors/other	56	0.497
Small size school	6.9	0.253
Medium size school	31.3	0.464
Large size school	61.8	0.486
Supportive Environment		
Institutional emphasis: Spending significant amounts of time studying and on academic work	3.19	0.748
Institutional emphasis: Providing support to help students succeed academically	3.19	0.769
Institutional emphasis: Using learning support services (tutoring services, writing center, etc.)	3.21	0.85
Institutional emphasis: Encouraging contact among students from different backgrounds (social, racial/ethnic, etc.)	2.93	0.931
Institutional emphasis: Providing opportunities to be involved socially	3.17	0.829
Institutional emphasis: Providing support for your overall well-being (recreation, health care, counseling, etc.)	3.11	0.862
Institutional emphasis: Helping you manage your non-academic responsibilities (work, family, etc.)	2.49	0.985
Institutional emphasis: Attending campus activities and events (performing arts, athletic events, etc.)	3.05	0.887
Institutional emphasis: Attending events that address important social, economic, or political issues	2.74	0.944
Supportive Environment (total score)	39.69	13.388

Of the 2,420 students, 69.8% stated on their First Year Experience (FYE) module that they intended to persist at their current institution. This percentage breakdown is similar to the total population and national statistics at four-year institutions (ACT, 2016). For academic preparation, 41.1% indicated on the Beginning College Survey of Student Engagement (BCSSE)

that they received grades of mostly "A" in high school. About one-fourth (24.3%) indicated that they earned grades of mostly "A-minus" in high school. Given the low frequency of the remaining group, the third group of students who reported grades of mostly "B" or "C or below" in high school, were combined to make the "B or below" group. This group represented 34.6% of participants.

The financial stress variable was recoded from a six-point Likert scale (M=3.93; SD=1.643), where one was *not difficult at all* and six was *very difficult*, with three variables: *low difficulty* (scores 1-2), *medium difficulty* (scores 3-4), and *high difficulty* (scores 5-6). Of the 2,420 respondents, 42.5% indicated *high difficulty* paying for college expenses, 34.3% indicated *medium difficulty* paying, while 23.2% reported *low or no difficulty* paying for college expenses. The "low" and "no" difficulty groups were combined because of the small size of both groups.

For institutional characteristics, the majority of students (70.6%) attended a public institution, while 29.4% attended a private institution. The majority (56%) of students are from institutions classified under Carnegie as "Master's or Bachelor's Colleges and Universities" or "Other Institutions." The "Other Institutions" group comprised 0.3% of the sample and was identified with four-year colleges who conferred more than 50% of degrees at the associate's level. Given the small number of institutions that were in the "Bachelor's" or "Other" group, these groups were combined with the "Master's Colleges" group to create the "*masters/bachelors/other*" group. Of the sample, 61.8% of students were enrolled at institutions with 10,000 or more students. The institutions were not evenly distributed. Of the 2,420 students in the sample, 31.3% came from one institution classified as a large, public institution with high research activity. To account for institutional differences, I included a series of variables and tested their interaction effects.

The last control variable focused on the students' perception of the campus environment. Table 4 shows the means and standard deviations of the total and individual scores for a supportive campus environment. The mean score for a supportive campus environment was *M*=39.69 (*SD*=13.388). For specific campus environment factors, students felt that their institution emphasized "using learning support services [such as] tutoring services, writing center" (*M*=3.21, 0.850), "spending significant amounts of time studying on academic work" (*M*=3.19, *SD*=0.748), and "providing support to help students succeed academically" (*M*=3.19, *SD*=0.769). Additional factors included the perception of institutions as "providing opportunities to be involved socially" (*M*=3.17, *SD*=0.829), "providing support for overall well-being" (*M*=3.11, *SD*=0.862), "attending campus activities and events" (*M*=3.05, *SD*= 0.887), "encouraging contact among students from different backgrounds" (*M*= 2.93, *SD*=0.931), "attending events that address important social, economic, or political issues" (*M*=2.74, *SD*=0.944), and "helping [to] manage non-academic responsibilities" (*M*=2.49, *SD*= 0.985).

Independent Variables

Table 5 shows the means and the standard deviations of the total and individual scores for the independent variables, or the NSSE academic engagement indicators. The independent variables were scored in two ways. The first is a Likert scale from 1 to 4, with 1=*never*, 2=*sometimes*, 3=*often*, and 4=*very often*. The second is a total score, produced by NSSE, which is averaged and weighted based on rescaling the individual items from a four-point scale to a 60-point scale, with 0 as *no participation* and 60 as the *highest level of participation*. The *sometimes* and *often* scale items were coded with 20 and 40 points, respectively. Prior NSSE studies have used both total scores and individual scores in their analyses (Gordon et al., 2007; Kuh et al., 2006).

Among the three key engagement indicators on academic engagement, the descriptive statistics demonstrated that students reported the highest levels of learning strategies (*M*=40.50, *SD*= 13.715) compared to collaborative learning (*M*=33.72, *SD*=13.445). Among the three academic engagement variables, the lowest level of participation was student-faculty interactions (*M*=22.51, *SD*=14.783). Supportive Environment, which served as a control variable, scored relatively high compared to the rest of the engagement indicators (*M*=39.69, *SD*=13.388).

Table 5

Descriptive Statistics: Means and Standard Deviations (n=2,420)

Academic Engagement Indicators	**Mean**	**Standard Deviation**
Independent Variables		
Collaborative Learning		
Asked another student to help you understand course material	2.64	0.832
Explained course material to one or more students	2.79	0.791
Prepared for exams by discussing or working through course material with other students	2.62	0.916
Worked with other students on course projects or assignments	2.7	0.822
Collaborative Learning (total score)	33.72	13.445
Student-Faculty Interactions		
Talked about career plans with a faculty member	2.36	0.885
Worked with a faculty member on activities other than coursework (committees, student groups, etc.)	1.86	0.939
Discussed course topics, ideas, or concepts with a faculty member outside of class	2.08	0.893
Discussed your academic performance with a faculty member	2.2	0.873
Student-Faculty Interactions (total score)	22.51	14.783
Learning Strategies		
Identified key information from reading assignments	3.23	0.73
Reviewed your notes after class	2.96	0.881
Summarized what you learned in class or from course materials	2.89	0.886
Learning Strategies (total score)	40.5	13.715

Among the individual elements of learning strategies, students reported the highest level of participation in "identify[ing] key information from reading assignments" (*M*=3.23, *SD*= 0.730) compared to "review[ing] notes after class" (*M*=2.96, *SD*=0.881) and "summariz[ing] what [they] learned in class or from course materials" (*M*=2.89, *SD*=0.886). Of the individual elements of collaborative learning, students reported the highest level of participation in "explain[ing] course material to one or more students" (*M*=2.79, *SD*=0.791) compared to "work[ing] with other students on course projects or assignments" (*M*=2.70, *SD*= 0.822) and "ask[ing] another student to help understand course material" (*M*=2.64, *SD*=0.832). The lowest factor of collaborative learning reported was "prep[aring] for exams by discussing or working through course material with other students" (*M*=2.62, *SD*=0.916).

Of the three independent variables, student-faculty interactions scored the lowest, indicating a lower level of student-faculty interactions. Of the factors that were focused on student-faculty interactions, the highest level of interaction was "talk[ing] about career plans to [a] faculty member" (*M*=2.36, *SD*=0.885), followed by "discuss[ing] academic performance with a faculty member" (*M*=2.20, *SD*=0.873). The two lowest elements of student-faculty interactions were "discuss[ing] course topics, ideas, or concepts with a faculty member outside of class" (*M*=2.08, *SD*=0.873) and "work[ing] with a faculty member on activities other than coursework [like] committees or students groups" (*M*=1.86, *SD*=0.939).

ANOVA Tests

ANOVA, or analysis of variance, is a hypothesis test used to compare population means (Alison, 1999). A one-way ANOVA was used to determine the difference between the means of the population for the sample and each engagement indicator (student-faculty interactions, collaborative learning, learning strategies, and supportive environment). There were no

significant differences in engagement scores when ANOVA was used for the demographic variables of gender or financial stress.

However, when evaluating the difference of population means for race/ethnicity, significant differences in areas of student-faculty interactions and supportive campus environment appeared. Tables 6 through 8 provided results from the ANOVA tests for race and ethnicity. Based on the *F*-test, there was sufficient evidence to indicate that student-faculty interactions differ significantly across racial and ethnic groups (F=3.338; p<0.01). In this sample, there were significant differences between student-faculty interactions when comparing White and Black or African-American students (p<0.01). On average, the post-hoc tests (Table 7) showed that, compared to White students, Black or African American students tend to score 4.4 points lower in student-faculty interactions (p<0.01).

Table 6

ANOVA Results: Race/Ethnicity

ANOVA					
		Sum of Squares	Mean Square	F	Sig.
Learning Strategies	Between Groups	1655.847	413.962	2.205	
	Within Groups	453273.06	187.768		
	Total	454928.9			
Collaborative Learning	Between Groups	264.427	66.107	0.365	
	Within Groups	436933.61	181		
	Total	437198.04			
Student-Faculty Interactions	Between Groups	2907.768	726.942	3.338	**
	Within Groups	525658.35	217.754		
	Total	528566.12			
Supportive Environment	Between Groups	2170.736	542.684	3.037	*
	Within Groups	431368.79	178.695		
	Total	433539.53			
p<0.05; **p<0.01;*p<0.001*					

Similarly, based on the *F*-test, there was sufficient evidence to indicate that the perception of a supportive campus environment differed significantly across racial and ethnic groups (F=3.037; p<0.05). Given this sample, there were significant differences between the perception of supportive campus environments when comparing Asian students and Hispanic/ Latino and White students. On average, the post-hoc tests (Table 8) showed that, compared to Asian students, Hispanic/Latino students tended to score 4.15 points lower on the perception of a supportive campus environment (p <0.05). Similarly, the post-hoc tests showed that, on average, compared to Asian students, White students tend to score 3.23 points lower on the perception of supportive campus environment (p<0.05).

