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The Effect of the Sophomore Slump on Students' Persistence

Vanessa Harris
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**The Effect of the Sophomore Slump on
Students' Persistence**

by

Vanessa G. Harris

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy

Educational Psychology

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Albuquerque, New Mexico

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Dedication

To my sons, Jeremy and Jordan, and my parents, Zelphia and James, for their endless love and support. To my sister friend, Dr. Dymaneke Mitchell, thank you for being my motivator and getting me cross the finish line.

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The journey of achieving any goal is to understand the process, learn from the highs and lows, and embrace the support of others. I could not have achieved this tremendous educational milestone without the support and love of my family, colleagues, and friends. You have been my anchor. Thank you for walking this journey with me.

Thank you to my dissertation committee members for their continuous support and encouragement throughout this process. Dr. Allison Borden, thank you for your unwavering support, patience, and guidance.

To my sons, Jeremy and Jordan, who have endured the most through this process, I hope that this journey has shown you that, “If you can imagine it, you can achieve it. If you can dream it, you can become it” (Ward, n.d.). Always remember to stay true to who you are, have FAITH, and surround yourself with positive and likeminded people; your dreams can become a reality.

The Effect of the Sophomore Slump on Students' Persistence

by

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ABSTRACT

For years, universities have focused on student admissions and getting students through their first-year. According to Schaller (2010), this has resulted in limited literature and research regarding the persistence of sophomore students. From Fall 2010 to Fall 2015, the University of New Mexico (UNM) has experienced a decrease in the persistence of its cohorts from the third to the fifth semester. The existence of this higher attrition rate amongst sophomore students has been associated with a phenomenon known as the “sophomore slump” (Tobolowsky & Cox, 2007). The purpose of this research study was to utilize student retention conceptual models to explore the effect of the sophomore slump on sophomore students’ persistence. It included an examination and statistical analysis of several variables that impacted the retention or persistence of a sample of sophomore students at UNM. This research study was conducted using a descriptive quantitative methodology. The variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financial categories were

merged into five conceptual models as a mean to investigate if there was a correlational statistical significance within their relationships on the effect of the sophomore slump. Overall, the statistical results of this research study revealed that the two of the financial variables (i.e., lottery scholarship and performance-based scholarship) had the most significant impact on the persistence of sophomore students at the University of New Mexico.

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Chapter 1: Introduction

Background

For years, universities have focused on student admissions and getting students through their first-year. According to Demetriou and Schmitz-Sciborski (2011), “During the second half of the decade, understanding student transition periods, especially the first-year experience, and providing quality support services became a significant focus” (pp. 302-303). On average, “58% of undergraduate students in the United States complete college within a six-year period” (Turner & Thompson, 2014, p. 94). As a result, universities have created first-year experience programs and initiatives that have been successful at retaining students past the first-year (Pattengale & Schreiner, 2000). The University of South Carolina (USC) is considered the premier authority on first-year programs and initiatives. USC created the hallmark course that has become the national model for the first-year seminar (USC, University 101 Programs, n.d., para. 2). USC has had excellent success in retaining freshman students as a result of its “National Resource Center,” which encompasses its first-year programs and initiatives (“About the Center,” “Mission Statement” section, n.d.). Many universities, including the University of New Mexico (UNM), have implemented similar programs and initiatives in order to provide ongoing support to freshman students to assist their transition into the sophomore year. According to Reinheim and McKenize (2011):

Regardless of university efforts to retain students, nearly half of all students are still failing to graduate from four-year institutions (Dennis, 1998; Fiske, 2004; Lederman, 2009). Data show that the proportion of first-year students who returned to their colleges as sophomores in 2007-8,

65.7 percent, dropped to the lowest level in 25 years (Lederman, 2009). (p. 22)

Over the past several years, the lack of increase in graduation rates at the postsecondary level, despite an increase in freshman retention rates, has led to more focus on the persistence of students throughout their sophomore year as well (Lee & Leonard, 2009). Although freshman retention rates have improved significantly, these improvements have not directly impacted graduation rates, which may indicate that sophomore students, who are largely overlooked, have needs that differ from freshman students.

Overview of the Retention of Freshman Students

The freshman year tends to be full of excitement, new adventures and, typically, the first-time a student is away from home. In my experience as the Director of University Advisement at the University of New Mexico (UNM), coursework in the freshman year tends to be general and similar to secondary education coursework. One of the first challenges that freshman students have to face is becoming acclimated to being away from home. Turner and Thompson (2014) highlight that:

A current challenge that colleges and universities are encountering in the United States is the persistence and retention of Millennial freshmen college students (Lowery, 2004). Millennials are individuals born between 1982 and 2002 (Ricketts, 2009) making this the model group of the current traditional-aged college student. An attempt by students to transition from high school to a college environment can be a challenging process. First year students often face personal, family, academic, and social transitional adjustment issues (Budny & Paul, 2003). Negative or unpleasant experiences encountered during the first year can either lead to the student eventually dropping out of the institution or not returning for the sophomore year. (pp. 94-95)

Currently, many postsecondary institutions have freshman or first-year programs and initiatives in place to help students make the transition from not only secondary to postsecondary education but also from the freshman year to the second year (Demetriou & Schmitz-Sciborski, 2011). As freshman students adjust to the adventures of college life, they receive guidance and support from these programs and initiatives through the initial stages of their postsecondary academic journey. As freshman students persist or transition to their sophomore year, there is a shift from them having guidance and support from various facets of the university to having to find and figure things out on their own (Clark, 2005). Unlike freshman students, the onus is on sophomore students to navigate their academic journey as well as establish a support system that may help them continue their academic journey.

The sophomore year is a critical milestone that marks another major transition for any college student. During the transitional period from freshman to sophomore year, students have to adjust how they function academically and socially. As students enter their sophomore year, their coursework starts to focus more on their major. They are taking more upper division courses and starting to understand that they must now make decisions on their own regarding their academic and professional aspirations. Also, they have to learn how to: self-regulate, connect more deliberately to resources that support their academic and career aspirations and ask for assistance when they need it (Clark, 2015).

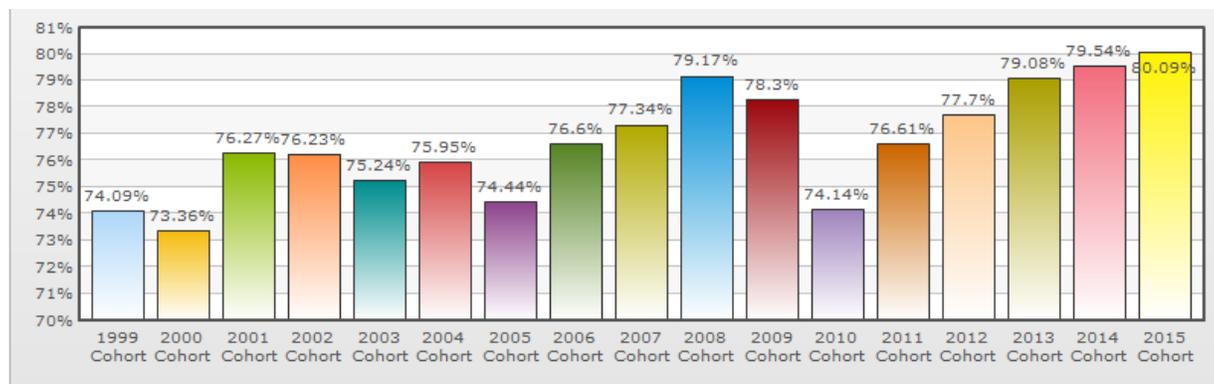
Lawmakers and foundations that support student persistence have increased their focus on improving graduation rates (Labi, 2015). The University of New Mexico (UNM), like most universities, is interested in understanding why an increasing number of its students are not persisting past the freshman year and completing their sophomore year. UNM is considered the flagship institution in the state of New Mexico. First-time, full-time students of the freshman cohort of 2007 at UNM had a four- and six-year graduation rate of 15% and 48%, respectively (OIA Freshman Cohort Tracking Report,

n.d.). However, the 2013 national four-and six-year graduation rate for first-time, full-time students at four-year public postsecondary institutions was 33.3% and 57.6%, respectively (“College Completion,” New Mexico public colleges (4-year), n.d.). In other words, UNM’s four-year and six-year graduation rate for the Fall 2007 Cohort fell below the corresponding 2013 national graduation rates.

The most currently available retention data for the University of New Mexico (UNM) displayed in Figure 1.1 below for the Fall 2010 to Fall 2015 Cohorts show that there was a steady increase in the retention of first-time, full-time students during their transition from the second to the third semester (Freshman Cohort, Retention, n.d.). The persistence or retention of freshman students at UNM to the third semester progressively increases from 74.1% for the Fall 2010 Cohort to 80.17% for the Fall 2015 Cohort.

Figure 1.1.

Retention to the Third Semester for Full-Time Beginning Freshman Students by Cohort



There are several programs and initiatives at the University of New Mexico (UNM) that target the retention of freshman students. For instance, the “Transition Communities” are based on the UNIV 101 course and involves helping first-year students transition at UNM (First-Year Experience, Transition Communities, n.d.). Also, UNM offers several summer bridge programs that prepare incoming freshman students for postsecondary coursework by requiring them to enroll in foundational

courses, such as Math and English, during the summer session before their first fall semester. The purpose of these types of programs and initiatives has been to help transition freshman students to their third semester or sophomore year. It seems that UNM's investment in first-year programs and initiatives may have been successful in impacting the transition of freshman students to their sophomore year. The success of these programs and initiatives are also reflected in the fact that UNM's freshman retention rates for the Fall 2013 (79.08%) and Fall 2014 (79.54%) Cohorts are close to or higher than the 2013 and 2014 national freshman retention rate for four-year public postsecondary institutions, 79.3% and 68.8%, respectively ("National Student Clearinghouse," (Snapshot Report, 2015 & 2016, p. 3).

It is important to note that in 2012, the UNM 2020 Strategic Plan was developed in which Goal 2 focuses on preparing students for lifelong success and includes a target third-semester retention rate of 80% ("Performance Metrics," 3rd Semester Retention Rates, n.d.). Therefore, the work that UNM has done since 2012 in retaining its freshman students has been effective in progressively achieving its year 2020 target objective to increase student persistence to the third semester. However, there have been several informal and formal discussions among administrators at UNM regarding the hundreds of thousands of dollars that are spent a year on recruitment and various programs and initiatives to retain freshman students; but the university's return on that investment has not been what it could or should be in regard to impacting the graduation rates of freshman cohorts. Presently, there have not been any deliberate focus on creating programs and initiatives at UNM for retaining students beyond the third semester of their sophomore year.

Overview of the Retention of Sophomore Students: The Sophomore Slump

According to Schaller (2010), "Questions focused on the second-year experience have not been raised broadly in higher education. In fact, limited literature, even descriptive research, exist regarding

the sophomore year” (p. 14). As a result, little is known about how sophomore students experience higher attrition rates and are plagued by the phenomenon known as the “sophomore slump” (Tobolowsky & Cox, 2007). In their book, Feldman and Newcomb (1994) explain the sophomore slump as students’ dissatisfaction with their personal and college experiences as a result of their struggles with achieving competence, desiring autonomy, establishing an identity, and developing a purpose. The sophomore slump is a major obstacle for students. As freshman students transition to the sophomore year or third semester, it has become clear that they need more cognitive development, academic guidance, career awareness and social connections (Hunter, Tobolowsky, & Gardner, 2010). The persistence or transition from the freshman year to the sophomore year can cause a lot of additional stress to an already stressful experience. “The increased pressure and the decreased support that is evident in the sophomore year combine to create a difficult transition for students to thrive in the sophomore year” (Schreiner, Louis & Nelson, 2012, p. 111). Yazedjian, Toews, Sevin, and Purswell (2008) conclude in their study that “development of skills that allow the individual to transition into more adult roles” (p. 147) is vital to the success of sophomore students during their transition to upper academic course work. In short, the sophomore slump causes confusion, anxiety and an unawareness of the academic processes that can affect sophomore students’ transition to the next level of their academic journey (Furr & Gannaway, 1982; Lemons & Richmond, 1987).

In addition to the sophomore slump, Freedman (1956) and Tobolowsky and Cox (2007) discussed how sophomore students experience a sense of inertia and disorganization. The sophomore year is the beginning of the realization that college must be taken seriously (Tobolowsky & Cox, 2007). Typically, sophomore students are unsure about how to navigate their experiences and convert their academic goals and career choice into selecting a major (Gardner, 2000). “Some sophomore students

may have already decided on a major, but are facing the harsh reality of their own limitations” (Gardner, 2000, p. 57). Also, if students have not selected a major by the second or third semester, they could get off -track and lose interest in their academic journey (Gardner, 2000). Regardless, Berkner, He, & Forrest (2002) state that “For students who intend to complete a four-year degree, at least as many students leave after the second year as do the first year” (as cited in Schaller, 2010, p. 16). Also, researchers at the “Education Advisory Board” in Washington, D.C. highlight that “Forty-five percent of total dropouts nationwide finish a year of college and with a grade-point average between 2.0 and 3.0” (Tyson, 2014, “The Murky Middle” section, para. 2).