Table 7

Student-Faculty Interactions and Race/ Ethnicity

			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Student-Faculty Interactions	White	Other	-0.836	0.955		-3.44	1.77
		Asian	-0.127	1.235		-3.5	3.25
		Black or African American	-4.402*	1.302	**	-7.96	-0.85
		Hispanic or Latino	-1.712	1.057		-4.6	1.17
**p<0.05; **p<0.01; ***p<0.001*							

When assessing the difference of population means for academic preparation as determined by high school grades, significant differences in supportive campus environment between the groups appeared. Tables 9 to 10 show results from the ANOVA test for academic preparation. Based on the *F*-test, there was sufficient evidence to indicate that the perception of

supportive campus environment differs significantly across academic preparation between groups (F=7.617; p<0.001). Given this sample, it appeared that there were significant differences between the perception of a supportive campus environment when comparing students who report grades of "A," "A-minus," or "B or below" (p<0.05).

Table 8

Supportive Campus Environment and Race/Ethnicity

						95% Confidence Interval	
			Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Supportive Campus Environment	Asian	Other	-1.983	1.334	0.572	-5.63	1.66
		Black or African American	-3.799	1.557	0.105	-8.05	0.45
		Hispanic or Latino	-4.152*	1.396	*	-7.96	-0.34
		White	-3.236*	1.119	*	-6.29	-0.18
**p<0.05; **p<0.01; ***p<0.001*							

On average, the post-hoc tests (Table 10) showed that compared to students who report grades of "A" in high school, students who report mostly "A-minus" or "B or below" tended to score 1.71 and 2.36 points higher in the perception of a supportive campus environment, respectively (p<0.05; p<0.01). Therefore, the lower the academic preparation, as indicated by lower reported grades, the higher the perceived supportive campus environment.

Cross Tabulation and Chi-square tests

Cross Tabulations and chi-square tests were used to compare the observed frequencies with the expected frequencies, which is based on the null hypothesis that the proportion of an outcome will be the same across groups (Hinkle et al., 2003). Tables 11 through 16 show a series of cross-tabulations and chi-square tests to further explore the relationship between the outcome

variable “intention to persist” and demographic characteristics. If the difference between the observed and expected frequencies was large, this suggests that there are correlations or relationships between the group and the outcome.

Table 9

ANOVA Results: Academic Preparation

ANOVA					
		Sum of Squares	Mean Square	F	Sig.
Learning Strategies	Between Groups	1755.539	877.769	4.68	
	Within Groups	453173.36	187.572		
	Total	454928.9			
Collaborative Learning	Between Groups	680.156	340.078	1.882	
	Within Groups	436517.88	180.678		
	Total	437198.04			
Student-Faculty Interactions	Between Groups	176.532	88.266	0.404	
	Within Groups	528389.59	218.704		
	Total	528566.12			
Supportive Campus Environment	Between Groups	2716.703	1358.352	7.617	***
	Within Groups	430822.82	178.321		
	Total	433539.53			
**p<0.05; **p<0.01; ***p<0.001*					

Table 10

Supportive Campus Environment and Academic Preparation

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Supportive Campus Environment	A	B or below	2.364*	0.626	**	0.9	3.83
		A-minus	1.711*	0.694	*	0.08	3.34
**p<0.05; **p<0.01; ***p<0.001*							

Although the cross-tabulations indicated that in this sample, male students persisted at a higher rate than female students (72% and 68.2%, respectively), the chi-square test did not indicate a significant association between intention to persist and gender. Combined with the cross-tabulation results, the statistics indicated that intention to persist was not significantly related to students' gender.

Race/Ethnicity

Table 11 shows the cross-tabulation, and chi-square tests result between intention to persist and student race/ethnicity. Of the analytic sample, 69.8% indicated that they intended to persist in college.

Table 11

Intention to Persist and Race/Ethnicity

Variable	**Intention to Persist**	**No Intention to Persist**
Race/Ethnicity		
Asian	71.2%	28.8%
Black/African American	60.7%	39.3%
Hispanic/Latino	63.5%	36.5%
White	72.5%	27.5%
Other	62.5%	37.5%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.458[a]	4	***
Likelihood Ratio	21.902	4	***
Linear-by-Linear Association	14.508	1	***
N of Valid Cases	2420		
a. 0 cells (0.0%) have expected count less than 5. **p<0.05; **p<0.01; ***p<0.001*			

Of the sample, White and Asian students tended to persist at higher rates than their counterparts. Of the White students in the sample, 72.5% reported intending to persist in college, while 71.2% of Asian students in the sample intended to persist. Of Hispanic/ Latino students in the sample, 63.5% intended to persist, while students who reported "Other" as their race were less likely to report that they intended to persist in college (62.5%) than their counterparts. The group that had the lowest intention to persist was Black/African American students. Among the Black/African American students in the sample, 60.7% intended to persist and 39.3% did not. The cross-tabulation statistics indicated that intention to persist in college was significantly related to students' race/ethnicity.

The same conclusion could be drawn after the chi-square hypothesis testing. Table 11 shows the chi-square test for intention to persist and race/ethnicity. The chi-square test results indicated that students with different race/ethnicities differed significantly in their intention to persist in college (chi-square value=22.458, $p<0.001$). Combined with the cross-tabulation results, the statistics indicated that White and Asian students had a significantly higher likelihood of intending to persist than Black/African American students, Hispanic/Latino students, or students who indicated "Other" race/ethnicity. Combined with the cross-tabulation results, the statistics indicated that intention to persist was significantly related to students' race/ethnicity.

First-Generation Status

Table 12 shows the cross-tabulation and chi-square test results between intention to persist and first-generation status. Students who were not categorized as first-generation students intended to persist at a higher rate than their counterparts, at 72.4%. First-generation students intended to persist at 65.9%, while 34.1% did not. The cross-tabulation statistics indicated that intention to persist in college was related to students' first-generation status. The

chi-square test results indicated that first-generation students differed significantly in their intention to persist in college (chi-square value=11.427, $p<0.001$). Combined with the cross-tabulation results, the statistics indicated that intention to persist was significantly related to students' first-generation status.

Table 12

Intention to Persist and First-Generation Status

	Intention to Persist	**No intention to persist**
First-Generation	65.9%	34.1%
Not First- Generation	72.4%	27.6%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.427[a]	1	***
Continuity Correction[b]	11.124	1	***
Likelihood Ratio	11.352	1	***
Fisher's Exact Test			
Linear-by-Linear Association	11.422	1	***
N of Valid Cases	2420		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 291.61.
**p<0.05; **p<0.01; ***p<0.001*

Academic Preparation

Table 13 shows the cross-tabulation and chi-square test results for first-year students' intention to persist and academic preparation as indicated by high school grades. Among the students in the sample, those who reported higher grades were more likely to intend to persist than those who reported lower grades. Of students who reported grades of "A," 74.7% intended to persist in college. Similarly, 71.1% of students who reported grades of "A-minus" intend to

persist in college, 63% of students who reported grades of "B or below" intended to persist and 37% did not. Overall, the results showed that students who reported higher academic preparation were more likely to intend to persist. The cross-tabulation statistics indicated that intent to persist in college was significantly related to students' academic preparedness, as indicated by their reported high school grades.

Table 13

Intention to Persist and Academic Preparation

Variable	**Intention to Persist**	**No intention to persist**
Academic Preparation		
High school grades (A)	74.7%	25.3%
High school grades (A-minus)	71.1%	28.9%
High school grades (B or below)	63.0%	37.0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.604[a]	2	***
Likelihood Ratio	30.325	2	***
Linear-by-Linear Association	29.876	1	***
N of Valid Cases	2420		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 177.92.
**p<0.05; **p<0.01; ***p<0.001*

The same conclusion could be drawn from the chi-square hypothesis testing. Table 13 shows the chi-square test for intention to persist and academic preparation. The chi-square test results indicated that students with different reported high school grades differed significantly in their intention to persist in college (chi-square value = 30.604, $p<0.001$). Combined with the

cross-tabulation results, the statistics indicated that intention to persist was significantly related to academic preparedness, as determined by reported high school grades.

Financial Stress

Table 14 shows the cross-tabulation and chi-square test results between intention to persist and student financial stress as indicated by perceived difficulty paying for college expenses.

Table 14

Intention to Persist and Financial Stress

Variable	**Intention to Persist**	**No intention to persist**
Financial Stress		
Low difficulty paying	77.0%	23.0%
Medium difficulty paying	74.8%	25.2%
High difficulty paying	61.8%	38.2%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	54.819[a]	2	***
Likelihood Ratio	54.608	2	***
Linear-by-Linear Association	47.688	1	***
N of Valid Cases	2420		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 169.83.
**p<0.05; **p<0.01; ***p<0.001*

In the sample, 77% of students who reported low difficulty paying for college expenses intended to persist, 74.8% of students who reported medium difficulty paying for college intended to persist, and 61.8% of students who reported high difficulty paying for college expenses intended to persist while 38.2% do not. The cross-tabulation statistics indicated that

intention to persist in college was significantly related to students' financial stress, as indicated by their level of difficulty paying for college expenses.

The same conclusion could be drawn after the chi-square hypothesis testing. Table 14 shows the chi-square test for intention to persist and financial stress. The chi-square test indicated that students with different reported levels of financial stress differed significantly in their intention to persist in college (chi-square value = 54.819, $p<0.001$). Combined with the cross-tabulation results, the statistics indicate that intention to persist is significantly related to financial stress, as indicated by reported difficulty paying for college expenses.

Institutional Characteristics

Additional chi-square tests were conducted to determine whether there were differences in intention to persist based on institutional characteristics, including control (public or private), type (*doctoral/research* or *master/bachelors/other*), and enrollment size. Based on the cross-tabulation results and chi-square testing, there were no significant differences between intention to persist and students' institution type (*doctoral/ research* or *masters/bachelors/other*). However, there were differences found when comparing institution size and control (private or public).

Tables 15 and16 show the cross-tabulation and chi-square tests between students' intention to persist and their institution characteristics, such as enrollment size and control (private or public). Of the sample, 73.4% of students who were enrolled in a large sized school (with 10,000 or more students) intended to persist. In the sample, 68.7% of students who were enrolled in a small sized school (with a Carnegie classification of less than 2,500) intended to persist while 31.3% did not. Similarly, 63% of students who were enrolled in a medium sized school (Carnegie classification between 2,500-9,999 students) intended to persist while 37% did

not. The cross-tabulation statistics indicated that intention to persist in college is significantly related to institution size. The same conclusion could be drawn after the chi-square hypothesis testing. Table 15 shows the chi-square test for intention to persist and institutional size. The chi-square test results indicate that students from different size institutions differed significantly in their intention to persist in college (chi-square value = 25.832, $p<0.001$). Combined with the cross-tabulation results, these statistics indicated that intention to persist was significantly related to institutional characteristics, as indicated by institution size, among the surveyed sample.

Table 15

Intention to Persist and Institution Size

Variable	**Intention to Persist**	**No intention to persist**
Institution Size		
Small size school	68.7%	31.3%
Medium size school	63.0%	37.0%
Large size school	73.4%	26.6%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25.832[a]	2	***
Likelihood Ratio	25.438	2	***
Linear-by-Linear Association	15.577	1	***
N of Valid Cases	2420		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 50.16. **p<0.05; **p<0.01; ***p<0.001*			

Table 16 shows the cross-tabulation and chi-square test results between intention to

persist and institutional control (public or private). Among the students in the sample, 73.2% enrolled in a public institution intended to persist while 61.5% of students who were enrolled in a private institution intended to persist. The chi-square test indicated that students who were enrolled in a public institution differed significantly in their intention to persist in college (chi-square= 32.890, $p<0.001$). Combined with the cross-tabulation results, these statistics indicate that intention to persist is significantly related to institutional control.

Table 16

Intention to Persist and Institution Control

	Intention to Persist	**No intention to persist**
Institution Control		
Public	73.2%	26.8%
Private	61.5%	38.5%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.890[a]	1	***
Continuity Correction[b]	32.335	1	***
Likelihood Ratio	32.104	1	***
Fisher's Exact Test			
Linear-by-Linear Association	32.876	1	***
N of Valid Cases	2420		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 214.97. **p<0.05; **p<0.01; ***p<0.001*			

Data Analysis

I relied on binary logistic regression to answer my second research question: "Controlling for all other factors, to what extent do academic engagement factors—specifically student-

faculty interactions, learning strategies, and collaborative learning—affect first-year students' intention to persist?"

Tables 17 and 18 provide the binary logistic regression results. Levels of significance and odds ratios (Exp(β)) were used to determine whether the independent and control variables had a significant relationship with the dependent variable of intention to persist. In order to find specific factors related to academic engagement, I conducted two binary logistic regression analyses with total academic engagement scores and individual academic engagement scores. Consistent with the literature and explained in Chapter 3, the purpose of conducting two sets of analysis was, first, to determine if any of the engagement indicators were significant (based on total scores) and then to conduct a sensitivity test to determine whether or not it would be possible to extrapolate additional information from individual scores (Gordon et al., 2007).

Analysis 1: Academic Engagement Total Scores

The first binary logistic regression analysis included the control variables of academic preparation, financial stress, gender, race/ethnicity, and such institutional characteristics as the perception of the campus environment, size and type of institution. Independent variables were the total score of each academic engagement indicator (learning strategies, student-faculty interactions, and collaborative learning). The purpose of this analysis was to understand whether or not there were significant relationships between intention to persist and the academic engagement indicators. Table 17 shows the binary logistic regression results of the total score variables.

Control Variables. Eight control variables were used to examine the relationship between intention to persist and academic engagement. In my model, the following control variables had no significant effect on students' intention to persist: gender, institution size,

institution type, or first-generation status. However, the following control variables had significant effects on students' intention to persist: financial stress, academic preparation, race/ethnicity, supportive campus environment, and institutional control.

As indicated in Table 17, there is evidence of a significant relationship between intention to persist and high financial stress. Compared to students who indicated low difficulty paying for college expenses, those who reported "high" financial stress tended to have 42.3% lower odds of intending to persist ($\text{Exp}(\beta) = 0.577$; $p<0.001$). Similarly, the p-value ($p<0.01$) suggests a significant relationship between intention to persist and academic preparation. Compared to students who indicated grades of mostly "A," those who reported earning grades of "B or below" tended to have a 27.2% lower odds of intending to persist ($\text{Exp}(\beta) = 0.728$; $p<0.01$).

As indicated in Table 17, the p-value ($p<0.05$) suggested evidence of a significant relationship between intention to persist and race/ethnicity. The students categorized in the "Other" race included those who indicated "Native American or Alaska Native," "Native Hawaiian or other Pacific Islander," "Other or Unknown," or "Multiracial." Compared to White students, those who identified as "Other" race/ethnicity tended to have a 27.5% lower odds of intending to persist ($\text{Exp}(\beta) = 0.725$, $p<0.05$). Similarly, the p-value ($p<0.001$) suggested evidence of a significant relationship between intention to persist and perception of a supportive campus environment. Students who indicated that they had a supportive campus environment tended to have 2.9% higher odds of intending to persist ($\text{Exp}(\beta) = 1.029$; $p<0.001$).

As indicated in Table 17, the p-value ($p<0.05$) suggests that there is evidence of a significant relationship between intention to persist and institutional characteristics, such as control. Although this finding can be explained by the particular sample of institutions, compared to students who attended a public institution, those who attended a private institution

tended to have 35.6% lower odds of intending to persist (Exp(β) = 0.644; $p<0.05$). To further account for institutional differences and to determine the coefficients on institutional fixed effects, I included a series of variables to account for where each student was enrolled. My analysis indicated that there were differences in intention to persist between institutions that are classified as doctoral universities with high research activity and those classified as private master's universities.

Table 17

Binary Logistic Regression—Academic Engagement Total Scores

Variables in the Equation			
	Exp(β)	**Standard Error**	**Significance**
Control Variables			
Medium difficulty paying	0.979	0.133	
High difficulty paying	0.577	0.126	***
Asian	1.164	0.195	
Black/ African American	0.708	0.196	
Hispanic/ Latino	0.823	0.165	
"Other" race	0.725	0.142	*
First-generation	0.903	0.1	
Small size school	1.252	0.311	
Medium size school	0.974	0.223	
Doctoral/research school	1.02	0.103	
Female	0.828	0.107	
Private institution	0.644	0.214	*
High school grades (A-minus)	0.985	0.122	
High school grades (B or below)	0.728	0.112	**
Supportive Environment	1.029	0.004	***
Independent Variables- Total Scores			
Learning Strategies	0.997	0.004	
Collaborative Learning	0.997	0.004	
Student-Faculty Interactions	1.007	0.004	
*Significance *p<0.05; **p<0.01; ***p<0.001*			

Independent variables. In this model, none of the total scores for academic engagement variables—such as learning strategies, student-faculty interactions, or collaborative learning—showed significant p-values (p>0.05). Since the p-value was not significant (p>0.05), I concluded that there was no evidence of a significant relationship between first-year students' intention to persist and total academic engagement scores for learning strategies, student-faculty interactions, and collaborative learning.

Analysis 2-Academic Engagement Individual Scores

The second binary logistic regression analysis included the control variables of academic preparation, financial stress, gender, race/ethnicity, and institutional characteristics such as perception of the campus environment, size and type of institution, and the individual scores on each academic engagement variable (learning strategies, student-faculty interactions, and collaborative learning). As stated in Chapter 3, the reason for conducting a second analysis was to provide sensitivity tests and to learn whether specific factors influenced students' intention to persist (Gordon et al., 2007). Table 18 shows the binary logistic regression results for the individual score variables.

Control variables. Similar relationships were found between intention to persist and the control variables. The binary logistic regression showed the following control variables had no significant effect on student intention to persist: gender, institution size, institution type, or first-generation status. The binary logistic regression showed that the following control variables had significant adverse effects on intention to persist: financial stress, students who reported "Other" race, academic preparation with grades B or below, and students who attended a private institution.

As with the total score analysis, intention to persist was found to have a positive

relationship to a supportive campus environment. As indicated in Table 18, the results suggest that there is evidence of a significant relationship between intention to persist and how much an institution emphasizes providing support for a student to succeed academically (scaled *very much*, *quite a bit*, *some*, or *very little*). Specifically, compared to students who indicated a lower view of the campus environment (*very little*), those who reported that their institutions emphasized academic support and success (*very much*) tend to have 19% higher odds of intending to persist ($Exp(\beta) = 1.190$; $p<0.05$).

As indicated in Table 18, the *p*-value ($p<0.001$) suggests evidence of a significant relationship between intention to persist and how much an institution emphasizes providing support for helping a student to manage their non-academic responsibilities (work, family, etc.). Compared to students who indicated a lower view of the campus environment, those who reported that their institutions emphasized support for non-academic responsibilities tend to have 24.1% higher odds of intending to persist ($Exp(\beta) = 1.241$; $p<0.001$).

Similarly, the p-value ($p<0.05$) suggests evidence of a significant relationship between intention to persist and how much an institution emphasizes providing opportunities to be involved socially. Compared to students who indicated a lower view of the campus environment, those who reported that their institutions emphasized opportunities to become involved socially tended to have 22.7% higher odds of intending to persist ($Exp(\beta) = 1.227$; $p<0.05$).

As indicated in Table 18, the p-value ($p<0.05$) suggests evidence of a significant relationship between intention to persist and how much an institution emphasizes learning support services (e.g., tutoring, writing centers). Compared to students who indicated a lower view of the campus environment, those who reported that their institutions emphasized using learning support services tended to have a 15.6% lower odds of intending to persist ($Exp(\beta) =$

0.844; $p<0.05$). This finding is contrary to the literature relating to academic success and an institution's emphasis on academic support, and it will be discussed in Chapter Five.

Independent variables. In this model, none of the individual scores for academic engagement variables—learning strategies, student-faculty interactions, or collaborative learning—showed significant p-values ($p>0.05$). Since the p-value was not significant ($p>0.05$), I conclude that there is no evidence of a significant relationship between intention to persist and the individual academic engagement scores for learning strategies, student-faculty interactions, and collaborative learning.