At the University of New Mexico (UNM), the most recent available data displayed in Table 1.1 below show that there was a drastic decrease in the retention rate of sophomore students compared to that of freshman students for Fall 2010 to Fall 2014 Cohorts (OIA Freshman Cohort Tracking Report, n.d.). The retention rates for freshman-to-sophomore (i.e., the transition from the first to third semester) and sophomore-to-junior (i.e., the transition from the third to the fifth semester) for the Fall 2010, Fall 2011, Fall 2012, Fall 2013 and Fall 2014 Cohorts follow: 74.1% and 62%, 76.6% and 65.3%, 77% and 66.6%, 79.1% and 67.8%, and 79.5% and 69.5%, respectively. The data illustrates that there is a steady decrease in the retention of students from the beginning of the sophomore year to the beginning of the junior year or the third to the fifth semester. However, between the fifth and eighth (i.e., the four-year graduation mark) semester, the retention rate is more stable with less than a 5% decrease between semesters. Overall, the four-year graduation rate average for Fall 2010 to Fall 2013 Cohorts is 58.3%.

Table 1.1.

Retention Rate Percentages Per Semester for Full-Time Beginning Freshman by Cohort

Semester	Cohorts				
	2010	2011	2012	2013	2014
3	74.1	76.6	77.7	79.1	79.5
4	69.1	72.5	72.2	73.4	74.4
5	62	65.3	66.6	67.8	69.5
6	60.1	62.3	62.2	61.5	
7	56.8	59.6	58.6		
8	54	56	56		
9	37.4	38	35.6		
10	25.7	26			
11	15.5	14.4			

According to Ramist (1981), “Almost three-quarters of the students who complete their sophomore year without interruption complete all four years without interruptions” (p. 6). Therefore, it is important that postsecondary institutions focus not only on the retention of their freshman students but also on the retention of their sophomore students in order to strategically increase graduation rates. Schaller (2010) confirms how “research strategies on four-year institutions have focused on the magnitude of change seen in college students over the entire four years of the college experience, thus research designs often call for measurements in the first and senior years of college” (p. 14). Overall, it is imperative that sophomore students at the postsecondary level are also provided with retention-focused programs and initiatives that support and help them in prioritizing their studies, identifying and overcoming barriers in their academic journey as well as ensure that they graduate within four to six years.

The Research Study

The purpose of this research study was to utilize student retention conceptual models (Aljohani, 2016) to explore the effect of the sophomore slump on sophomore students' persistence. It included an examination and statistical analysis of several variables that impacted the retention or persistence of a sample of sophomore students at the University of New Mexico (UNM). This research study was conducted using a descriptive quantitative methodology based on the correlational and survey research design, which are two of the four research designs associated with this methodology (Williams, 2007, p. 66). Specifically, the convergent parallel mixed methods design was used to create conceptual models, which were then statistically analyzed using the logistic regression method (Creswell, 2002, p. 269). The variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories were merged into five conceptual models as a mean to investigate if there was a correlational statistical significance within their relationships.

The following overarching research question is the premise of this research study: What are the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories that effect the persistence of sophomore students? This overarching research question is explored using the following guiding research questions:

1. Do sophomore students' ethnicity, gender, and first-generation status effect their persistence?
2. Do sophomore students' motivation, self-efficacy, self-regulation and future-time perspective effect their persistence when they are sequentially merged with the variables associated with the pre-entry attributes category?

3. Do credit hours, grade point averages (GPAs), and academic advisement influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes and cognitive categories?
4. Do faculty involvement and academic support programs influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, and academics categories?
5. Do student employment, a state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship impact sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories?

The data for this research study were retrieved from the Second-Year Student Assessment (SYSA) which was created by Ruffalo Noel-Levitz and first administered as a pilot in 2010 (Ruffalo Noel-Levitz, 2011). This survey included a total of 78 items based on the following four categories: Student Information, Motivational Assessment, Receptivity/Student Needs and Interest and Institutional Impression (“Retention Management,” “SYSA: Summary and Planning Report,” n.d.). In particular regards to this research study, 21 of the 78 survey items were specifically mapped (without duplication) to one of the following categories: pre-entry attributes, cognitive, academics, social engagements, and financials (refer Appendix A on page 119 to access the Variables Mapping Matrix). In Fall 2010, the University of New Mexico was among 14 four-year public universities, 31 four-year private universities and 18 two-year colleges that participated in the national pilot of the SYSA survey instrument. There was a total of 8,613 sophomore students that responded (Ruffalo Noel-Levitz, 2011). Respondents were enrolled at a broad cross-section of institutions where 41.2% of respondents came from four-year private

institutions, 26.5% from four-year public institutions, and 32.3% from two-year institutions (Ruffalo Noel-Levitz, 2011). From the University of New Mexico, a total of 6,228 active full-time and part-time sophomore students who were eligible to register and/or who registered for their sophomore year in Fall 2010 were emailed an invite and link to participate in the national pilot of the SYSA survey instrument. Of the 6,228 that were emailed, only 609 students completed the entire survey. These completers represented 10% of the total active UNM sophomore student population in Fall 2010 (i.e., 6,228). The results from the UNM student population were examined in relation to the results from the other institutions that participated.

Of the 609 sophomore students at UNM who completed the SYSA survey instrument, 112 participated in the “Vision Inspired Scholarship Through Academic” (VISTA) Success program. The VISTA program was a performance-based scholarship awarded to freshman students for achieving specific academic milestones, meeting specific academic requirements, and persisting beyond the sophomore year (Miller, Binder, Harris, & Krause, 2011). Conceptual models were used to investigate the statistical significance (i.e., using the logistic regression method) of the correlational relationships between the pre-entry attributes, cognitive, academics, social engagements and financial variables.

It is the researcher’s hypothesis that the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financial categories impact the persistence of sophomore students. The results of this research study will be significant in contributing to research and scholarship regarding the retention of sophomore students especially considering that there is a limited amount of research and scholarship on the study of specific variables that may affect the retention and performance of sophomore students. Overall, the statistical results of this research study reveal that two of the

financial variables (i.e., lottery scholarship and performance-based scholarship) have the most significant impact on the persistence of sophomore students at UNM.

Summary

Many postsecondary institutions have implemented effective first-year programs and initiatives to retain freshman students. However, there is a new focus on the persistence or retention of sophomore students at the postsecondary level in order to increase graduation rates. This research study focuses on examining factors the impact the persistence of sophomore students that the University of New Mexico. Chapter 2 provides a review of research and scholarship associated with the retention of sophomore students. Chapter 3 includes a discussion of the quantitative methodology that this research study is based upon. Chapter 4 outlines the results of the research study. Chapter 5 includes a discussion of the findings and implications of this research study.

Chapter 2: Literature Review

Introduction

The persistence of students has always been a major concern for university administrators. They have constantly tried to determine what contributes to or impact students' persistence (Demetriou & Schmitz-Sciborski, 2011). Researchers are divided on identifying specific variables that influence students' departure and/or persistence. There are an infinite number of confounding variables that could contribute to a student persisting or departing from college. Since the early 1970s, researchers such as Spady (1970), Tinto, (1975), Pascarella (1980), and Astin (1984) have been built and redefined student retention conceptual models to investigate college students' persistence or their uninterrupted continuation from one academic term to the next (Aljohani, 2016). It has been and continues to be a mystery as to why certain students persist, and others do not.

Spady (1970) was one of the first scholars who tried to confront this mystery. Building upon Spady's research, Tinto (1975) and Pascarella (1980) theorized that students' interactions with faculty could directly affect their academic persistence. Astin (1975, 1984) and Hurtado and Carter (1997) introduced theories that highlighted how variables associated with student involvement and social-community organizations, respectively, could positively impact students' persistence. The following sections of Chapter 2 provides a review of literature and scholarship on the variables that are typically studied in student retention conceptual models associated with students' persistence and departure. (For the remainder of this dissertation, the following terms will be used interchangeably: social engagements, social interactions, social connections, collegial social engagements, collegial engagements, academic engagement, and student engagement.)

Conceptual Models

A conceptual model is a system for exploring and examining the correlational relationship between multiple variables (Data Warehousing, Conceptual Data Model, n.d.). Specifically, it “Clarifies what is known and not known about the system,” and “Goes beyond simple cause and effect to explore linkages and feedbacks in complex systems” (“Research Planning Workshop,” Conceptual Model, n.d., Slide 3). Historically, the use of student retention conceptual models in higher education is as an analytical tool to explain or draw comparisons between various theories and/or concepts (Reason, 2009). They also have been referred to as “Student Retention Theoretical Models” (Aljohani, 2016). Specifically, the persistence and departure conceptual models are the most commonly used student retention theoretical models for investigating complex correlational relationships (Spady, 1970; Tinto, 1975).

Many researchers have studied multiple variables that may impact the persistence and/or departure of college students, including the impact of these variables on their academic journey (Astin, 1984, 1993; Hurtado & Carter, 1997; Pascerella, 1980; Pascarella & Terenzini, 1991, 2005; Spady, 1970; Tinto, 1975). Pascarella and Terenzini (1991, 2005) concluded that numerous variables operate in many settings to impact student learning and persistence. Persistence and departure conceptual models formulate the foundation upon which this research study is based. Therefore, the following literature review explores and examines scholarship and research associated with these conceptual models, including variables that are typically analyzed with these models.

Persistence Model

In 1970, Spady introduced a conceptual model to help explain why students leave college. Spady’s conceptual model focused on pre-college academic abilities and social engagements during

college, including how they affected students' academic and social integration on campus as well as their persistence. Persistence conceptual models initially were based on the belief that pre-college academic abilities and social engagements had a direct influence on college academic achievement, which in turn influenced students' persistence (Cabrera, Nora & Castaneda, &, 1992; Nora & Cabrera, 1996; Pascarella & Terenzini, 1991). If students had positive social experiences in forming connections with various entities at the institution, then they were more likely to persist (Tinto, 2002).

Even though the persistence conceptual model initially focused on variables associated with pre-college academic abilities and collegial social engagements, the variables that Spady initially identified for these two categories were narrow. Building upon Spady's (1970) work, Tinto (1975) identified additional variables associated with pre-college academic abilities and collegial social engagements with a focus on students' departure, which were incorporated into and explored through his departure conceptual model. The following sections on pre-college academic abilities and social engagements highlight the significance of these categories and their associated variables on students' persistence as well as provide an overview of the evolution of these categories in regard to the persistence and departure conceptual models.

Pre-college academic abilities. Spady's research was informed by literature and scholarship associated with social norms and the human condition. In particular, he used this literature and scholarship to investigate why students drop out of college. This led to Spady's assertion that there were two prevailing systems at work in all postsecondary institutions: academic and social (Aljohani, 2016, p. 2). In regard to the academic system, Spady (1970, 1971) identified two variables that often influenced students' decision to withdraw from college: grades and intellectual development. As for the social system, he determined that normative congruence and friendship support also were variables that often

influenced students' decision to withdraw from college (Aljohani, 2016, p. 2). In Spady's development of a persistence conceptual model, along with demographics (i.e., gender and ethnicity/race), grades and intellectual development (i.e., academic system category) became variables that reflected students' pre-college academic abilities whereas normative congruence and friendship support (i.e., social system category) became variables that reflected students' collegial social engagements.

In building upon Spady's research, Tinto (1975) introduced additional variables associated with pre-college academic abilities. For instance, Tinto (1975) utilized a more comprehensive set of demographic variables in his departure conceptual model, which were referred to as pre-entry attributes. Tinto (1993) also included the following pre-college academic variables in his departure conceptual model: ACT/SAT scores and high school grade point average. Later in the 21st century, Yue and Fe (2017) revealed that "The characteristics students bring into college [i.e., pre-college academic abilities] not only affect chances of graduation but also time to degree: among the graduates, student groups with lower probabilities of graduation took longer than their counterparts to complete degrees" (p. 196).

For the purpose of this research study, pre-entry attributes were included in investigating the persistence of sophomore students. Due to the fact that these students had already completed their first-year in college, variables associated with their pre-college academic abilities were not relevant for this research study. However, their cumulative grade point average (GPA) and earned credit hours were included as variables in examining the persistence of sophomore students. The pre-entry attributes category is further reviewed below under the "Departure Conceptual Model" section.

In his initial research, Tinto (1975) indicated how "institutional relationships associated with informal peer groups, semi-formal extracurricular activities, and interactions with faculty and administrative personnel could impact students' persistence" (p. 106). In 1993, Tinto expanded upon his

initial research by elaborating on the significance of faculty involvement with students. He concluded that faculty interactions with students could significantly impact students' persistence. Similarly, Pascarella (1980) research on the significance of student-faculty informal contacts yielded evidence that suggested: "what transpire[d] between students and faculty outside of class may have a measurable, and possibly unique, positive impact on various facets of individual development during college" (p. 571). Building upon Tinto's work, researchers such as Hurtado and Carter (1997), Tierney (2004), Feldman (2005), and Colvin (2007) presented additional variables associated with collegial student engagements, like social-community organizations, tutoring, career services, and academic support programs. The following section provides a discussion of social engagements and the two key variables associated with it: faculty involvement and academic support programs.