Table 18

Binary Logistic Regression: Academic Engagement Individual Scores

Variables in the Equation			
	Exp(ß)	**Standard Error**	**Significance**
Control Variables			
Medium difficulty paying	0.976	0.135	
High difficulty paying	0.574	0.128	***
Asian	1.125	0.198	
Black/African American	0.7	0.199	
Hispanic/Latino	0.809	0.167	
"Other" race	0.719	0.144	*
First-generation	0.89	0.101	
Small school	1.233	0.317	
Medium school	1.003	0.228	
Doctoral/ research	1.003	0.105	
Female	0.847	0.11	

Private institution	0.653	0.218	*
High school grades (A-minus)	0.962	0.124	
High school grades (B or below)	0.704	0.115	**
Institutional emphasis: Spending significant amounts of time studying and on academic work	1.003	0.073	
Institutional emphasis: Providing support to help students succeed academically	1.19	0.09	*
Institutional emphasis: Using learning support services (tutoring services, writing center, etc.)	0.844	0.078	*
Institutional emphasis: Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	0.975	0.069	
Institutional emphasis: Providing opportunities to be involved socially	1.227	0.084	*
Institutional emphasis: Providing support for your overall well-being (recreation, health care, counseling, etc.)	1.143	0.078	
Institutional emphasis: Helping you to manage your non-academic responsibilities (work, family, etc.)	1.241	0.064	***
Institutional emphasis: Attending campus activities and events (performing arts, athletic events, etc.)	1.135	0.076	
Institutional emphasis: Attending events that address important social, economic, or political issues	0.93	0.074	
Independent Variables- Individual Scores			
Asked another student to help you understand course material	0.957	0.073	
Explained course material to one or more students	0.879	0.078	
Prepared for exams by discussing or working through course material with other students	1.095	0.071	
Worked with other students on course projects or assignments	0.984	0.073	
Talked about career plans with a faculty member	0.908	0.071	
Worked with a faculty member on activities other than coursework (committees, student groups, etc.)	1.068	0.066	
Discussed course topics, ideas, or concepts with a faculty member outside of class	1.051	0.08	
Discussed your academic performance with a faculty member	1.092	0.077	
Identified key information from reading assignments	0.916	0.076	
Reviewed your notes after class	0.902	0.071	
Summarized what you learned in class or from course materials	1.101	0.072	
*Significance *p<0.05; **p<0.01; ***p<0.001*			

Summary

The objective of my quantitative correlation study was to find the extent to which academic engagement factors—including student-faculty interactions, learning strategies, and collaborative learning—affect students' intention to persist. My study analyzed two models of binary logistic regression to examine the relationship between college students' intention to persist (the dependent variable) and the predictor (independent) variables of student-faculty interactions, learning strategies, and collaborative learning. The control variables in my study included gender, race/ethnicity, academic preparation, financial stress, first-generation status, institutional characteristics, and perception of a supportive campus environment. I combined longitudinal data from 2,420 students who took the 2014 Beginning College Survey of Student Engagement, the 2015 National Survey of Student Engagement, and the 2015 First Year Experience module.

Among the three key engagement indicators of academic engagement, the descriptive statistics demonstrated that students reported the highest levels of academic engagement through learning strategies (M=40.50, SD=13.715), specifically "identifying key information from reading assignments (M=3.23, SD= 0.730). The second highest academic engagement indicator was collaborative learning (M=33.72; SD=13.445), specifically "explaining course material to one or more students (M=2.79; SD=0.791). The lowest of the three academic engagement indicators was student-faculty interactions (M=22.51, SD=14.783), specifically "working with a faculty member on activities other than coursework (M=1.86, SD=0.939). Supportive Environment, which served as a control variable, scored relatively high among the engagement indicators (M=39.69, SD=13.388), specifically for "emphasis on using learning support services" (M= 3.21, SD= 0.850).

The ANOVA test revealed differences in population means for race/ethnicity regarding two areas of engagement, student-faculty interactions, and supportive campus environment. There is sufficient evidence to indicate that student-faculty interactions differ significantly across racial and ethnic groups (F=3.338; p<0.01). In this sample, there were significant differences between student-faculty interactions when comparing White and Black or African American students (p<0.01). On average, compared to White students, Black or African American students tended to score 4.4 points lower in student-faculty interactions (p<0.01). Similarly, based on the post-hoc F-test, there was sufficient evidence to indicate that the perception of supportive campus environments differed significantly across racial and ethnic groups (F=3.037; p<0.05). On average, compared to Asian students, Hispanic/Latino students tended to score 4.15 points lower on their perception of a supportive campus environment (p<0.05). Similarly, the post-hoc tests show that, on average, compared to Asian students, White students tended to score 3.23 points lower on their perception of a supportive campus environment (p<0.05).

ANOVA tests also found that, based on the F-test, there is sufficient evidence to indicate that the perception of a supportive campus environment differed significantly across academic preparation categories in terms of high school grades (F=7.617; p<0.001). Given this sample, there were significant differences between the perception of supportive campus environment when comparing students who report grades of mostly "A," "A-minus," or "B or below" (p<0.05). On average, the post-hoc tests showed that, compared to students who reported grades of "A" in high school, students who reported mostly "A-minus" and "B or below" tended to score 1.71 and 2.36 points higher in a supportive campus environment, respectively (p<0.05; p<0.01).

Cross tabulations and chi-square tests were conducted to further explore the relationship

between the demographic variables and the outcome variable "intention to persist." Chi-square tests found significant associations between intention to persist and demographic variables, including race/ethnicity (chi-square value= 22.458; $p<0.001$), first-generation status (chi-square value= 11.427; $p<0.001$), academic preparation (chi-square value= 30.604; $p<0.001$), financial stress (chi-square value= 54.819; $p<0.001$), and institutional characteristics such as enrollment size (chi-square value= 25.832; $p<0.001$) and institutional control (chi-square value=32.890; $p<0.001$). There were no significant associations found between intention to persist and institution type or gender.

The binary logistic regression results indicated significant relationships between intention to persist and the control variables. Based on this analysis, both models revealed significant relationships between intention to persist and students who anticipated financial stress in college. Those who indicated "high difficulty paying" for college expenses tended to have 42.3% lower odds of intending to persist than their counterparts (Exp(ß) = 0.577; $p<0.001$). Both models also revealed significant relationships between intention to persist and race/ethnicity. Compared to White students, those who identified as "Other" race or ethnicity tended to have 27.5% lower odds of intending to persist (Exp(ß) = 0.725, $p<0.05$).

Similarly, both models found significant relationships between intention to persist and students who reported earning "B or lower" in high school. Compared to their counterparts, those students who reported earning "B or lower" in high school had approximately 27.2% lower odds of intending to persist (Exp(ß) = 0.728, $p<0.01$). Students who were enrolled in private institutions also had lower odds of intending to persist. Compared to students who attend public institutions, those who attended private institutions tended to have a 35.6% lower odds of intending to persist (Exp(ß) = 0.644, $p<0.05$). There were significant differences in intention to

persist between institutions. On average, compared to students enrolled at institutions classified as large, public institutions with high research activity, those at institutions that were classified as master's universities without high research activity had lower odds of intending to persist.

In both models, students who had a high perception of supportive campus environment had higher odds of intending to persist than their counterparts. For the supportive campus environment scores (M=39.69, SD=13.388), students who indicated that their institution emphasized a supportive campus environment tend to have 2.9% higher odds of intending to persist (Exp(ß) = 1.029; p<0.001) than their counterparts. When comparing individual supportive campus environment scores, the p-value (p<0.05) suggested that there is evidence of significant relationships between intention to persist and how much an institution emphasizes providing academic support. Compared to students who indicated a lower view of supportive campus environments, those who reported that their institutions emphasized academic support and success tend to have 19% higher odds of intending to persist (Exp(β) = 1.190, p<0.05). Students who reported that their institutions emphasized support for non-academic responsibilities, such as work and family, tended to have 24.1% higher odds of intending to persist (Exp(β) = 1.241, p<0.001). Students who reported that their institutions emphasized providing opportunities to become involved socially tended to have 22.7% higher odds of intending to persist (Exp(β) = 1.227, p<0.05).

In contrast to the literature related to academic support, the data analysis in this study showed a negative relationship between intention to persist and institutional emphasis on using learning support services. Compared to students who indicated a higher view of the campus environment, those who reported that their institutions emphasized using learning support services (tutoring services, writing center) tended to have 15.6% lower odds of intending to

persist (β = -0.170, Exp(β) = 0.844, $p<0.05$). In both models, none of the individual scores for academic engagement variables such as learning strategies, student-faculty interactions, or collaborative learning showed significant p-values ($p>0.05$). Since the *p*-value was not significant ($p>0.05$), I concluded that there was no evidence of a significant relationship between intention to persist and the total and individual academic engagement scores for learning strategies, student-faculty interactions, and collaborative learning.

Chapter 4 presented the findings of my research and demonstrated the answers to my research questions supported by the data. The findings addressed each research question through descriptive statistics and the results of the binary logistic regression data analysis. Chapter 5 provides conclusions, recommendations, and suggestions for future research.

Chapter 5

Summary, Conclusions, and Recommendations

In Chapter 5, I summarize the study on academic engagement and students' intention to persist, providing a summary of the findings and drawing conclusions by addressing each research question based on the evidence presented. My discussion will show how the study contributes to the larger body of literature on the topic of academic engagement and student persistence. Based on this study, I also provide recommendations for practice and policy. Finally, I discuss future opportunities for research.

Summary of Findings

My study employed two models of binary logistic regression to examine the relationships between college students' intention to persist (dependent variable) and the predictor (independent) variables of student-faculty interactions, learning strategies, and collaborative learning. The control variables in my study included gender, race/ethnicity, academic preparation, financial stress, first-generation status, institutional characteristics, and perception of a supportive campus environment. I combined longitudinal data from 2,420 students who took the 2014 Beginning College Survey of Student Engagement, the 2015 National Survey of Student Engagement, and the 2015 First Year Experience module.

I used descriptive statistics—including ANOVA, cross-tabulations, and chi-square tests— to answer my first research question, "What are the levels of academic engagement and distribution of intention to persist for first-year college students?"

Academic Engagement

Descriptive statistics showed differences in mean scores among the academic engagement variables. Of the sample, students reported the highest engagement in learning

strategies as identifying key information from reading assignments. The second highest reported level was the perception of a supportive campus environment, which served as a control variable. ANOVA test results uncovered sufficient evidence to indicate that the perception of supportive campus environments differs significantly across racial and ethnic groups. On average, compared to Asian students, Hispanic/Latino and White students tended to score lower on their perceptions of a supportive campus environment. Supportive campus environment results also differed significantly across academic preparation levels (as indicated by high school grades). Compared to students who reported grades of mostly "A" in high school, students who report grades of mostly "A- minus" or "B or below" tended to score higher in their perceptions of a supportive campus environment.

The next highest academic engagement indicator was collaborative learning, specifically participating in explaining course material to one or more students. The lowest of the academic engagement variables was student-faculty interactions, explicitly working with faculty members on activities other than coursework. ANOVA tests found sufficient evidence to indicate that student-faculty interactions also differed significantly across racial and ethnic groups. On average, compared to White students, Black or African American students tended to score lower in student-faculty interactions.

Intention to Persist

My cross-tabulations and chi-square tests found significant associations between intention to persist and demographic variables, including race/ethnicity, first-generation status, academic preparation, financial stress, and institutional characteristics such as enrollment size and institutional control. There were no significant associations between intention to persist and institution type (*doctoral/research* or *masters/bachelors/other*) or gender.

Compared to White and Asian students, Hispanic/Latino, Black/African American, and students who identified as "Other" were less likely to report an intention to persist. Similarly, first-generation students were less likely to intend to persist than their counterparts. The results of this study also showed significant negative relationships between students who anticipated high financial stress or had lower academic preparation in high school. Students who indicated high difficulty paying for college expenses tended to have lower odds of intending to persist than their counterparts. Similarly, compared to their counterparts, students who reported earning grades of "B or below" in high school had lower odds of intending to persist.

Institutional size and control factors played a statistically significant role in student intention to persist. Compared to students who attended public institutions, those who attended private institutions tended to have lower odds of intending to persist. Larger institutions that have more than 10,000 students were more likely to report intention to persist than small- or medium-sized schools. To take into account individual institutional characteristics, the study found significantly higher intention to persist among students at large, public institutions with high research activity than those at smaller or medium-sized master's universities with no research activity.

I addressed my second research question—"Controlling for all other factors, to what extent do academic engagement factors, specifically student-faculty interactions, learning strategies, and collaborative learning, affect first-year students' intention to persist?"—by using two binary logistic regression models: one for total engagement scores and one for individual engagement scores.

Academic Engagement and Intention to Persist

While analyzing total and individual scores, none of the factors for academic engagement

variables—such as learning strategies, student-faculty interactions, or collaborative learning—showed significant *p*-values ($p>0.05$). Since the *p*-value was not significant ($p>0.05$), there was no evidence of a significant relationship between intention to persist and the total or individual academic engagement scores for learning strategies, student-faculty interactions, and collaborative learning.

However, both total and individual score analysis found significant relationships between intention to persist and students who had a high perception of being in a supportive campus environment. Among individual scores, there were relationships between intention to persist and students who reported that their institutions emphasized academic support and success. Similarly, students who reported that their institutions emphasized support for non-academic responsibilities, such as work and family, tended to have higher odds of intending to persist. Lastly, students who reported that their institutions emphasized providing opportunities to be involved socially tended to have higher odds of intending to persist.

Contrary to the existing literature related to academic support, this data analysis found a negative relationship between intention to persist and institutional emphasis on learning support services. Compared to students who indicated a higher view of the campus environment, students who reported that their institutions emphasized using learning support services (tutoring services, writing center) tended to have lower odds of intending to persist.

Discussion of Findings

Academic Engagement

Among academic engagement indicators, students reported the highest levels of learning strategies, supportive campus environment, collaborative learning, and student-faculty interactions. These findings mirror trends found in prior NSSE studies, which have shown the

same pattern for students' mean scores (Fuller et al., 2011; Johnson et al., 2013). This trend underscores the problem statement, which was that students express dissatisfaction with their faculty interactions and low frequency of faculty interactions inside and outside of the classroom (Mancuso et al., 2010). Data analysis also showed differences in individual academic engagement factors between various subgroups. Student-faculty interactions varied by race and ethnicity; this finding is supported by the literature, which states that, compared to White students, Black and African American students are less likely to participate in student-faculty interactions (Umback & Wawrzynski, 2005).

Intention to Persist

Compared to White and Asian students, Hispanic or Latino, Black or African American, and students who reported "Other" as their race were less likely to report an intention to persist. This finding supports studies showing differences in college persistence when considering race and ethnicity (Kuh, 2006; Strayhorn, 2010; Soria & Stebelton; 2012). Previous research supports the view that White and Asian students are more likely to persist after their first year than students from other races and ethnicities (NCES, 2016).

The findings from this study also support the literature showing that racial and ethnic differences are amplified when examining levels of socioeconomic status (Kuh, 2006). Students who reported experiencing a high level of financial stress were more likely than their counterparts to report no intention to persist. Research shows students who experience financial stress are more likely than their peers to drop out of college (Engle & Tinto, 2008; King, 2000; Tinto, 2010). Similarly, low-income students from lower socioeconomic backgrounds are more likely to drop out of college compared with their upper-income counterparts (Chen & DesJardins, 2008).

The results of this study also support the relationship found in the previous literature regarding academic preparedness, as reported by grades in high school, and first-year students' persistence (DeBerard et al., 2004; Kuh, 2006). Students with lower academic preparation, as indicated by reported high school grades of grades of "B or below," showed a negative intention to persist. Similarly, this study supports previous findings on the effect of parental educational attainment and college intention to persist (Ishitani, 2006; Mitchell & Hughes, 2014; Warburton, Bugarin, & Nunez, 2001). First-generation students were found to have lower intention to persist rates than students whose parents completed a bachelor's degree.

Institutional factors such as type and size can affect student persistence (Astin, 1996; Kim, 2007; NCES, 2015). Contrary to the literature, students at private colleges, in this study, tended to have lower intention to persist rates than public institutions. This finding can be explained by the overrepresentation of public institutions in this study. Data in this study suggest that, overall, larger institutions tend to retain their students at higher rates than smaller institutions (NCES, 2016). This finding supports descriptive studies showing that larger institutions have higher intention to persist rates than smaller or medium-sized institutions (NCES, 2016).

Academic Engagement and Persistence

This study provides sufficient evidence for concluding that there is no significant relationship between intention to persist and academic engagement factors, including student-faculty interactions, collaborative learning, and learning strategies. Although surprising, this finding is consistent with previous studies that have attempted to find relationships between academic engagement and college persistence and have yielded mixed results (Braxton et al., 2004; Kuh, 2007; Tinto, 2004). Some studies have found significant relationships between

student-faculty interactions and persistence (Hu, 2011; Mitchell & Hughes, 2014; Trosset & Weisler, 2010), while others have found no correlations between these variables (Flynn, 2014). Similarly, some of the literature supports the finding that there are moderate relationships between learning strategies and persistence (Robbins et al., 2004; Tuckman & Kennedy, 2011), while other studies have found no correlations between the variables (Hoops et al., 2015). Lastly, some research shows significant relationships between collaborative learning and persistence (Colardarci et al., 2013; Cooper, 2010), while other studies have found converse results (Ticknor et al., 2014). Many of the studies that have shown positive relationships between academic engagement and persistence, however, did not use the NSSE as their primary data source.

Although none of the academic engagement variables were found to be significant, the perception of a supportive campus environment did have a positive relationship with students' intention to persist. This finding is consistent with the literature that reviews the effects of a supportive campus environment and college outcomes, including persistence (Jones, 2013; Kuh et al., 2010; Pike & Kuh, 2005; Tinto, 2010). A campus that has a supportive, collaborative, welcoming climate is more likely to have higher persistence rates than a campus that does not exhibit these characteristics (Lau, 2003).

The present study further found that there is sufficient evidence to indicate that the perception of supportive campus environment differs significantly across racial and ethnic groups. On average, compared to Asian students, Hispanic/Latino and White students scored lower on the perception of a supportive campus environment scores. The previous literature has not explicitly supported this finding. However, the research has found that the more a student integrates academically, the more s/he is likely to report higher levels of perception of a supportive campus environment (Laird & Niskodé-Dossett, 2010). Of Asian students in the

sample (*n*=157), 69% reported using learning strategies *often* or *very often*. Fifty percent of Asian students reported that their institutions emphasized a supportive campus environment *quite a bit* or *very often*. This finding supports previous evidence showing that student perceptions of a supportive campus environment differ by race and ethnicity (Rankin & Reason, 2005; Saenz, Ngai, & Hurtado, 2006).

The total scores and individual coefficients showed that there was a significant positive relationship between students' perception of a supportive campus environment and intention to persist, specifically whether or not the institution emphasized providing support to help students succeed academically, to manage non-academic responsibilities, or to become involved socially. The findings confirms the literature which suggests that students' perceptions of the campus environment and the emphasis that institutions place on student engagement can influence persistence (Astin, 1984; Gordon et al., 2008; Kuh, 2007; Laird & Niskode-Dossett, 2010; Tinto, 2010). A campus that had a supportive and welcoming climate is more likely to have higher persistence rates than their counterparts (Lau, 2003). Contrary to the literature related to academic support (Kuh et al., 2008; Lau, 2003; NSSE, 2015), this study found a negative relationship between intention to persist and institutional emphasis on using learning support services. This finding may suggest that students who are not likely to persist may be academically disengaged from academic support services such as tutoring and may not, therefore, seek the services offered (Sidelinger et al., 2016; Ticknor et al., 2014). Although institutions may emphasize academic support services such as tutoring, many of these services are voluntary.