Social engagements. Collegial social engagements have been proven to contribute to students' persistence and success (Tinto, 1993). Students' persistence is connected to multifaceted relationships, characteristics of institutions, and characteristics of individual students (Terenzini, Springer, Yeager, Pascarella, & Nora, 1996). Astin (1993) introduces the "student involvement theory" to highlight that "...the amount of student learning and personal development" that occurred equated to "...the quantity and quality of the physical and psychological energy that students invest[ed] in the college experience" (pp. 528-529). Social engagements can include various aspects of the institution. Students can be engaged in student government, student Greek activities, internships, work-study and other social-community organizations (Hurtado & Carter, 1997). Tierney (2004) suggested that students should not lose who they are as they transition to college. In order to help students, maintain their identity, he discussed how it was important that opportunities and support for engagement were available to students.

Once students become involved in internships, service learning, and other extracurricular activities, they start to understand the academic and professional benefits of their social engagement in collegial activities. Both social and academic integration are important because they provide students with the support and motivation to complete their degree by submerging them in the social and academic climate of their institution (Rendon, 1995; Tinto, 1975 & 1993). According to Tinto (1975):

Successful encounters in these areas result in varying degrees of social communication, friendship support, faculty support, and collective affiliation, each of which can be viewed as important social rewards that become part of the person's generalized evaluation of the costs and benefits of college attendance and that modify his educational and institutional commitments. (p. 107)

Therefore, lack of degree completion could be reflective of a student not being engaged to or connected with the institution (Leppel, 2005). Overall, social connections at the institution would provide students with the positive experiences they need in order to persist in their academic journey (Astin, 1975).

Faculty involvement. The role of faculty involvement is paramount to the successful persistence and retention of students. “Given the faculty's more intimate and direct association with the academic system of the institution, it is not surprising that a number of studies have found that social interaction with the college's faculty is related to persistence in college” (Tinto, 1975, p. 109). Faculty members could provide the necessary mentoring and stewardship that students need to help them apply and transfer their academic knowledge to other contexts outside of the classroom, such as internships and research projects. In the 1990 Boyer Report, the authors stressed the importance of faculty involvement in students' freshman and sophomore year. Faculty involvement with students could stimulate intellectual inquiry as well as lead to opportunities to be involved in research. Unfortunately, faculty

involvement with freshman students is not a priority. In my experience, interactions between faculty and students typically are not solidified until students are accepted into their major and/or taking upper division courses.

In their research involving faculty-student focus group, Collier and Morgan (2008) found that students felt that it was their responsibility to contact the professor. On the other hand, “faculty members felt that it was students’ responsibility to let them if they were experiencing academic trouble” (p. 434). In addition, faculty members felt that students should follow-up with them during office hours (p. 434). However, faculty members should focus on developing relationships with students during their freshman and sophomore year. In their research, Pascarella and Terenzini (1991) found that freshman students who had the highest amount of informal contacts with faculty ranked faculty members significantly higher, compared to those who had the lowest amount of informal contact, “as a source of positive influence on their intellectual development and on their personal development during the freshman year” (p. 552). Furthermore, Pascarella and Terenzini (1991) found that “students who interact[ed] with faculty, staff, and their peers outside of the classroom form[ed] educated opinions, attitudes, values, and aspirations based on those interactions” (p. 134). Therefore, early connections between faculty members and students could provide the foundation for freshman and sophomore students to start developing and exploring their academic or professional interests (Terenzini and Reason, 2005).

Student engagement is one of the most critical components of persistence and success. Tinto (1993) states that “nowhere is the importance of student involvement more evident than in and around the classrooms of the college” (p. 132). Faculty members can enormously affect students’ academic journey during the first and second college years (Terenzini and Reason, 2005). According to Astin

(2001), students' involvement in activities like service learning, research, or internships with faculty members help them develop their identity and autonomy. Students that are socially engaged on campus have a much higher rate of persisting because they feel part of the campus community and/or experience a stronger sense of belonging (Hurtado & Carter, 1997). Overall, faculty involvement with students allows for a positive impact on persistence and degree completion (Pascarella & Terenzini, 1991).

Academic support programs. Academic support programs are created with the intention of increasing enrollment, retention, and degree completion (Kim, 2000). These programs provide students with academic and professional support (Xiong & Lee, 2011). "Programs directed at increasing student involvement can increase persistence. Academic as well as social involvement is important, and institutions should avoid social interaction at the expense of academic interaction" (Leppel, 2002, p. 445). They also provide students with access to social support networks that may lead to a "greater involvement on campus and better self-reported academic achievement" (Mattanah, Brooks, Brand, Quimby, & Ayers, 2012, p. 23). Astin (1984) indicates that because administrative student support personnel "frequently operate on a one-to-one basis with students, they are in a unique position to monitor the involvement of their clients in the academic process and to work with individual clients in an attempt to increase that involvement" (p. 526). "Ultimately, their goal is to help students learn self-sustaining skills that enable them to thrive and become independent learners" (Mahoney, 1998, p. 383). Therefore, academic support programs should be structured in a way that service and nurture the student holistically as an individual (Mahoney, 1998; Olive, 2008).

Students choose to engage academic support programs and social networks for various reasons. However, one of the main reasons students choose to participate is to feel a sense of belonging at the institution. Hurtado and Carter (1997) highlight how students' involvement in peer tutoring,

participation in student organizations, and utilization of other academic support programs and social networks are instrumental in helping students to develop a sense of belonging. Students feel connected to the institution and are more liable to persist to degree completion when they are involved in academic support programs and social networks (Tinto 1993). Overall, effective academic support programs and social networks can aid students in persisting. For the purpose of this research study, academic support programs consist only of services and resources that students have the option of engaging. More specifically, the role of tutoring and career services as academic support programs as well as vehicles for social networking are reviewed in the following sections.

Tutoring. As a type of academic support program, tutoring supports students in socially and academically integrating into the campus environment (Stephen, O’Connell & Hall, 2008). A study by Reinheimer and McKenize (2011) “demonstrate the positive impact of tutoring on students' academic performance and retention in college” (p. 31). Tutoring connects students to peer and/or professional tutors. “Peering tutoring is a very old practice, traceable back at least as far as the ancient Greeks” (Topping, 1996, p. 322). Particularly, peering tutoring positively impacts the academic and social integration of students who both serve as tutors and utilize tutoring services. Participation in peer tutoring activities “suggest a merging of students' social and academic interactions that may contribute to their significant effect on sense of belonging in college” (Hurtado & Carter, 1997, p. 334).

Topping (1996) and Colvin (2007) research revealed that peer tutoring programs had a positive effect on the persistence of at-risk students by aiding them in improving their academic performance. In a study conducted by Coladarci, Willett, and Allen (2013), they discovered that there was a strong link between student retention and tutoring programs in the third semester or at the beginning of the sophomore year. This link showed that tutoring could have a significant impact on students’ academic

success if they participated in tutoring programs earlier during their freshman and sophomore year. Tutoring could offer students an added layer of academic support that would also assist them in connecting to the institution.

In the past, one of the biggest challenges facing tutoring programs was that they were typically assumed to be a service and resource for students who were struggling academically. “However, as development and research in different formats of peer tutoring proceeded apace in more recent years, it became clear that peer tutoring is not necessarily only about transmission from the more able and experience...to the less able” (Topping, 1996, p. 322). Tutoring has shifted to become an academic support program that is embraced by students as a service and resource for them to utilize in order to support their academic success (MacDonald, 2000). "Pedagogical advantages for the tutee include more active, interactive and participative learning, immediate feedback, swift prompting, lowered anxiety with correspondingly higher self-disclosure, and greater student ownership of the learning process" (Topping, 1996, pp. 324-325). Thus, tutoring programs have become more complex and have branched out to include multiple types of services and resources to support students' academic success. Tutoring programs now involve interchanges that range from formal teaching in the classroom to sharing information in social settings (Colvin, 2007, p. 166). "In general, peer tutors help other students either on a one-to-one basis or in small groups by continuing classroom discussions, developing study skills, evaluating work, resolving specific problems, and encouraging independent learning" (Colvin, 2007, p. 166). Now, students understand the importance of engaging academic support programs like tutoring. Findings from a study by Reinheimer and McKenzie (2011) confirms that tutoring has an impact on retention.

Career services. As an academic support program, career services staff and personnel assist students in aligning their academic aspirations with their professional aspirations. They strive to teach students lifelong skills that could enable the students to obtain employment in meaningful and satisfying professions associated with their major (Raymoan, 1993). A survey administered by Ruffalo Noel-Levitz (2013) to 3,780 second-year students at four-year public institutions found that 78% of these students wanted to receive assistance in identifying "work experiences or internships related to [their] major" (p. 11). Gardner (2000) confirms that "Career services can assist students with connecting to opportunities related to the students' interests. The rapid change in the structure of the workplace, in methods for job posting, and in campus recruitment is reshaping program delivery in career services" (p. 75).

The significance of career services in impacting students' persistence has become more visible in recent literature and scholarship. "The economy, state and federal government policies, along with input from parents, employers, and other stakeholders, are some of the factors creating an increased focus on career services at colleges and universities" (Ledwith, 2014, p. 49). According to Perry, Cabrera, and Vogt (1999), "Career development theorists suggest that students who do not progress to higher levels of career maturity are more prone to dropping out" (p. 42). Feldman (2005) believes that introducing some aspect of career services into the freshman year could help in increasing students' satisfaction and persistence. Overall, career services can be instrumental not only in helping students persist to degree completion but also to transition from college to the workforce.

Departure Model

Whereas Spady (1970) focused on the influence of academic and social systems on the persistence of students, Tinto (1975) highlighted the impact of academic and social integration on the

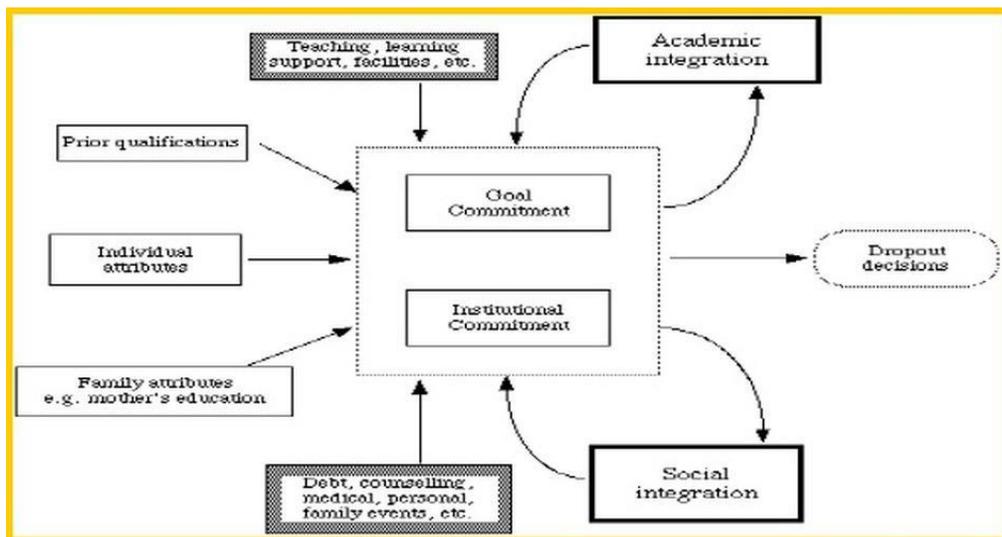
departure of students. “Tinto’s model of student departure has had the greatest influence on our understanding of student retention” (“College Student Retention,” n.d., p. 6). Tinto (1975) asserted that academic integration related directly to how prepared students are in entering college. It also contributed to students’ course load and GPA. Academic integration involved the extent to which students were adjusting to the “academic norms” of a university. Most importantly, successful academic integration also depended on how motivated and committed students were to achieving their goals (p. 103). On the other hand, successful social integration related directly to the extent students became socially engaged at the university. It included activities such as social-community organizations, faculty interactions, and tutoring which kept students connected to the university (p. 107). Rendon (1995) also confirmed that both academic integration, which consisted of grades, attendance, and contact with faculty and students, and social integration, which encompassed participation in extracurricular activities, clubs, and organizations, are equally important to student retention (p. 6).

Tinto (1993) Students successfully process through the stages stage of separation, transition, and incorporation when they integrated the academic and social systems of their college (p. 94). Separation is considered student’s capacity to disengage from their previous academic and social system Separation is considered student’s capacity to disengage from their previous academic and social system (Tinto, 1993, pp. 95-97). The transition occurs when students have successfully adjusted from being detached from their communities. They are learning to function on their own while still trying to adapt to new norms of their surroundings (Tinto, 1993, pp. 97- 98). Incorporation occurs when students have successfully integrated into their new college environment. However, they can be incorporated but still need assistance in how to be successful in pursuing academic goals (Tinto, 1993, pp. 98-99).

Figure 2 below illustrates Tinto’s initial departure model concept (1975, p. 89). It shows how goal and institutional commitment are key factors in determining whether students persist or dropout. They directly affect the degree to which students are able to academically and socially integrate at an institution. The departure model highlights how variables associated with prior qualifications, individual attributes, and family attributes are brought with students when they enter a university. Each of these variables can have a negative impact on the success of students’ academic and social integration at the institution. However, the extent to which an institution provides students with proficient teaching, learning, support, facilities, financial aid, counseling, medical aid, etc. also can have a negative impact on the success of students’ academic and social integration at the institution.