Implications and Recommendations

The significance of this study is that it highlights the lack of literature regarding the

extent to which academic engagement indicators influence students' intention to persist. This study contributes to the current body of knowledge on attributes associated with student persistence, including academic preparation, financial stress, and a supportive campus environment. The findings of this study can inform policymakers on ways to address leadership, policy, and organizational change. The results of this study can serve as guidelines for student affairs professionals seeking to improve their students' persistence through application and programming.

Pre-college Preparation

In this study, pre-college characteristics—including race/ethnicity, financial stress, and academic preparation—were related to students' intention to persist. Although some of the colleges in the sample may have pre-college preparation programs, such as summer bridge programs, in place, additional emphasis on improving and assessing these interventions could promote success for students who need additional support and assistance. Cabrera, Miner, and Milem (2013) described pre-college or summer bridge programs as interventions focused on exposing students to college-level coursework, academic study skills, and campus resources (Douglas & Attewell, 2014). Studies have found that pre-college programs have worked as successful interventions to retain first-generation college students (Wilbrowski, Matthews, & Kitsantas, 2016). Studies have found that underrepresented students who participate in pre-college programs experience improved social and academic integration, higher GPAs, and higher persistence and graduation rates than their nonparticipating counterparts (Cabrera et al., 2013; Douglas & Attewell, 2014; Wilbrowski et al., 2016).

There is a significant relationship between students who reported high levels of financial stress and lower odds of intending to persist in college. Students who experience financial stress

in college may not be able to participate in college activities due to lack of finances, or they may feel additionally burdened by having to work to support themselves or their families (Fosnacht & Dong, 2013). Policymakers and the U.S. Department of Education could devote additional financial resources to improving the Federal Student Aid Office, which provides students with information on how to financially prepare for college, apply for aid, and research loan options. States could review college funding formulas to allocate more funding to need-based and grant aid while considering other performance indicators, such as course completion and time-to-degree (Chen & John, 2011). State or institutional merit-based grants that are tied to academic performance have also been correlated with increased persistence rates (Dynarski & Scott-Clayton, 2013).

Part of financial stress is caused by a lack of information provided to students on topics such as money management, budgeting tools, and resources (Fosnacht & Dong, 2013). Higher education practitioners seeking to decrease financial stress could provide workshops or seminars about financial literacy to increase financial knowledge, including more responsible attitudes towards credit, budgeting tools, and money management skills (Bordon, Lee, & Collins, 2008). Colleges could also collaborate with online platforms, such as *SALT Money*, which provide students with customized resources and tools to find scholarships and jobs, practical advice on budgeting, and a system to manage loan information (SALT Money, n.d.). Since these financial literacy online tools are new platforms, it is too early to provide empirical evidence of their effectiveness or outcomes.

Creating a Supportive Campus Environment

This study showed a significant positive relationship between intention to persist and students' perception of a supportive campus environment, especially whether or not the

institution emphasizes providing support to help students to succeed academically, to manage non-academic responsibilities, or to become involved socially. As researchers have suggested, "a supportive campus environment does not exist in a vacuum; [it is not] independent of other policies and practices" (Kuh et al., 2010, p. 242). Campus collaboration is essential to providing a supportive campus environment to students. The benefits of organizational collaboration include higher efficiency, effectiveness, and enhanced student learning (Kanter, 1994; Senge, 1990). The way that students navigate or perceive organizational bureaucracies can also influence their persistence (Braxton & McClendon, 2001). However, there are many barriers to campus collaboration, including trust, departmental silos, bureaucracy, unions, resources, relationships, and commitment (Kanter, 1994; Kezar, 2005). To build campus collaboration and improve persistence, institutions must align their strategic plans with the mission of student success (Kuh et al., 2010).

Faculty role. Faculty members play an integral role in helping to create a supportive campus environment (Kuh, 2011). Researchers have found that faculty who create an open and approachable atmosphere inside and outside of the classroom can improve academic and social outcomes for students (Komarraju et al., 2010). Faculty can also contribute to building a supportive campus environment by providing their expertise and perspectives to campus committees that focus on student success and by developing strong collaborations with student affairs departments (Kuh, 2011). Mechanisms that promote information sharing and faculty involvement in activities outside of the classroom have been proven to yield positive outcomes (Komarraju et al., 2010).

Academic support. As Tinto (2010) has explained, "academic support is important not just to those who begin college academically under-prepared, but also for many other first-year

students who struggle to adjust to the new demands of college work" (p. 61-2). Academic support has been defined as study skill courses, peer tutoring, supplemental instruction, and mentoring or coaching (Kuh et al., 2005; Tinto, 2010). Institutions could provide additional emphasis on building a supportive campus environment, specifically on providing financial resources or additional personnel, which can enhance academic support services such as tutoring or supplemental instruction. Some of the academic benefits of peer tutoring include positive effects on academic achievement for the tutor and tutee, an increase in metacognitive skills and cognitive processing, enhanced conceptual understanding, and higher test scores (Bowman-Perrott et al., 2013; Leung, 2015; Topping, 2005). The psychological improvements that can be attributed to peer tutoring include increased group achievement motivation and higher self-efficacy (Bandura, 1989), active learning and participation (Benware & Deci, 1984), improved college engagement (Kuh et al., 2008), and a decrease in stress and test anxiety (Pintrich, 2004).

Although some of the institutions in the sample may have already adopted Student Success Courses (SSC) or learning strategies workshops, practitioners can further promote these interventions to help first-year students improve their academic performance and foster student motivation (Cho & Karp, 2012; Hoops et al., 2015; Tuckman & Kennedy, 2011; Wingate, 2006). Effective course design in SSCs should include cognitive, metacognitive, and affective elements (Hattie, Biggs, & Purdie, 1996). Academic coaching and mentoring programs can improve students' academic success and perception of a supportive campus environment (Allen & Webster, 2012; Pike & Kuh, 2005).

Managing non-academic responsibilities. This study has shown that students who feel that they are supported in their non-academic responsibilities, such as work or family obligations, are more likely to intend to persist in college. Students who have a challenging time

managing their non-academic responsibilities tend to be commuter, non-traditional, adult, or transfer students (Pike & Kuh, 2005). Previous research has found that undergraduate students who have children are less likely to persist because of the added strain of family responsibilities (Mitchell & Hughes, 2014). Programs that assist students in balancing competing priorities can support students and show them that the institution is aware of responsibilities other than coursework. Recommendations for additional support include on-campus childcare centers, alternate programming times for orientation programs or mandatory events, and additional resources, such as study spaces or parking accommodations, for students who require more flexibility (Kuh et al., 2011; Mitchell & Hughes, 2014).

Social involvement. This study also found that students who are encouraged to be involved socially are more likely to intend to persist than their counterparts. Previous research supports the finding that students who build strong social connections and are socially integrated into college are more likely to succeed academically and to persist (Kuh, 2006; Pike & Kuh, 2005; Tinto, 2010). Similarly, students who report loneliness or feelings of not belonging to the campus community are more likely to show decreased grade point averages, reduced satisfaction, and lower persistence (Mattanah et al., 2012; Strayhorn, 2008). Departments who cross-promote their social programs or provide incentives and encouragement to attend can build and model a sense of community and cohesiveness on campus.

Future Research

There is a need for further research in the realm of academic engagement and persistence. The main areas for this needed research include exploring differences in academic engagement across additional student and institutional characteristics, other effects or outcomes of academic engagement outside of persistence, a broader diversity in methodology, other factors

that influence the perception of a supportive campus environment, and deeper understandings of how to bridge academic engagement theory and practical application.

First, there is a need for more in-depth studies on differences in academic engagement across student subgroups and institutional characteristics. Although this study found differences in academic engagement across demographic characteristics, more in-depth subgroup analysis might provide a clearer understanding of how academic engagement and persistence differ across groups. Similarly, a closer look at how academic engagement differs based on institutional characteristics, such as expenditures and disciplines, is lacking in the research to date (Brint et al., 2008; Pike et al., 2006). Additional research on the variations of academic engagement across disciplines is also required (Brint, 2008; Gasiewski et al., 2012) to determine the significant differences in academic engagement for students in science, technology, engineering, and mathematics (STEM) fields compared to those who are studying in the humanities. Lastly, additional studies on how academic engagement affects community college students could provide further information on non-traditional students (Townsend & Wilson, 2009). A supplementary exploration of academic engagement and additional institutional characteristics could provide institutions with best practices guidelines to encourage college persistence.

Second, there is a need for research that focuses on the effects of academic engagement, outside of persistence factors. It may be worthwhile, for example, to explore the effects of academic engagement on cognitive and non-cognitive factors. Cognitive factors include the perception of academic challenge or critical thinking skills (Tuckman & Kennedy, 2011). Non-cognitive factors include self-efficacy, motivation, and student satisfaction (Hoops et al., 2015). Understanding how academic engagement may or may not influence additional outcomes, such as other cognitive and non-cognitive factors, can enhance the field and body of knowledge

regarding academic engagement and student success (Fuller et al., 2011; Pike & Kuh, 2005; Tinto, 2010).

Additionally, it may be worthwhile to explore whether or not there are consequences of too much academic engagement. Evidence from previous research shows that extreme studying behaviors and academic engagement could lead to student "burnout" and increased levels of stress and anxiety (Stoeber et al., 2011; Zhang, 2007). Hu (2011) and Astin (1984) found that students who are heavily involved academically tend to show signs of isolation from their peers and are less likely to integrate socially. Kuh (2007) also explained that students who spend an excessive amount of time and effort on academic activities, but not much time on other social activities, report lower academic gains and persistence.

Third, there is a need for additional studies using different research methods. Since there is a body of research that explores academic engagement in the pre-college and K-12 setting, longitudinal studies that follow students' academic engagement throughout college could be beneficial (Cole & Korkmaz, 2013). Such studies could explore how academic engagement changes throughout students' transition periods and how academic engagement levels are different for sophomores, juniors, and seniors. With longitudinal studies, an exploration of how academic engagement affects career outcomes could also provide insight on how specific learning strategies, such as time management, could lead to increased career success (Hu & McCormick, 2012).

Much of the existing research on academic and social engagement has relied on large-scale national surveys, such as the National Survey of Student Engagement (NSSE). More mixed methods and qualitative research could provide a better comprehension of how academic engagement shapes student outcomes, including persistence. Based on the available data, the

outcome variable focuses on first-year students' intention to persist. Although this outcome variable has been used in several studies (Bean, 1982; Cabrera et al., 2012; Nora & Castaneda, 1992; Okun et al., 1996), my study did not show the actual persistence outcomes of the students who reported that they intended to persist. Although this is a reliable proxy, NSSE may wish to match institutional data in order to provide actual persistence outcomes for future research.

Since a supportive campus environment was found to be a significant predictor of first-year students' intention to persist, further research on factors that improve this perception is needed. Diversity on college campuses, specifically racial and ethnic diversity, has been found to contribute to positive perceptions of the campus environment (Pike & Kuh, 2005). Further research on organization structure and change could provide additional insights on barriers to campus collaboration and create a culture of a supportive campus environment, which includes building trust and relationships (Kanter, 1994; Kezar, 2005).

Finally, additional research is needed on how college administrators and educators can utilize the theories and conceptual frameworks of academic engagement to design and deliver effective interventions. As technology continues to advance, it is essential to understand some of the ways that college educators can use new technology, including phone applications, texting, and games to increase academic engagement. Similarly, further research could measure the effectiveness of infusing academic engagement behaviors, learning strategies, and collaborative learning elements into first-year experience models, including programming and coursework (Porter & Swing, 2006). These models, in turn, could be evaluated to assess relationships to persistence.

Conclusion

As the United States continues to struggle with persistence, retention, and college degree

attainment, higher education administrators and policymakers seek additional evidence on the strategies and interventions designed to improve academic outcomes. This study provided a critical examination of the research on specific elements of academic engagement—including student-faculty interactions, learning strategies, and collaborative learning—to further understand their relationships with first-year students' intention to persist.

Tinto's Interactionist Theory of Student Departure (1975) and Astin's Theory of Student Involvement (1984) provided a theoretical framework and foundation for the literature review, helping to conceptualize the relationship between academic engagement and student outcomes. Academic engagement is defined as an observable set of behaviors that students exhibit inside and outside of the classroom, learning strategies and study skills, and participation in study groups and tutoring (Astin, 1984; Estell & Perdue, 2013; Fredricks et al., 2004). Pre-college predictors, such as demographic characteristics, financial stress, and academic preparedness, were included in this study to provide a solid conceptual model of student persistence.

The literature review provided strong evidence of a relationship between academic engagement and student persistence by examining studies that included factors such as student-faculty interactions, learning strategies, and collaborative learning. Academic behaviors, including frequency and quality of faculty interactions inside and outside of the classroom, class attendance and discussions, and the number of textbook readings, all have a positive relationship with student persistence. Learning strategies embedded in Student Success Courses (SSCs)—including note taking, test taking, and time management—also suggest a positive correlation with student persistence. Finally, peer tutoring in various programs showed a small but significant relationship with academic outcomes, including persistence. Although the majority of research found connections between academic engagement and student persistence, several

limitations (including small sample sizes, un-generalizable results, and self-selection bias) were uncovered and discussed.

The results of this study showed that students reported the highest levels of academic engagement in their frequency of utilizing learning strategies and the lowest levels of academic engagement in their frequency of student-faculty interactions. This study also showed significant differences in student-faculty interactions and significant differences in the perception of supportive campus environment among racial and ethnic groups.

When evaluating student persistence, this study showed significant associations between intention to persist and demographic variables, including race/ethnicity, first-generation status, academic preparation, financial stress, and institutional characteristics such as enrollment size and institutional control. Although none of the academic engagement variables (learning strategies, student-faculty interactions, collaborative learning) were found to be significant, the results showed a significant relationship between students' intention to persist and the perception of a supportive campus environment. Students who reported that their institutions emphasized academic support and success, support for non-academic responsibilities, and opportunities to become involved socially tended to have higher odds of intending to persist.

Academic engagement is a significant topic to explore because student behaviors are malleable and can be influenced by targeted interventions. This study provided additional recommendations for policymakers and practitioners to improve pre-college programs and suggested interventions to create supportive campus environments through collaboration and organizational change.

Additional research that focuses on specific factors of academic engagement—including exploring other ways to improve the perception of a supportive campus environment—could

further contribute to the field of student success. Specific research topics include discovering differences in academic engagement across subpopulations and institution types, seeking a broader diversity in methodology, examining other influences on academic engagement, and bridging academic engagement theory to practical application.

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Appendix A: Justification of Data Source

BPS: 12/14 Variables

Independent Variables	● *Talk with faculty about academic matters, outside of class* ● *Informal or social conversations with faculty members* ● *Attend study groups outside of classroom*
Control Variables	● *Academic Expectation (highest level of education)* ● *Receipt of financial aid* ● *Current age group* ● *Gender identity* ● *Race/Ethnicity* ● *Cumulative GPA*
Dependent Variable	● *Degree: Likelihood of completing a degree* ● *Are you currently enrolled?* ● *If you are not currently enrolled, why did you decide to leave?*

NSSE Variables

Independent Variables	*NSSE* ● *Student-faculty interactions inside and outside of the classroom (experiences with faculty talking about career plans, working in groups, discussing course topics, discussing academic performance)* ● *Learning strategies (reading assignments, reviewing notes, summarizing course materials)* ● *Collaborative learning (peer tutoring, preparing for exams together, working on course projects)*
Control Variables	*BCSSE:* ● *Academic preparation (high school grades, SATs, AP classes,* ● *Financial (expectations to pay for college; types of financial aid used)* ● *Parental education (highest level)* ● *Gender identity* ● *Race/Ethnicity* ● *NSEE* ● *Supportive environment (perception of institutional support)*
Dependent Variable	*FYE Topical Module: Intent to persist (Considering leaving? How important is it to graduate from this institution?)*

CENTER for POSTSECONDARY RESEARCH

Indiana University Data Sharing Agreement

This Indiana University Center for Postsecondary Research Data Sharing Agreement ("Agreement") defines the parameters for data sharing from the National Survey of Student Engagement ("BCSSE-NSSE") between the Research Institution(s) and its Authorized Researchers named below and the Trustees of Indiana University on behalf of the Indiana University Center for Postsecondary Research ("IUCPR"). The terms below are intended to reflect and comply with the existing agreements between BCSSE-NSSE and the institutions that participate in the survey program. Under these participation agreements, BCSSE-NSSE may:

> *"...make data, in which individual institutions or students cannot be identified, available to researchers interested in studying the undergraduate experience... BCSSE-NSSE results specific to each institution and identified as such will not be made public except by mutual agreement between BCSSE-NSSE and the institution."*

RESEARCHERS

The following researchers ("Authorized Researchers") of **Seton Hall University** ("Research Institution") may make use of BCSSE-NSSE data pursuant to the terms of this Agreement:

Monica Burnette, Seton Hall University, [redacted]

FACULTY SPONSOR (Required for students)

Dr. Rong Chen, Associate Professor, ELMPF, Seton Hall University, [redacted]

PROJECT TITLE or TOPIC ("Project")

First-Year Student Intentions to Persist

DATA DESCRIPTION

Under this Agreement, IUCPR will provide the researchers a data file delimited in the following ways ("BCSSE-NSSE Data File"):

Data Source(s):

BCSSE 2014, NSSE 2015, FYE Module 2015 (matched longitudinally)

Variables:

All BCSSE 2014, NSSE 2015, and FYE Module 2015 variables and demographic items.

Cases:

Include only students from the cohort who completed BCSSE 2014, and NSSE + FYE module in 2015.

PARAMETERS FOR DATA SHARING:

1. IUCPR will provide a single copy of the BCSSE-NSSE Data File solely for non-commercial research by the Authorized Researchers.

Appendix B: NSSE Data Sharing Agreement

CENTER for POSTSECONDARY RESEARCH

Indiana University
Data Sharing Agreement

2. The BCSSE-NSSE Data File will exclude the Unit ID code from Integrated Postsecondary Educational Data System (IPEDS), any other unique school or student identifiers, and any variables that IUCPR determines reasonably may permit the identification of a participating school or student.

3. The Authorized Researchers will not attempt, privately or publicly, to associate elements of the BCSSE-NSSE Data File with the individual institutions or individual students participating in the BCSSE-NSSE, nor will they share the data with anyone else who might do so.

4. In all publications or presentations of data obtained through this agreement, the Authorized Researchers agree to include the following citation:

   "BCSSE-NSSE data were used with permission from The Indiana University Center for Postsecondary Research."

5. The Authorized Researchers agree to provide to IUCPR a copy of all reports, presentations, analyses, or other materials in which the data given under this Agreement are presented, discussed, or analyzed.

6. The data should be encrypted when not in use by the above researcher and should be destroyed once the Project has been completed. If the researcher needs the data for any longer period than that which is necessary for completing the Project, the researcher is required to ask for an extension. Using the data for other purposes besides completing the Project must be approved by the Director for the Center for Postsecondary Research at Indiana University at Bloomington.

7. Other parameters: **All student and institutional identifiers will be removed from the data.**

8. The IUCPR of Indiana University may, by written notification to the Authorized Researchers and the Research Institution(s), terminate this Agreement if it determines, in its sole discretion, that either the Authorized Researchers or the Research Institution(s) have breached the terms of this Agreement. In the event that this Agreement is terminated, the Authorized Researchers and Research Institution(s) shall return the originals and all copies of the BCSSE-NSSE Data File to the IUCPR, and securely destroy all BCSSE-NSSE Data File elements contained in any analyses or other materials created or maintained by Authorized Researchers, within ten (10) days of the receipt of the termination notice.