Figure 2.1.

Tinto's 1975 Departure Model



In Tinto’s 1975 departure model, he focuses “on the environmental conditions under which departure is likely to occur...” (Tinto, 1993, p. 112). Tinto (1993) expanded upon his initial departure model concept by developing “an interactive model of student departure which describes and explains the longitudinal process by which individuals come to leave institutions of higher education” (Tinto,

1993, p. 112). The longitudinal departure model, first is “intended to speak to the longitudinal process of departure as it occurs *within an institution* of higher education;” secondly, it brings attention “the longitudinal process by which individuals come to *voluntarily* withdraw from institutions of higher education; and thirdly, “the model is *longitudinal and interactional* in character” (Tinto, 1993, pp. 112-113).

One of the best forecasters of students’ persistence is the degree to which they become academically and socially integrated at their university. The initial research of Spady (1970) and Tinto (1975) has informed the development of several college impact conceptual models and conceptual frameworks. From Pascarella’s (1980) emphasis on the importance of the informal interactions between students and faculty, Astin’s (1985) introduction of the “student involvement theory,” Feldman and Newcomb’s (1994) discussion of the sophomore slump, to Terenzini and Reason’s (2005) development of “a conceptual framework that focuses on students’ first, critical year and [that] takes into account the multiple student, faculty, and institutional influences [previous] research shows are involved in shaping first-year student learning and persistence” (p. 1), all of these researchers and others have explored, examined, and/or introduced “*intraindividual*,” “*interindividual*,” organizational and institutional structures, and other variables that affect the persistence and departure of students (Terenzini & Reason, 2005). Nevertheless, Reason (2009) asserts that “To parse out the effects of different organizational practices or cultures a study must include multiple organizations” (p. 678).

This research study particularly focuses on variables associated with the following categories which are associated with the departure conceptual model and consistently referenced in literature and scholarship related to students’ persistence: pre-entry attributes, cognitive, academics, social engagements, and financials. The pre-entry attribute category consists of demographic variables

associated with ethnicity, first-generation, and gender. The cognitive category encompasses motivation, self-efficacy, self-regulation, and future-time perspective variables. The academic category comprises of credit hours, grade point average, and advisement variables. The financial category includes student employment, lottery scholarship and/or other scholarships, and performance-based scholarship variables. The following sections provide a review of literature associated with these variables.

Pre-entry attributes. The pre-entry attributes category represents demographic variables that are often used as the first step in categorizing participants because they are captured at a set moment in time (Adelman, 2006, p. 23). Throughout the literature and scholarship regarding conceptual models on retention, there is a common theme on the importance of variables associated with pre-entry attributes that can explain whether students persist or depart (Astin, 1985; Hurtado & Carter, 1997; Pascarella, 1980; Pascarella & Terenzini, 1991; Tinto, 1975, 1993). According to Adelman (2006), “Demographic variables are normally considered in the context of other aspects of student experience, behaviors, and attitudes when attainment of any kind (e.g., high school graduation, test scores, grades, college degree) is the dependent variable” (p. 23).

In this research study, the pre-entry attributes category is measured by three demographic variables: ethnicity, first-generation, and gender. Demographic variables are intertwined together. Therefore, it would be difficult to explore gender in a vacuum or any of the other demographic variables without taking the others into account. Previous research has shown that ethnicity and gender particularly tend to have an impact on students’ persistence. “First-generation college students, most of whom come from low-income and minority backgrounds, face a number of challenges that make it more difficult for them not only to get into but through college as well” (Engle, Bermero, & Obrien, 2008, p. 13). Tinto (1975) confirms that:

First, there is simply too little information regarding the relationship between race and dropout from higher education. It is clear that race is an independent predictor of dropout (independent of both ability and social status), but it is unclear in which ways this aggregate relationship occurs. We simply do not know enough about the processes of interaction that lead individuals of different racial backgrounds to drop out from higher education. Nor do we know enough about how these processes relate to differing patterns of academic and social integration or how they vary between institutions of different academic and social characteristics. (p.119)

Overall, demographic variables play a vital role in students' persistence (Adelman, 2006; Bean, 1980; Tinto, 1993). First-generation students and those classified as having a wanted to touch bases about my travel low socioeconomic backgrounds typically face significant challenges in enrolling in postsecondary education (Engle, Bernero, & Obrien, 2008; Ishitani, 2003). A low socioeconomic background usually impacts the persistence of minority students on a much larger scale than it does white students. In their study, Yue and Fu (2017) found that males, "[Underrepresented minority] URM students, first-generation students, students who qualified for Pell grant, those who required Math or English remediation, those who did not have Pre-college experience and those who have lower high school GPA have notably lower probability of graduation" (p. 196). Each one of these demographic variables has been shown to have a direct correlation to students' persistence (Bean, 1980; Ishitani, 2003; Tinto, 1975).

Ethnicity. Students' ethnicity plays a fundamental role in their persistence (Leppel, 2002). Each ethnic group brings a certain level cognitive ability, level of engagement, and cultural influences to the university. "Research has indicated that Black students tend to have lower persistence rates than Whites. However, this persistence disadvantage disappears when other characteristics, including [grade point

average] GPA, are taken into consideration” (Leppel, 2002, p. 445). As the diversity of the college population continues to grow, it is becoming more common for first-generation students to attend college (Berger, Ramirez, & Lyons, 2005). Students’ ethnicity plays a vital role in their persistence because each ethnic group brings with it certain cognitive variables, social variables, and cultural capital to the university (Arnold, 2012; Creighton, 2007; Leppel, 2002).

In his study on the differences in the first-year academic success of economic students from various ethnic background, Arnold (2012) found “that minority students gain less credits and have a higher dropout rate” (p. 317). Creighton (2007) confirmed in his research that “the retention of college students of underrepresented populations is complex and encompasses not only such issues as academic preparation but also commitment, belonging, and perseverance” (p. 8). According to Swail (2009), “Career colleges do a better job of graduating minority students than public institutions at both the two- and four-year levels” (p. 27). In his book *Leaving College*, Tinto (1987) “argued that overall differences in rates of four-year degree completion between Hispanics, blacks, and whites are at least partially due to the differences between those groups in their average ability test scores and socioeconomic status background” (p. 32). As the aforementioned research and others have shown, ethnicity is typically explored in conjunction with students’ socioeconomic background and first-generation status.

First-generation. According to Chen (2005), “First-generation students are defined as those from families where neither parent attained any education beyond high school. These students are compared with two groups of students whose parents went to college...” (p. 2). The number of first-generation students in college is on a steady increase. First-generation students tend to have more family commitment, job pressures and need more guidance than students who are not first-generation students. First-generation students, when compared to those that are not first-generation, may face different

barriers that in turn, affect their persistence (Rendon, 1995, p. 6). They usually do not have parents that can assist them with the college admission process. They tend to have to help their family financially, requiring them to work more hours than their peers that are not first-generation. In addition, they are more likely to have a harder time adjusting to the demands of college (Hurtado, Carter, & Spuler, 1996). “Nontraditional students who are the first in their family to attend college find the transition to college to be a disjuncture in their life trajectory” whereas “Traditional students consider college-going a normal, rational part of their life experience” (Rendon, 1995, p. 6).

First-generation students tend to have lower grade point averages (GPAs) in comparison to non-first-generation students. They typically have a “more significant challenge to prepare, enroll and succeed in higher education, because they do not always have the support that other students whose parents went to college have” (Swail, 2009, p.16). Collier and Morgan (2008) highlight how Tinto’s (1975) model has been used by researchers to show that “social integration and academic integration are the best predictors of first-generation college student retention rates” (p. 426). First-generation students are less likely to graduate than peers who have at least one parent with a college education (Chen, 2005).

Gender. Gender continues to be a very critical variable that is used to study persistence. Gender is used to differentiate between the persistence of males and females. “However, institutional commitment is the most important variable in explaining dropout for students of both sexes” (Bean, 1980, p. 26). In addition, it is beneficial to use gender to examine the disparity between ethnic groups. Peter and Horn’s (2005) research revealed that “in 1999–2000, women made up a greater percentage of Black students than they did among White, Hispanic, and Asian/Pacific Islander students and Black women earned proportionally more associate’s and bachelor’s degrees than Black men” (p. 43). Over the

last several years, women have dominated the increase in admissions, and they have had higher rates of persistence toward graduation (Francis, 2013; Peter & Horn, 2005).

Women tend to stay in college longer, enroll in more courses than men, and complete their degrees at a higher rate than men (Dwyer, Hodson, & McCloud, 2013). For example, male students who participated in Bellani's (2007) study expressed that they have a fear of failure (p. 85). "Excessive social integration seems to jeopardize men's academic performance" (Leppel, 2002, p. 445). Anxiety over big life choices and expectations held by others could cause men to avoid thinking about the future. These barriers for men tend to affect their persistence. "Over the last three decades, the educational gender gap favoring men, in many respects, has been reversed: women have surpassed their male peers in educational expectations, enrollment in postsecondary education, and college degree attainment (Freeman 2004)" (Peter & Horn, 2005, p. 1).

There is a push for institutions to figure out why males are falling behind in the achievement gap (Jacob, 2002; Leppel, 2002). Previous research has identified the impact of gender differences on college adjustment (Bean, 1980; Berman & Sperling, 1991; Kenny & Donaldson, 1991; Leppel, 2002). In their study, Conger and Long (2010) found that there is a correlation between males that enter college with a low high school grade point average (GPA) and males who earn lower GPAs and credit hours in their first semester of college (p. 184). Leppel (2002) also found that "...GPAs are higher for men who perceive themselves as above average in academic ability, are not Black or Asian, are older, are married, and have children" (p. 445). The findings of research like these illustrate what is happening across many institutions. Nationally, males are persisting to graduation slower than females. Females students are better preparing themselves for college by having higher high school GPAs (Conger & Long, 2010); Jacob, 2002; Peter and Horn, 2005; Reynolds and Burge 2004; & Reigle-Crumb, 2007), which in turns

has a positive influence on the success of postsecondary institutions. Jacob (2002) reveals that “higher returns to college and greater noncognitive skills among women account for nearly 90 percent of the gap” (p. 596).

Cognitive. Cognitive processes take on many forms (Bandura, 1993, p. 120). Variables associated with cognitive processes can be used to help predict students’ persistence. In particular, the level of students’ cognitive ability will help them to academically and socially integrate. Pintrich and De Groot (1990) studied how “different cognitive strategies, such as rehearsal, elaboration, and organizational strategies have been found to foster active cognitive engagement in learning” (p. 33) and increase student achievement. The successful utilization of cognitive processes and strategies to academically and socially integrate at a university involves students’ ability to:

...draw on their knowledge to construct options, to weight and integrate predictive factors, to test and revise their judgments against the immediate and distal results of their actions, and to remember which factors they had tested and how well they had worked. (Bandura, 1994, p. 120)

“Motivational determinants are also strongly associated with academic and social adaptation” (Bean & Eaton, 2000, p. 52). High intrinsic motivation is important in driving students to excel cognitively, which can lead to persistence and academic success (Meece & McColskey, 1997). If students come to college with low motivation, they are more likely to struggle and not persist. As students earn more credit hours and achieve a higher grade point average (GPA), they will become more invested in their academic success. This investment can lead to academic motivation which then transpires into students becoming more socially engaged at the institution. Students participation in social engagements such as the services and resources of academic support programs further support,

develop, and strengthen their cognitive processes. The cultural environment of the university can influence the degree to which students exhibit the variables associated with the cognitive category.

Self-regulation, self-efficacy, and motivation are the three common cognitive variables that are often researched on student persistence. “The greater motivation and self-regulation of learning of self-efficacious students produces higher *academic achievement*... (Zimmerman, 2000, p. 88). However, this research study also incorporates future-time perspective (FTP) as a cognitive variable. FTP is relatively new and is becoming more relevant in understanding students’ persistence. The following sections include a review of literature associated with these three cognitive variables.

Motivation. “Students form motivational beliefs that are specific to particular academic tasks and contexts. Some of those beliefs, however, generalize across different situation” (Bong, 2004, p. 287). Brophy (1987) reveals how “Student motivation to learn is an acquired competence developed through general experience, but stimulated most directly through modeling, communication of expectations, and direct instruction or socialization by significant others (especially parents and teachers)” (p. 40). According to Pintrich and De Groot (1990), there is evidence that there is a correlation between “students’ perceptions of the classroom as well as their individual motivational orientations and beliefs about learning” and their “cognitive engagement and classroom performance” (p. 33). Friedman and Mandel (2011) confirmed that “Students who are motivated to achieve positive results and improve upon their past performance appear to do better academically than their peers that report less motivation to perform well” (p. 11). In his study, Killen’s (1994) “Results indicated that nine of the ten factors students perceived to be the most influential in terms of their success at university were factors within their control. These included ‘self-motivation,’ ‘self-discipline’ and ‘consistent effort’” (Devlin, 2002, p. 127).

It is apparent that “Improving students’ motivation is generally viewed as important because it is related to high achievement” (Meece & McColskey, 1997, p. v). Students’ motivation plays a critical role in their academic success and commitment to college. “Self-motivation involves standards against which to evaluate performance. By making self-rewarding reactions conditional on attaining a certain level of behavior, individuals create self-inducements to persist in their efforts until their performances match self-prescribed standards” (Bandura, 1977, p. 193). Therefore, students’ commitment to college provides an insight into how they value their college education; the degree to which they are satisfied with college life; and their understanding of the long-term benefits of degree completion. “If activated in particular learning situations, motivation to learn functions as a scheme or script that includes not only affective elements but also cognitive elements such as goals and associated strategies for accomplishing the intended learning” (Brophy, 1987, pp. 40-41).

Self-efficacy. “Self-efficacy is defined as a self-evaluation of one’s competence to successfully execute a course of action necessary to reach desired outcomes” (Zajacova, Lynch, & Espenshade, 2005, p. 678). It is a multidimensional construct (Zajacova et al., 2005; Zimmerman, 2000). “Other theories have emphasized the importance of student motivational variables such as self-efficacy and self-esteem, and how these variables interact with such things as academic persistence and performance (Bean & Eaton, 2000)” (Friedman & Mandel, 2011, p. 3). The level of students’ self-efficacy as it relates to academic capability is formed before they enter college and can fluctuate during their college journey. Self-efficacy plays a vital role in students’ academic success. It has long been studied as an indicator of academic performance and retention for college freshmen (Zajacova et al., 2005). When academic self-efficacy is low, students are less likely to persist in college (Bandura, 1977, p. 207). Pajares (1996) also

reveals that “People with low self-efficacy may believe that things are tougher than they really are, a belief that fosters stress, depression, and a narrow vision of how best to solve a problem” (pp. 544-545).

Self-efficacy can assist students in transitioning to college. The level of self-efficacy students exhibits depends upon the “difficulty of a particular task, such as spelling words of increasing difficulty; *generality* pertains to the transferability of self-efficacy beliefs across activities, such as from algebra to statistics; *strength* of perceived efficacy is measured by the amount of one's certainty about performing a given task” (Zimmerman, 2000, p. 83). "Efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will prove in the face of adverse situations" (Pajares, 1996, p. 544). A higher sense of efficacy will lead to greater efforts, persistence, and resilience (Pajares, 1996, p. 544).

Self-regulation. Zimmerman (2000) asserts that “Self-efficacy beliefs also provide students with a sense of agency to motivate their learning through use of such self-regulatory processes as goal setting, self-monitoring, self-evaluation, and strategy use” (p. 87). Like self-efficacy, self-regulation also is a very important aspect of students’ persistence and academic success. “However, knowledge of cognitive and metacognitive strategies is usually not enough to promote student achievement; students also must be motivated to use the strategies as well as regulate their cognition and effort” (Pintrich & De Groot, 1990, p. 33). Deci, Ryan, and Williams (1996) clarify that “The highest level of self-regulation involves actions that are freely undertaken because the person finds them interesting or important, and the lowest level involves doing an activity only because the person feels forced by some external agent” (p. 166). Moreover, self-regulation can impact students’ professional success. “The ideas that there are some similarities in the way individuals self-regulate in both academic and professional settings provides an

important link to the concept of life-long learning and the importance of academic self-regulatory behaviors” (Ruban & Amaury, 2002, p. 2).

An awareness of students’ ability to self-regulate is very important because they must be able to regulate their study time, balance their social life, and family time. Pintrich and De Groot (1990) discuss “three components of students’ self-regulated learning: (a) *expectancy*, beliefs about their ability to perform a task, (b) *value*, goals and beliefs about the importance and interest of the task, and (c) *affective*, emotional reactions to the task” (p. 33). Overall, students must be disciplined in their decision-making, academic and social habits, and time-management skills in order to effectively self-regulate.

Future-time perspective. The future-time perspective (FTP) concept is relatively new in literature and research regarding students’ motivation and persistence. “FTP is the “degree to which and the way in which the chronological future is integrated into the present life-space of an individual through motivational goal-setting processes” (Husman & Lens, 1999, p. 114). Spady, Tinto, and other early researchers who have utilized conceptual models to examine students’ retention, persistence, or departure from college did not take into consideration FTP as a variable, including its bearing on students’ persistence, academic achievement, and professional aspirations. When students engage in an activity, they can be motivated by immediate, present, and/or future goals. In other words, FTP is the process by which students decide how current practices and activities would serve to motivate them in reaching their future goals. “Some teachers indicate that actively participating in present school activities helps a student exercise skills and talents that will be needed in future education and career” (Vansteenkiste, Simons, Lens, Soenens, Matos, & Lacante, 2004, p. 755). Students with a long FTP are able to anticipate the value of their current decisions and activities in defining their future goals, and

adapt their academic and social behaviors accordingly, whereas students with a short FTP dissociate their current decisions and activities from their future goals (Husman & Lens, 1999).

According to Leondari (2007), there are two very important aspects of FTP that are relevant to academic achievement: instrumentality and valence (p. 19). Instrumentality refers to the cognitive aspect that involves anticipating the implications of one's current actions to his/her future goals (Leondari, 2007, p. 19). For instance, if a student elects not to take advantage of academic support programs, such as tutoring services, for additional support for a test, it could not only hamper his/her performance on the test but also impact his/her future academic success. On the other hand, valence involves the value or importance that is placed on certain future goals. Because it "has been shown to be associated with adaptive behavior and positive motivation," valence can be vital to supporting students' persistence (Leondari, 2007, p. 19). "The motivational importance of an individual's perception of the future [or valence] ... mediates [his/her] long-term motivation and supplies direction for the achievement of a desired goal" (Leondari, 2007, pp. 19-20). However, Vansteenkiste et al. (2004) warn that there is a need for further research to examine or explore whether increasing the perceived usefulness, intrinsic value, and/or extrinsic value of a current decision or activity "is a sufficient condition to promote optimal study motivation or whether the content of the future goal also matters in understanding why some students are better motivated, perform well, and persist afterwards with study-related activities" (p. 755).

Academics. Research has shown that academic variables have been leading predictors of students' persistence. They are usually "investigated in tandem with social variables (e.g. peer relationships, campus involvement) in order to provide a more comprehensive picture of how students become acclimated to and integrated in campus environments" (Wood, 2012, p. 3). Specifically,

academics variables provide an insight into how well students will persist as well as the level of their academic achievement. They can range from grade point average (GPA), major change, informal meetings with faculty, etc. (Wood, 2012, p. 1). “Success at challenging tasks, particularly in the academic domain, often requires being able to generate multiple pathways to goals” (Synder, Shorey, Cheavens, Pulvers, Adams, & Wiklund, 2002, p. 820). Wood’s (2012) study found “that select variables reflective of academic integration [such as ‘students’ grade point average, whether a student ever received an incomplete, repeating courses for higher grades, withdrawing from courses after the add or drop deadline, and informal meetings with faculty” (pp. 15-16)] serve as significant predictors of black male persistence and attainment in the community college” (p. 15).

Bong (2004) discusses three different goal-orientations that are used to characterize, define, and inform students’ academic behaviors and engagement (p. 288). Mastery goal-oriented students “strive to acquire new information to improve their competence. Performance-approach, goal-oriented students, in contrast, are motivated mainly by their strong desire to outperform others and to document their superior ability....” (Bong, 2004, p. 288). Additionally, “Achievement goal orientations have like-wise been linked significantly to diverse indexes of motivation and performance outcomes” (Bong, 2004, p. 288).

Synder, Shorey, Cheavens, Pulvers, Adams, and Wiklund (2002) explain how the two types of goal that students typically pursue “set up adaptive or mal-adaptive achievement patterns reflecting either a mastery or a helpless orientation” (p. 820). Students who choose learning goals exhibit a mastery-orientation, which means that they “are actively engaged in their own learning, including assessing the demands of various assignments, planning the strategies they will use to meet those demands, and monitoring their progress at staying on track” (Synder, et al., 2002, p. 820). In contrast, students “who exhibit a helpless response when confronted with challenges are interested primarily in

performance goals or low-effort goals that enable them to look good and be assured of success” (Synder et al., 2002, p. 820). These students “are more likely to take easy rather than more difficult classes in which the potential for success is greater” (Synder et al., 2002, pp. 820-821). As a result, students’ pursuit of learning goals versus performance goals can be instrumental in determining not only the effectiveness of their academic and social integration but also the success of their academic and college journey. For the purpose of this research study, credit hours, GPA, and advisement are reviewed in the following section as variables of the academic category.

Credit hours. The purpose of credit hours in postsecondary has been evolving since the 20th century. “It has morphed from a measure of degree credit into a vehicle for institutional accounting, public accountability, and cross-institutional transfer” (Wellman, 2005, p. 20). Credit hours are the primary catalyst that determines if students can persist to the next college classification level. The total number of credit hours for which students are enrolled per semester also is used to calculate the number of credit hours they earned. At the University of New Mexico (UNM), students who earned 25 credit hours or less are classified as freshman; students who earned 26-59 credit hours are considered sophomores, and students who earned 60-94 and 95 or more credit hours are classified juniors and seniors, respectively (“What is my classification,” “UNM Student Classifications” section, n.d.). “Research suggests that the strongest predictors of degree attainment are average student credit hour load per term, followed by total credit hours earned” (Yue & Fu, 2017, p. 190). Students are not able to progress to the next classification level and persist to degree completion until they have earned or accumulated the required credit hours associated with each classification level. Arnold (2012) confirms “the general finding that minority students gain less credits and have a higher dropout rate,” (p. 317).

Currently, the national trend for degree completion is at least 120 earned credit hours (Wellman, 2005, p. 20). “Despite the nominal connection between credits and contact hours, institutions can and do vary course credits depending on academic criteria such as the rigor of the course requirements or the level of instruction” (Wellman, 2005, p. 20). For credit hours to manifest to a degree, the student must declare a major and stick with it until degree completion. “Students decisions to enroll (whether they are retained term to term), enrollment intensity (number of units enrolled) and term success (earned units out of enrolled units) interact to act as time-dependent factors of time to degree” (Yue & Fu, 2017, p. 190). Unfortunately, students accumulate more credit hours when they are undecided, undeclared, or transitioning between majors. As a result, students that declare and commit to a major early are more likely to graduate within four to five years. Yue and Fe's (2017) study confirm “that academic performance is the most important factor, followed by students' decisions on majors (such as having double majors/minors)” (p. 184). Although it “has been the object of growing criticism for several decades..., Like it or not, [the credit hour] is the glue that holds together our diverse and uniquely American ‘system’ of higher education” (Wellman, 2005, p. 20).

Grade point average. As students earn credit hours, their grade point average (GPA) either increases or decreases. Students’ GPA is vital to them remaining in good academic standing. “College students who are in academic difficulty often do not seek appropriate measures of intervention to improve their college grade-point average (GPA) and to prevent academic dismissal from school” (Schee, 2007, p. 50). The University of New Mexico (UNM) requires that students maintain their academic standing with a minimum cumulative GPA of 2.0 (UNM University Catalog 2016-2017, “Satisfactory Academic Progress,” n.d.). In their study’s conceptual model, Yue and Fe (2017) define academic performance in three aspects: term GPA, cumulative GPA and earned cumulative units (p.

190). Consequently, GPAs are critical variables in predicting whether or not students will persist.

“Lower grades are negatively associated with retention, while higher grades predict academic success”

(Gifford, Briceno-Perriott, Mianzo, 2006, p. 23).

It is obvious that “Low term GPA indicates a higher probability of course repeats and fewer earned credit units per term, while low cumulative GPA signals a slow accumulation of total earned credit units, leading to longer time in school before degree completion” (Yue & Fe, 2017, p. 190). Nevertheless, although grade point average is usually used to examine academic integration, it should not be the only measurement to predict students’ academic success. However, Collins and Morgan (2008) caution that relying solely on GPAs “without investigating the ways that other forms of academic integration influence grades” limits our measurement and understanding of the impacts of academic integration (p. 426). Abrams and Jernigan’s (1984) research on a group of high-risk college freshman students demonstrated “that high-risk entering students’ willingness seek assistance from either reading teachers or tutors is the most accurate predictor of their first semester college GPAs...” (p.271). In fact, they found that no pre-college academic abilities, such as admission test scores and high grades, “adequately distinguished those students who completed their freshman year in good academic standing from those who failed” (Abrams & Jernigan, 1984, p. 271). Furthermore, in their study on the retention of sophomore students, Bradley and Blanco (2010) examine the impact of the “Focus” program on getting sophomore students involved in leadership and service activities as well as in training sophomore students “to be mentors in their junior and senior years to help build transition skills they will need in the workplace.... Students in the program show progress in many areas, including higher GPAs than those not in the program” (Bradley & Blanco, 2010, p. 21). Overall, as students’ progress through their

academic journey, it is necessary that administrators, faculty, and advisors take into consideration how multiple academic variables may influence students' persistence to degree completion.