9. IU will not be liable to the Research Institution(s) for any direct, consequential, or other damages, related to the use of the BCSSE-NSSE Data File or any other information delivered by Indiana University or IUCPR in accordance with this Agreement. The Research Institution(s) shall defend, indemnify, and hold harmless The Trustees of Indiana University, their officers, employees, and agents, with respect to any and all claims, causes of action, losses, and liabilities, of any kind whatsoever, arising directly or indirectly from the Authorized Researchers' use of the BCSSE-NSSE Data File.

FEES

In exchange for access to and use of the BCSSE-NSSE Data File, Ms. Monica Burnette of Seton Hall University agrees to pay Indiana University the sum of [redacted] by check upon execution of this Agreement. IUCPR will send an invoice detailing payment instructions.

CENTER for POSTSECONDARY RESEARCH

Indiana University Data Sharing Agreement

SIGNATURES

The undersigned hereby consent to the terms of this Agreement and confirm that they have all necessary authority to enter into this Agreement.

For The Trustees of Indiana University:

Trisha Adams — 2/21/17

Name: Trisha Adams
Title: Asst Director of Research Contracting
Indiana University Office of Research Administration

Alex McCormick — Digitally signed by Alexander C. McCormick DN: cn=Alexander C. McCormick, o=Indiana University, ou=Center for Postsecondary Research, email=amcc@indiana.edu, c=US Location: IU Center for Postsecondary Research Date: 2017.02.13 12:01:30 -05'00'

Alexander C. McCormick, Director, National Survey of Student Engagement — Date

For the Research Institution(s):

Agnes Welter — 2/3/17

Name: Agnes Welter, M.S.
Title: Assistant Provost for Assessment
Authorized Institutional Official from Seton Hall University

Acknowledgment of Authorized Researcher(s) (including Faculty Sponsor if applicable):

Monica Burnette — 2/8/17

Monica Burnette, Seton Hall University (Monica.burnette@shu.edu) — Date

2/8/17

Dr. Rong Chen, Associate Professor, Seton Hall University, rong.chen@shu.edu — Date

2/12/17

Dr. Joseph Stetar, Professor, Seton Hall University, joseph.stetar@shu.edu — Date

2/13/17

Dr. Robert Kelchen, Assistant Professor, Seton Hall University, robert.kelchen@shu.edu — Date

Appendix C: IRB Approval Letter

REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR RELATED ACTIVITIES INVOLVING HUMAN SUBJECTS

All material must be typed.

PROJECT TITLE: *College Academic Engagement and First-Year Student Intention to Persist*

CERTIFICATION STATEMENT:

In making **this application,** I(we) certify that I(we) have read and understand the University's policies and procedures governing research, development, and related activities involving human subjects. I (we) shall comply with the letter and spirit of those policies. I(we) further acknowledge my(our) obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making those deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

Monica Burnette

Monica Burnette 3/27/17

RESEARCHER(S) DATE

Please print or type out names of **all researchers below signature.
Use separate sheet of paper, if necessary.**

My signature indicates that I have reviewed the attached materials of my student advisee and consider them to meet IRB standards.

Dr. Rong Chen _3/27/17

RESEARCHER'S FACULTY ADVISOR [for student researchers only] DATE

Please print or type out name below signature

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research at the April 2017 meeting.

The application was approved ✓ not approved ___ by the Committee. Special conditions were _____ were not ✓ set by the IRB. (Any special conditions are described on the reverse side.)

Mary J. Ruzycka, Ph.D. 4/26/17

DIRECTOR, DATE

SETON HALL UNIVERSITY INSTITUTIONAL
REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

Seton Hall University
3/2005

Appendix D: Missing Cases Analysis

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
Intention to Persist	2955	0.31	0.462	15	0.5	0	0
Private Institution	2970	0.29	0.455	0	0	0	0
High School Grades	2937			33	1.1		
Difficulty paying for college	2830			140	4.7		
First-generation	2962			8	0.3		
Institution type	2970			0	0		
Race/Ethnicity	2958			12	0.4		
Masked Institution Identifier	2970			0	0		
Gender	2970			0	0		
Institution size	2970			0	0		
Asked another student to help you understand course material	2936	2.65	0.834	34	1.1	0	0
Explained course material to one or more students	2932	2.79	0.793	38	1.3	79	0
Prepared for exams by discussing or working through course material with other students	2951	2.62	0.912	19	0.6	0	0
Worked with other students on course projects or assignments	2947	2.7	0.825	23	0.8	138	0
Talked about career plans with a faculty member	2948	2.37	0.895	22	0.7	0	0
Worked with a faculty member on activities other than coursework (committees, student groups, etc.)	2941	1.88	0.948	29	1	0	233
Discussed course topics, ideas, or concepts with a faculty member outside of class	2938	2.08	0.899	32	1.1	0	248
Discussed your academic performance with a faculty member	2936	2.2	0.87	34	1.1	0	274
Identified key information from reading assignments	2952	3.21	0.739	18	0.6	23	0
Reviewed your notes after class	2939	2.96	0.886	31	1	124	0
Summarized what you learned in class or from course materials	2914	2.89	0.887	56	1.9	152	0
Institutional emphasis: Spending significant amounts of time studying and on academic work	2942	3.18	0.753	28	0.9	55	0
Institutional emphasis: Providing support to help students succeed academically	2925	3.17	0.777	45	1.5	63	0

Institutional emphasis: Using learning support services (tutoring services, writing center, etc.)	2933	3.18	0.857	37	1.2	130	0
Institutional emphasis: Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	2936	2.91	0.929	34	1.1	211	0
Institutional emphasis: Providing opportunities to be involved socially	2930	3.14	0.845	40	1.3	107	0
Institutional emphasis: Providing support for your overall well-being (recreation, health care, counseling, etc.)	2928	3.09	0.859	42	1.4	134	0
Institutional emphasis: Helping you manage your non-academic responsibilities (work, family, etc.)	2930	2.49	0.984	40	1.3	0	0
Institutional emphasis: Attending campus activities and events (performing arts, athletic events, etc.)	2932	3.04	0.883	38	1.3	158	0
Institutional emphasis: Attending events that address important social, economic, or political issues	2913	2.72	0.94	57	1.9	0	0
Intention to Persist	2955	0.31	0.462	15	0.5	0	0
Private Institution	2970	0.29	0.455	0	0	0	0
Supportive Environment	2936	39.36	13.324	34	1.1	76	0
Student-Faculty Interactions	2916	22.64	14.796	54	1.8	0	152
Collaborative Learning	2887	33.78	13.488	83	2.8	34	0
Learning Strategies	2901	40.45	13.812	69	2.3	29	0
a. Number of cases outside the range (Mean - 2*SD, Mean + 2*SD). There are no variables with 5% or more missing values. TTEST table is not produced. There are no variables with 5% or more missing values. CROSSTAB tables are not produced.							

Appendix E: Descriptive Analysis of Missing Cases and Analytic Sample

Missing Values (*n*=482)				**Analytic Sample (*n* = 2,420)**		
Variable	**Frequency**	**Percent**		**Variable**	**Frequency**	**Percent**
Dependent variable				**Dependent variable**		
Intends to Persist	314	67.2		Intends to Persist	1688	69.8
Control Variables				**Control Variables**		
High school grade B and below	230	35.8		High school grade B and below	832	34.6
High school grade A-	111	23		High school grade A-	589	24.3
High school grade A	165	34.2		High school grade A	994	41.1
Low difficulty paying	59	12.2		Low difficulty paying	562	23.2
Medium difficulty paying	126	26.1		Medium difficulty paying	828	34.3
High difficulty paying	157	32.6		High difficulty paying	1029	42.5
First-generation	194	40.2		First-generation	966	39.9
Female	324	67.2		Female	1758	72.7
Male	158	32.8		Male	662	27.3
White	288	59.8		White	1622	67
Asian	36	7.5		Asian	156	6.5
Hispanic/ Latino	48	10		Hispanic/ Latino	222	9.2
Black/ African American	37	7.7		Black/ African American	139	5.8
Other race	73	15.2		Other race	280	11.5
Private Institution	143	29.7		Private Institution	710	29.4
Public Institution	339	70.3		Public Institution	1709	70.6
Doctoral/ Research	215	44.6		Doctoral/ Research	1065	44
Masters/Bachelors/Other	267	55.4		Masters/Bachelors/Other	1354	56
Small size school	42	8.7		Small size school	166	6.9
Medium size school	147	30.5		Medium size school	759	31.3
Large size school	293	60.8		Large size school	1494	61.8

Appendix F: Descriptive Analysis of Original Sample and Analytic Sample

Original Sample (*n*=2,970)				**Analytic Sample (*n*= 2,420)**		
Variable	**Frequency***	**Percent****		**Variable**	**Frequency**	**Percent**
Dependent variable				**Dependent variable**		
Intends to Persist	2043	69.1		Intends to Persist	1688	69.8
Control Variables				**Control Variables**		
High school grade B and below	1025	34.8		High school grade B and below	832	34.6
High school grade A-	717	24.4		High school grade A-	589	24.3
High school grade A	1189	40.5		High school grade A	994	41.1
Low difficulty paying	639	22.5		Low difficulty paying	562	23.2
Medium difficulty paying	981	34.7		Medium difficulty paying	828	34.3
High difficulty paying	1210	42.5		High difficulty paying	1029	42.5
First-generation	1189	40.1		First-generation	966	39.9
Female	2129	71.7		Female	1758	72.7
Male	841	28.3		Male	662	27.3
White	1949	65.9		White	1622	67
Asian	198	6.7		Asian	156	6.5
Hispanic/ Latino	271	9.2		Hispanic/ Latino	222	9.2
Black/ African American	184	6.2		Black/ African American	139	5.8
Other race	356	12.1		Other race	280	11.5
Private Institution	869	29.3		Private Institution	710	29.4
Public Institution	2101	70.7		Public Institution	1709	70.6
Doctoral/ Research	2659	44.1		Doctoral/ Research	1065	44
Masters/Bachelors/Other	1662	56		Masters/Bachelors/Other	1354	56
Small size school	214	7.2		Small size school	166	6.9
Medium size school	924	31.1		Medium size school	759	31.3
Large size school	1832	61.7		Large size school	1494	61.8
**does not include missing items **valid%*						