Advisement. Academic advising has always been a part of the higher education process. More specifically, it is an essential part of the general educational mission of higher education institutions. Good academic advising can positively influence students' self-efficacy, self-regulation, and future-time perspective (FTP). According to Kimball and Campbell (2013), "Advising is paradoxically a relatively new profession with a long history.... academic advising has always been a part of higher education—first as the work of college faculty members, later as student affairs personnel, and finally professional advisors" (p. 4). Currently, academic advising practices refer "to situations in which an institutional representative gives insight or direction to a college student about an academic, social, or personal matter. The nature of this direction might be to inform, suggest, counsel, discipline, coach, mentor, or even teach" (Kuhn, 2008, p. 3). Therefore, when students start college, it is vital that they work in partnership with their academic advisor in order to ensure that they are on the correct academic trajectory as it relates to selecting a major, earning enough credit hours each semester, maintaining a high-grade point average (GPA), and ultimately, persisting toward degree completion.

Drake (2011) also reiterates how academic advising "helps students to value the learning process, to apply decision-making strategies, to put the college experience into perspective, to set priorities and evaluate events, to develop thinking and learning skills, to make choices..." (p.10) while also providing them with an opportunity "to develop a personal, consistent relationship with someone in the institution who cares about them" (p.10). When academic advising is done well, students are guided and mentored in their: negotiation of the higher education maze; making of effective and thoughtful decisions about their futures; adaption of their life skills to the new academic world; and cultivation of

the academic skills and knowledge they need to succeed (Drake, 2011; Kimball & Campbell, 2013; Kuhn, 2008). Subsequently, academic advisors play a pivotal role in supporting student achievement and helping students reach their academic and professional potential (Kimball & Campbell, 2013, p. 11).

Structured academic advising critically contributes to students' retention and persistence (Drake, 2011; Kuhn, 2008; Pascarella & Terenzini, 2005). Improvements in academic advising ranks in response to established interventions for increasing retention have led to "a widespread appeal of academic advising as a means of promoting student retention" (Metzner, 1989, p. 422). Consequently, the connection between academic advising and persistence is becoming increasingly prevalent. In particular, academic advisors are becoming instrumental in impacting retention and graduation rates. Students that have regular and meaningful contact with their academic advisor tend to have higher self-esteem, stronger confidence in their academic trajectory, and a better understanding of their academic and professional goals (Kuh, 2008). As the advising profession shifts from its intellectual, theoretical, and practical foundations toward its impact, "the power of high-quality advising becomes all the more clear and with it the need to continue to expand advisor knowledge of best practices of within the profession" (Kimball & Campbell, 2013, pp. 9-10). For instance, Kuh (2008) asserts that academic advisors should be knowledgeable about the persistence and graduation statistics associated with various ethnic groups when working with students from different backgrounds (p. 70). The transition in the focus on academic advisors from simply academic support personnel to influential facilitators in the success of students' academic and social integration points to the interconnected "power of advising, communicating, mentoring and student success and persistence to graduation" (Drake, 2011, p. 8).

Nevertheless, "No universal prescription applies to academic advising because each situation and the ways of individuals interpret it differ. Academic advisors must first and foremost understand how a

student interprets his or her situation...” (Kimball & Campbell, 2013, p. 8). There are several implications for administrators, faculty, and academic support professionals in creating a learning environment necessary for students’ academic success and persistence. “Advising is thought to be most effective in terms of promoting student growth, learning, and success when it is integrated into academic support services and when it is sensitive to the developmental needs of diverse students” (Kuh, 2008, p. 70). Therefore, it is important that faculty, administrators, and academic support professionals focus not only on building relationships with students in order to ensure that they are academically and socially engaged and connected but also on establishing effective collaborative relationships and partnerships with each other to better serve, support, and develop students holistically (Drake, 2011). “Students who are the happiest and academically the most successful have developed a solid relationship with an academic advisor, a faculty member, or an administrator who can help them navigate the academic and social shoals of the academy” (Drake, 2011, p. 10).

Overall, academic advisors provide guidance and partnership to assist students in discovering their path along with ensuring that students are taking the necessary course work and credit hours they need to persist to degree completion. Outside of students’ own intrinsic motivation, academic advising can serve as an external motivation that helps students in their academic and vocational achievements. Without good academic advising, students can become susceptible to academic challenges, which can lead to frustration, disenchantment, and ultimately, departure.

Financials. Even though we understand how important variables associated with the pre-entry attributes, cognitive, and academics categories are in examining students’ persistence and departure, having the financial means to stay in college also is a strong indicator in determining students’ persistence. Financial aid includes a broad spectrum of financial assistance (Patel et al., 2013, p. 1).

Although there has been an increase in various forms of financial assistance, such as merit-based scholarship programs, “Need-based aid has continued to be the dominant form of financial aid” (Doyle, 2012, p. 398). “Evidence suggests that financial aid as a whole (the combination of grants, scholarships, loans, work-study jobs, and other aid) is positively associated with students enrolling in college and staying there” (Patel, Richburg-Hayes, de la Campa, & Rudd, 2013, p. 1). However, although “Student financial aid programs have become an increasingly important component of the financing of higher education” (Jensen, 1981, p. 280), it is not clear if financial assistance, such as financial aid and scholarships, specifically contributes to student retention and academic performance (Patel et al., 2013, p. 1). D'Amico, Morgan and Robertson's (2011) “Findings show enrollment in developmental studies courses, gender, and availability of financial resources are significant when predicting student persistence. The number of credit hours earned each semester, age, and gender are significant when examining students’ likelihood of graduating” (p. 774). Their findings highlight the impact of financial assistance along with other variables in supporting students' persistence. There is still little literature, and research on the direct influence financial assistance have on students' persistence (Patel et al., 2013, p. 1).

It is important to note that the emphasis in federal, state, and higher education policies and procedures tend to focus more on providing better access to postsecondary institutions by increasing financial assistance to students and/or their families. For instance, the Tennessee HOPE lottery-funded scholarships “are intended to increase residents’ access to college broadly, but also to incentivize bright, college-going students to stay in their home state” (Bruce & Carruthers, 2013, p. 31). However, Jensen (1981) points out that it is relatively unknown if increases to financial assistance as well as enhancements in access and choice to a postsecondary education have also specifically resulted in an

increase in retention and persistence (p. 281). Regardless of the strides we have been making in increasing financial assistance and enhancing access to higher education institution, the cost of obtaining a college degree has continued to increase over the years, which has made it harder for students and/or their families to pay for their postsecondary education.

The increase in the cost of a postsecondary education has become even more problematic as state and federal budget cuts have led to significant decreases in the allocation of financial assistance to higher education institutions. According to Patel et al. (2013):

Policymakers, education leaders, and communities across the country recognize the need to improve college attendance and success but are constrained by the current budgetary environment. Meanwhile, students themselves face mounting college costs, and financial aid has not been able to keep pace. This affects both college enrollment and persistence, and low-income students are especially disadvantaged. (p. 1)

Today, students and/or their families depend more on financial aid, student employment, state financial support programs, such as lottery-funded educational awards, and scholarships to access college.

However, most forms of financial aid often lead to student debt and/or do not sufficiently cover college expenses (Astin, 1999; Shireman, 2009). Subsequently, students have to supplement loans and scholarships with employment more than any other generation of students. On a positive note, students who are engaged in student employment or work-study opportunities tend to be more dedicated to their academic success (Astin, 1999). On a negative note, "The purpose of financial aid is not merely to make it possible for a student to pay tuition and buy books and supplies, it is to get more students to and through college" (Shireman, 2009, p. 55). Due to increasing cost of a postsecondary education, even student employment is becoming inadequate in supplementing college expenses. "It's not worth covering

the tuition and books unless the student also has the time to be a student" (Shireman, 2009, p. 55). Consequently, for the purpose of this research study, the student employment, state-funded lottery and/or other scholarships, and performance-based scholarship variables are reviewed in the following sections.

Student employment. To offset college expenses, students are under more pressure today to work while pursuing a postsecondary education. "As more college students are relying on part- or full-time work to help pay for their education, federally financed work-study jobs are becoming harder to find" (Lipka, 2007, p. 1). Increases in college expenses have posed an additional challenge to students' persistence. St. John's (1990) study highlights how increases in college tuition negatively impacted the persistence of sophomore students to their junior year (p. 169). Fortunately, research has shown that student employment can have a positive impact on students' academic achievement and persistence (Orszag, Orszag, & Whitmore, 2001; Leppel, 2002, 2005).

Hood, Craig, and Ferguson (1992) purport that students who have a reasonable work schedule tend to have a higher grade point average (GPA). Furthermore, Stinebrickner and Stinebrickner (2003) assert that the number of hours that a student works can impact the magnitude by which they persist. One of the administrators that is involved in the work-study placement program at his postsecondary institution is referenced in Lipka's (2007) article as proclaiming that "work-study students in an on-campus job with a more moderate number of hours are much more likely to finish school" (p. 2). In other words, working too many hours could hinder students' persistence.

However, Ehrenberg and Sherman (1987) discuss the negative impact of students working off-campus in comparison to the positive impact of working on-campus. This difference can be related to the impact working on-campus has in supporting students' social engagements, social integration, and

sense of belonging at college. In addition, Lipka (2007) reveals that “work-study jobs have advantages over regular part-time employment. Income from a regular job may diminish a student’s future aid eligibility...” since these earnings are not factored into the federal financial aid formula (p. 2). Nevertheless, there is little recent research that focuses solely on students’ persistence, particularly in relation to sophomore students.

Lottery scholarship. Several states across the United States have created lottery systems that support high school graduating residents in attending a college in-state. A certain percentage of the lottery revenue is used to subsidize postsecondary education and provide financial assistance to in-state secondary education graduates. Each state has different criteria for determining how high school graduates are eligible for the lottery scholarship. Some state-funded scholarship programs provide need-based aid. "Most of the states which have broad-based financial aid award their aid on a need-based basis" (Doyle, 2010, p. 398). For the purpose of this research study, this section focuses on the New Mexico Legislative Lottery Scholarship which is also referred to as the New Mexico Lottery Scholarship. It is a merit-based scholarship program that provides financial assistance to high school graduates during their second semester in college based solely on their academic performance during their first semester at a two- or four-year higher education institution in New Mexico.

In other words, the New Mexico Lottery Scholarship is only awarded to New Mexico high school graduates after they complete their first semester in college if they have met the academic requirements. The academic requirements follow: 1) high school graduates must start their first fall semester of college immediately after their high school spring commencement; 2) as a college freshman, students must earn at least 15 credit hours during their first fall semester; 3) students must complete their first fall semester in college with a minimum 2.5 cumulative grade point average (GPA); and 4)

complete the FASFA application and registration process to transition to their second semester of college. The New Mexico Lottery Scholarship covers approximately 80% to 90% of students' college tuition. As a merit-based scholarship program, the New Mexico Lottery Scholarship supports students who have exhibited low and high academic performances as well as students from low and high socioeconomic backgrounds. As a result of the New Mexico Lottery Scholarship program, Binder, Ganderton, and Hutchens (2002) found that less academically prepared students, regardless of their socioeconomic status, were now able to access in-state colleges and that academically high performing students were attracted to attending college in state (p. 51).

Since the New Mexico Lottery Scholarship is not awarded until students complete their first full semester in college, high school graduates have the option of applying for financial assistance for their first fall semester in college, which must immediately follow their high school spring commencement. The New Mexico 3% Scholarship, also known as the Bridge Scholarship, is a one-time scholarship award that is issued to students based on their high school academic performance. The amount of the award varies amongst the postsecondary institutions in New Mexico. At the University of New Mexico (UNM), students are able to receive approximately \$1,500 for their first fall semester in college if they meet the following academic criteria: 1) graduate from a New Mexico high school with at least a 3.0 GPA; 2) earn a designated minimum score as determined by the postsecondary institution on the ACT, SAT, GED, or High School Equivalency Test (HiSET); 3) be a New Mexico resident; 4) complete the FASFA application; and 4) be enrolled at a New Mexico higher education institution.

From the time of the first award in 1997 to the spring of 2015, over 103,510 students have received financial assistance from the New Mexico Lottery Scholarship (New Mexico Lottery Fiscal Year 2015 Annual Report, p. 6). In their study on the impact of the New Mexico Lottery Scholarship on

the enrollment rates at the UNM, Binder, et al. (2002) reveal that the average fall enrollment rate increased dramatically to 78% from 1,271 (based on the Fall Cohorts of 1994, 1995, and 1996) to 2,237 (based on the Fall Cohorts of 1998 and 1999) (p. 15). However, little is known regarding the impact these higher enrollment rates have had on increasing students' persistence and degree completion rates.

Performance-based scholarship. The performance-based scholarship (PBS) is a relatively new and innovative concept in the study of student persistence. The goal of the PBS is to alleviate the financial burdens of college students from low socioeconomic backgrounds and reward them based on their academic performance (Patel et al., 2013, pp. 1-2). Unlike merit-based scholarships, performance-based scholarships award students at multiple points throughout their academic journey as they meet a series of short- and long-term performance benchmarks based on their current academic performance instead of a prior performance such as their high school grade point averages (GPAs) (Patel et al., pp.1-2). Performance-based scholarships (PBSs) "are paid in addition to Pell Grants – the main federal source of need-based aid – and other existing financial aid programs, including state and institutional grants. Students, therefore, have more money to cover academic and living expenses..." reducing their dependency on college student loans (Patel et al., pp.1-2).

The Bill and Melinda Gates Foundation, along with other researchers and organizations, has contributed significantly to the recent trend of funding PBSs (Shireman, 2009, p.56). It provides the funding for PBSs to various higher education institutions in order to assist in increasing the retention and persistence of students at two- and four-year colleges (Press Room, "New Initiative to Double the Number of Low-Income Students," n.d., para.1). The Bill & Melinda Gates Foundation has "announced grants totaling \$69 million to organizations working to improve college enrollment and completion rates in America. With the goal of getting more young people to and through college, the foundation aims to

double the number of low-income students” who have a postsecondary degree or credential and professional vocation by the age of 26 (Press Room, “New Initiative to Double the Number of Low-Income Students,” n.d., para.1). For the purpose of this research study, the impact of the Vision Inspired Scholarship Through Academic (VISTA) Success performance-based scholarship program on the persistence of sophomore students at the University of New Mexico (UNM) is investigated. The Manpower Demonstration Research Corporation (MDRC) has taken the lead in studying how the PBS concept impacts students’ persistence by launching several Performance Based Scholarship Demonstrations, which focus on increasing financial support for low-income students as well as creating a platform for students to persist to degree completion. “All of the programs in the demonstration use a random assignment design, the ‘gold standard’ in all program evaluation” (Patel et al., 2013, p. 2).

MDRC has implemented Performance Based Scholarship Demonstrations:

...in six states with over 12,000 students, eight institutions, and one intermediary to test several different scholarship designs and to address on a much larger scale and in a wide range of settings the questions of whether this innovative form of financial aid can improve academic achievement in both the short and long term (Patel, et al., 2013, pp. 1-2).

The first of these Performance Based Demonstrations was conducted by Binder, Harris, and Krause (2011) who found that students who received as scholarship of \$1,000 for two semesters were “more likely to enrolled in college full time exhibited higher rates of semester to semester retention (especially in the second and third semester) and passed more courses and college credits” (p. 10).

Another demonstration was the MDRC’s Opening Doors Demonstration in Louisiana. The implementation of this initiative in Louisiana contributed to “substantial improvements in full-time enrollment, persistence, credit accumulation, grades...” (Patel et al., 2013, pp. 1-2). The Open-Door

scholarship students took more credit hours and passed more courses than students who were not part of the scholarship program.

The VISTA scholarship program is unique from the other postsecondary institutions that are involved in the PBS Demonstrations initiative. It is unique because it is the only program that includes an advising component. UNM is the only four-year flagship university participating in the demonstrations that offers the scholarship to first-time, freshman students. Most of the UNM students that participate in the VISTA scholarship program are from low socioeconomic backgrounds and have some unmet financial needs. Students who are assigned to the VISTA program are eligible to receive \$1,000 per semester for four semesters. The \$1,000 payment is divided up into three separate payments: 1) if they enroll in at least 12 credit hours, student will receive \$250 on the 21st day of the semester; 2) if they receive a passing mid-term grade for at least 12 credit average with a GPA of 2.0 or higher, students will earn \$250 in the middle of the semester; and 3) if they have a 2.0 GPA or higher and earned at least 12 credit hours by the end of the semester, students are awarded \$500 at the end of the semester. The number of required credit hours rise to 15 in the second through the fourth semester. Successful VISTA students will acquire at least 57 credit hours by the end of their fourth semester. The impact of the VISTA performance-based scholarship program, particularly on the persistence of sophomore students, is examined in this research study.

Summary

This research study focuses on variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories on the persistence and departure of college sophomore students. Starting with Spady's (1970) persistence conceptual model and Tinto's (1975) departure conceptual model, these variables and others have been added and removed in various student

retention conceptual models by researchers over the years in their investigation of students' persistence and departure. Chapter 2 provides a review of literature regarding the variables that are examined in this research study.

Due to limited literature and scholarship regarding the persistence of sophomore students, the overarching research question for this study involves the examination of variables that effect the persistence of a sampled population of 609 sophomore students at UNM. The quantitative research methodology that is used to investigate the following guiding research questions is discussed in Chapter 3:

1. Do students' ethnicity, gender and whether or not they are first-generation college students predict their persistence?
2. Do students' motivation, self-efficacy, self-regulation and future-time perspective predict their persistence when they are sequentially merged with the variables associated with the pre-entry attributes category?
3. Do credit hours, grade point averages (GPAs), and academic advisement influence students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes and cognitive categories?
4. Do faculty involvement and academic support programs influence students' academic persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, and academics categories?
5. Do student employment, a state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship impact students' persistence when they are sequentially

merged with the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories?

Chapter 3: Research Methodology

Introduction

Literature and scholarship regarding the retention of freshman students have indicated that the implementation of first-year experiences and initiatives among higher education institutions throughout the United States have been effective in increasing the persistence of freshman students to their third semester or sophomore year (Clark, 2005); Demetriou & Schmitz-Sciborski, 2011; Pattengale & Schreiner, 2000; *Turner & Thompson, 2014*). Unfortunately, this primary focus on the retention of freshman students failed to take into consideration the persistence of these students after their first-year. The discontinuation of the structured support and services that are provided to students during their first-year have to led to academic and social difficulties as they transition to and attempt to navigate their sophomore year. As a result, sophomore students have become known as "invisible students" (Schreiner & Pattengale, 2000, p. 20).

According to Juillerat (2000), the efforts that have been put into retaining freshman students "need to be extended to the 'middle children,' who may have gotten off to a good start, but who may never reach alumni status if they are not better nurtured and served" (Juillerat, 2000, p. 29). The invisibility that sophomore students are experiencing has contributed to what has become known as the sophomore slump (Freedman, 1956; Pattengale & Schreiner, 2000; Tobolowsky & Cox, 2007). The sophomore slump is a manifestation of barriers and issues that usually are triggered by variables associated with pre-entry attributes, cognitive, academics, social engagements, and financials. Consequently, the purpose of this research study is to analyze the effect of specific variables on the sophomore slump.

The following overarching research question is the premise of this research study: What are the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories that effect the persistence of sophomore students? This overarching research question is examined using the following guiding research questions:

1. Do sophomore students' ethnicity, gender, and first-generation status effect their persistence?
2. Do sophomore students' motivation, self-efficacy, self-regulation and future-time perspective effect their persistence when they are sequentially merged with the variables associated with the pre-entry attributes category?
3. Do credit hours, grade point averages (GPAs), and academic advisement influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes and cognitive categories?
4. Do faculty involvement and academic support programs influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, and academics categories?
5. Do student employment, a state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship impact sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories?

This research study is based on a quantitative research methodology. Information and data were collected and analyzed from the University of New Mexico (UNM) and a survey instrument created by Ruffalo Noel-Levitz, which was first administered as a pilot in 2011 to sophomore students throughout

the United States. The following sections of Chapter 3 provide a review of the research method and process that was used to develop and implement this research study.

Quantitative Research Methodology

Quantitative research is used to address specific research questions and hypotheses and involves the process of collecting, analyzing, interpreting, and writing the results of a study (Creswell, 2002; Williams, 2007). However, a quantitative research methodology is used to quantify a problem by using numbers to represent different variables in order to reach a conclusion based on experimentation and objective and systematic observations (Belli, 2008, pp. 59-60). Quantitative research consists of three broad main classifications: experimental, causal comparative, and descriptive (Williams, 2007, p. 66).

Belli (2008) explains that the “A primary goal for experimental research is to provide strong evidence for cause and effect relationships” (p. 60), which involves the researcher investigating “the treatment of an intervention into the study group and then measures the outcomes of the treatment” (Williams, 2007, p. 66). Similar to the experimental research method, causal comparative research involves cause and effect relationships (Williams, 2007, p. 66). However, the causal comparative research method focuses on the cause and effect interactions between independent and dependent variables (Johnson, 2000, p. 1; Williams, 2007, p. 66). The descriptive research method focuses on describing a situation, the characteristics and/or behaviors of a sample population, or any aspects of a phenomenon (Dudovskiy, n.d.; Williams, 2007). This research method mainly encompasses correlational, developmental design, observational studies, and survey research (Dudovskiy, n.d., para. 5; Johnson, 2000, p. 1; Williams, 2007, p. 67).

It is based on the descriptive research method and incorporates aspects of both the correlational and survey research design. The correlational research design closely resembles the experimental and casual comparative research methods in that it also involves cause and effect relationships. However, it focuses on the interactions between quantitative variables instead of the impact of an intervention on a sample population (e.g., experimental research method) or the casual comparative relationships between dependent and independent variables (e.g., causal comparative research method) (Johnson, 2000; Williams, 2007). The survey research design involves the collection and analysis of data associated with a closed-ended instrument or open-ended items (Creswell, 2002; Dudovskiy, n.d.; Williams, 2007). The incorporation of aspects of both the correlational and survey research design into this research study is reflective of the convergent parallel mixed methods design (Creswell, 2002). “The key assumption of this approach is that both qualitative and quantitative data provide different types of information—often detailed views of participants qualitatively and scores on instruments quantitatively...” (Creswell, 2002, p. 269).

The qualitative data were reflected in various institutional information and data that were retrieved from the University Advisement Center (UAC), Financial Aid Office, and Student Information System (e.g., Banner) at the University of New Mexico (UNM). The qualitative codes associated with this data were changed into quantitative variables, which reflected a process known as “data transformation.” This process involved quantifying and categorizing the qualitative codes for each associated variable into one or more of the following five quantitative categories: pre-entry attributes, cognitive, academics, social engagements, and financials (Creswell, 2002, p. 273). On the other hand, data from the 2011 pilot administration of the Second-Year Student Assessment (SYSA) survey instrument represented the quantitative data that were analyzed in this research study. Subsequently, the

student retention conceptual models became the avenue by which the two quantitative databases (e.g., Quantitative Database 1: the SYSA survey instrument data and Quantitative Database 2: the *transformed* institutional information and data from the UAC, Banner, and Financial Aid Office) were effectively merged as predictor variables for statistical analysis using the logistic regression model (Creswell, 2002, p. 273). The survey instrument, quantitative databases, sample population, and data analysis method are discussed in the sections below.

Survey Instrument

The primary data sources for this research study were secondary data from the Second-Year Student Assessment (SYSA) survey instrument and institutional data from UNM. Quantitative Database 1 consisted of secondary data that were collected in Fall 2010 from the SYSA survey instrument which was administered by Ruffalo Noel-Levitz to sophomore students nation-wide. Across the United States, 8,613 students from various two- and four-year, private, and public institutions participated in this process. UNM was invited to participate in the norming pilot of the SYSA instrument, along with 63 other colleges and universities. One purpose of using secondary data is “to replicate or extend previously observed findings or to address new research questions that were not addressed in the first analysis” (Greenhoot & Dowsett, 2012, p. 3). Data from the SYSA survey instrument was used to expand on knowledge regarding sophomore students’ persistence. The use of this secondary data allowed for a comprehensive investigation of the overarching research question and the associated guiding research questions for this research study.

In order to utilize secondary data from this survey instrument, the researcher had to be 1) familiar with the original data, including a general understanding of how the original data were collected and analyzed, as well as 2) familiar with the conceptual framework that was used to create the survey

(Smith, 2008). The raw data from the Fall 2010 pilot of the SYSA were not publicly shared. Only the colleges and universities that participated in the norming of the survey instrument had access to the original data. However, secondary data could pose a problem with not being able to adequately address the research question of the research study it was being used for (Johnson, 2014). The secondary data collected from the SYSA survey instrument contained a breadth of survey items that allowed for the direct alignment of the survey items to one of the guiding research questions for this research study (i.e., refer to Appendix A on page 119).

It is important to note that the researcher used her discretion to select specific survey items from the SYSA survey instrument and mapped them to no more than one of the guiding research questions. In addition to incorporating secondary data from the SYSA survey instrument, supplementary qualitative information and data from UNM had to be identified and quantified in order to enable the researcher to address all of the guiding research questions, and ultimately, respond to the overarching research question of this research study (i.e., refer to Appendix A on page 119).

Ruffalo Noel-Levitz is a national consulting organization that specializes in enrollment and student success. In 2009, Ruffalo Noel-Levitz created the SYSA survey instrument, which was very similar to its freshman year survey--“College Student Inventory.” In particular, the purpose of the SYSA survey instrument was “to provide institutions with information that facilitates more timely and precise responses to needs and expectations of the individual student, as well as specific cohorts of students” (Noel-Levitz, 2011, p. 5). The SYSA survey instrument was created as an early alert measurement to identify sophomore students that could be at-risk academically in order to assist higher education institutions in determining necessary interventions. To create the SYSA instrument, Ruffalo Noel-Levitz’s researchers identified strengths and needs of college sophomore students through an

extensive review of literature and research on this population. This was used to inform and develop the conceptual framework for the SYSA instrument. The conceptual framework consisted of the following five factors:

1. ***Academic risk factors*** -They represented internal/external factors that hampered sophomore students' persistence. Ruffalo Noel-Levitz (2011) found that if a student was not adequately prepared for the intensification of his course work after the first semester, then the student was more likely to become academically at-risk.
2. ***Advising risk factors*** – They represented factors that were associated with possible misadvising or not receiving enough advisement especially during those critical periods of registration and selecting or changing a major. The absence of integration between advising and career planning could be a major challenge for second-year students, especially when a student's career plan was underdeveloped or the student had not selected a major which contributed to a limited academic focus by the student.
3. ***Social and personal relationships risk factors*** – They represented factors outside of the academic setting that could affect a student's academic success. The relationship factor was significant, especially in the second-year of college when interactions with friends from high school and home were being diminished and new friendship outlets were needed. Therefore, collegial peer relationships became more significant, as well as social engagements with clubs and organizations that offered leadership opportunities.
4. ***Financial risk factors*** – They represented potential financial barriers that can prevent a student from persisting. These factors could stem from a student not receiving enough financial aid or having to work more hours than usual to pay tuition. With family and financial support

diminishing, including first-year grants and scholarships being replaced with student loans, students were likely to become financially at-risk. The lack of personal financial skills also exacerbated the potential financial risk factor even further.

5. ***Career planning risk factors*** –They represented factors associated with a lack of career guidance. It was imperative that students connected with Career Services early in their academic journey. Students tended to wait until their senior year to start meeting with a career counselor. The career counsel could help students get additional clarity about their professional aspirations including the educational background, training, and internship needed for the profession.

Because Ruffalo Noel-Levitz used very broad factors in the conceptual framework for the SYSA survey instrument, for the purpose of this research study, a mapping matrix was created as Appendix A (i.e., page 119) to identify and categorize which survey items from the SYSA survey instrument, and associated quantitative codes, were used as secondary data.

Survey instrument reliability and validity. The SYSA survey instrument included a total of 78 survey items. These survey items were organized into four major areas: student information, student needs and interest, motivational assessment, and institutional impressions. The survey items were based on a seven-point Likert Scale and/or yes/no options. More specifically, the SYSA survey instrument measured the extent to which sophomore students' self-efficacy, self-regulation, motivation, future-time perspective, faculty interaction, academic programs (i.e., tutoring and career services), academic advisement, and student employment predicted their persistence from the third to the fifth semester. The norming pilot of the SYSA survey instrument in Fall 2010 was to assist Ruffalo Noel-Levitz in determining the validity of the four major areas and associated survey items. This pilot included

responses from both incomplete and complete surveys in the dataset. However, for this research study, the researcher only included secondary data only from completed surveys.

In 1994, Nunnally and Bernstein introduced seven point-weighted scales that had been used by multiple researchers to determine the reliability of studies related to student success. The seven scales that were defined by Nunnally and Bernstein were:

1. *Academic Confidence*: Refers to one's self-belief of doing well in academic studies.
2. *Commitment to College*: Refers to the value one places on college education and long-term benefits.
3. *Engaged Learning*: Refers to the positive energy one invests in his/her learning.
4. *Leadership*: Refers to self-perceptions of being accepted as a leader.
5. *Transition*: Refers to the degree of comfort with the various changes one experiences as a student.
6. *Family Support*: Refers to the satisfaction one feels with the communication within the family structure.
7. *Financial Security*: Refers to one's level of comfort with the financial resources available while attending college.

Based on the 2011 SYSA Pilot Project Notes report, these seven scales particularly were identified *a priori* by Ruffalo Noel-Levitz's researchers to measure the reliability of their research findings. The Cronbach's Alpha Reliability Coefficient was estimated for each of the seven scales. The general rule of thumb was that estimates of .70 or higher indicated good internal consistency (Nunnally & Bernstein, 1994). Based on the information presented below in Table 3.1, it was concluded that the

reliability of the seven scales in relation to the SYSA survey instrument demonstrated a good internal consistency.

Table 3.1.

Reliability of Final SYSA Scales

Scale	Estimate of Cronbach's α
Academic Confidence	0.834
Commitment to College	0.839
Engaged Learning	0.861
Leadership	0.845
Transition	0.854
Family Support	0.867
Financial Security	0.858

Quantitative Database 1: SYSA Instrument– Secondary Data

In the Fall 2010 pilot of the SYSA instrument, a total of 64 colleges and universities, including the University of New Mexico (UNM), was invited to participate in the norming of this survey instrument. The survey was sent to over 15,000 sophomore students at various two- and four-year, private, and public institutions throughout the United States. However, only 8,613 sophomore students participated in starting or completing the survey. In particular, 609 active sophomore students at UNM completed the survey out of the 6,228 active sophomore students who were emailed the survey in Fall 2010. Active sophomore students were described as full-time and part-time students who were eligible to register and/or who registered for their sophomore year at UNM in Fall 2010. Therefore, the secondary data that were utilized in this research study from the sampled population represented 10% of the total sophomore student population at UNM, which significantly mirrored the general demographical traits of the total UNM student population.

A total of 21 out of 78 survey items from the SYSA survey instrument were selected by the researcher of this research study. These survey items were categorized and mapped to the following five

categories and associated variables that were investigated in this research study: pre-entry attributes (i.e., ethnicity, gender, and first-generation status), cognitive (i.e., self-efficacy, self-regulation, future-time perspective, and motivation), academics (i.e., GPA, credit hours, and academic advisement), social engagements (i.e., academic support programs and faculty involvement), and financials (i.e., student employment, lottery scholarship/other scholarships, and performance-based scholarship (i.e., Vision Inspired Scholarship Through Academic (VISTA) Success program)). Each variable was labeled with a quantitative code which was used to construct the conceptual models. Because the variables associated with Quantitative Database 1 were based on numerical and non-numerical secondary data collected from the SYSA survey instrument, the numerical secondary data in this research study also were referred to as continuous or discrete variables. These variables were defined as variables that were assigned either any numerical value (i.e., continuous) or a predetermined specific numerical value (i.e., discrete) that could be measured, whereas the non-numerical secondary data were referred to as categorical variables. These variables were initially designated with non-numerical values (Statistics How To, n.d.). In this research study, the following variables were identified as continuous variables: self-efficacy, self-regulation, future-time perspective, and motivation. The following were identified as discrete variables: academic advisement and credit hours. The categorical variables that were identified are ethnicity, gender, first-generation status, cumulative grade point average, academic programs, faculty involvement, academic advisement, lottery scholarship and/or other scholarships, student employment, and performance-based scholarship. Notice that the academic advisement variable was identified as both discrete and categorical variables because it consisted of quantitative data that were both discrete and categorical. Each conceptual model was then mapped to the one of the five guiding research questions for this study. Also, refer to Appendix A (i.e., page 119) to review the mapping matrix of the categories, survey items, and

quantitative codes associated with Quantitative Database 1. A detailed breakdown of each category and associated data source, survey items, and quantitative codes are provided in the following sections.

Pre-entry attributes. The three variables associated with this category were: ethnicity, first-generation status, and gender. None of the survey items from the SYSA survey instrument were used in Quantitative Database 1 for this category.

Cognitive. The four variables associated with this category were: self-efficacy, self-regulation, motivation, and future-time perspective. The quantitative abbreviation for the self-efficacy variable was SE. Secondary data for three survey items were selected and utilized from the SYSA survey instrument for this variable. The quantitative abbreviation for the self-regulation variable was SR. Secondary data for three survey items were selected and utilized from the SYSA survey instrument for this variable. The quantitative abbreviation for the future-time perspective variable was FT. Secondary data for two survey items were selected and utilized from the SYSA survey instrument for this variable. The quantitative abbreviation for the motivation variable was MO. Secondary data for three survey items were selected and utilized from the SYSA survey instrument for this variable.

For the cognitive category, the responses to the three survey items that were mapped to the SE variable were based on a seven-point Likert Scale that ranged from a low of “Strongly disagree (SD1)” to a high of “Strongly agree (SA7).” The quantitative codes for the SE variable and associated survey items were SEJUDGEMENT (i.e., SYSA Q14), SECONFOPIN (i.e., SYSA Q39), and SEFIQURING (i.e., SYSA Q4). The responses to the three survey items that were mapped to the SR variable were based on a seven-point Likert Scale that ranged from a low of “Strongly disagree (SD1)” to a high of “Strongly agree (SA7).” The quantitative codes for the SR variable and associated survey items were SRAPPLYLRN (i.e., SYSA Q27), SRDLLBORING (i.e., SYSA Q44), and SRDEDICATED (i.e.,

SYSA Q49). The responses to the two survey items that were mapped to the FT variable were based on a seven-point Likert Scale that ranged from a low of “Completely dissatisfied (CD1)” to a high of “Completely satisfied (CS7).” The quantitative codes for the FT variable and associated survey items were FTOPPORTACT (i.e., SYSA Q70) and FTLEADERSHIP (i.e., SYSA Q73). The responses to the three survey items that were mapped to the MO variable were based on a seven-point Likert Scale that ranged from a low of “Strongly disagree (SD1)” to a high of “Strongly agree (SA7).” The quantitative codes for the MO variable and associated survey items were MOMOTIVE (i.e., SYSA Q12), MOPUREDUGO (i.e., SYSA Q15), and MOCONFUSED (i.e., SYSA Q31).

Academics. The three variables associated with this category were: credit hours, grade point average (GPA), and academic advisement. None of the survey items from the SYSA survey instrument were used in Quantitative Database 1 for the credit hours and GPA variables. The quantitative abbreviation for the academic advisement variable was AD. Secondary data for three survey items were selected and utilized from the SYSA survey instrument for this variable.

For the academics’ category, the responses to the three survey items that were mapped to the AD variable were based on a “Yes (1)” or “No (0)” scale. The quantitative codes for the AD variable and associated survey items were ADSLACPROGLSTYR (i.e., SYSA Q52), ADACADPLANLSTYR (i.e., SYSA Q53), and CAGOALSSTYR (i.e., SYSA Q56).

Social engagements. The two variables associated with this category were: faculty involvement and academic support programs. The quantitative abbreviation for the faculty involvement variable was FI. Secondary data for one survey item were selected and utilized from the SYSA survey instrument for this variable. The quantitative abbreviation for the academic support programs variable consisted of tutoring (TU) and career services (CA). Secondary data for two out of an overall total of four survey

items for academic support programs were selected and utilized from the SYSA survey instrument for the TU variable. Secondary data for two out of an overall total of four survey items for academic support programs were selected and utilized from the SYSA survey instrument for the CA variable.

For the social engagements category, the responses to the one survey item that was mapped to the FI variable were based on a “Yes (1)” or “No (0)” scale. The quantitative code for the FI variable and associated survey item was WORKATALL (i.e., SYSA Q1). The responses to the two survey items that were mapped to the TU variable were based on a “Yes (1)” or “No (0)” scale. The quantitative codes for the TU variable and associated survey items were HSTDYSKLSTYR (i.e., SYSA Q50) and TUTORLSTYR (i.e., SYSA Q51). The researcher equated the responses to these survey items to the University of New Mexico’s Center for Academic Program Support (CAPS), which was the primary academic support provider of tutoring services. The responses to the two survey items that were mapped to the CA variable were based on a “Yes (1)” or “No (0)” scale. The quantitative codes for the CA variable and associated survey items were CACRCHCELSTYR (i.e., SYSA Q57) and CAWKINTERLSTYR (i.e., SYSA Q58). The researcher equated the responses to these survey items to the University of New Mexico’s Career Services Office, which was the primary academic support provider of services regarding professional opportunities and vocational aspirations.

Financials. The three variables associated with this category were: student employment, lottery scholarship/other scholarships, and performance-based scholarship (i.e., VISTA). None of the survey items from the SYSA survey instrument were used in Quantitative Database 1 for the lottery scholarship/other scholarships and performance-based scholarship (i.e., VISTA) variables. The quantitative abbreviation for student employment variable was SW. Secondary data for one survey item were selected and utilized from the SYSA survey instrument for this variable.

For the financials category, the responses to the one survey item that was mapped to the SW variable were based on a “Yes (1)” or “No (0)” scale. The quantitative code for the SW variable and associated survey item was WORKATALL (i.e., SYSA Q1).

Quantitative Database 2: Institutional Data - UAC, Banner and Financial Aid Office

In addition to the secondary data that was utilized for Quantitative Database 1, the researcher selected and quantified pertinent institutional data associated with the following five categories: pre-entry attributes (i.e., ethnicity, gender, and first-generation status), cognitive (i.e., self-efficacy, self-regulation, future-time perspective, and motivation), academics (i.e., GPA, credit hours, and academic advisement), social engagements (i.e., academic support programs and faculty involvement), and financials (i.e., student employment, lottery scholarship/other scholarships, and performance-based scholarship (i.e., VISTA). The institutional data for this research study was acquired by the researcher from three main sources at the University of New Mexico (UNM): University Advisement Center (UAC), Banner, and Financial Aid Office. A quantitative code for each institutional data was created and included in the conceptual models along with the quantitative codes associated with the secondary data in Quantitative Database 1. Because the variables associated with Quantitative Database 2 consisted of finite and non-numerical institutional data collected from Banner, UAC, and the Financial Aid Office, they were referred to in this research study as discrete and categorical variables, respectively (Statistics How To, n.d.). Refer to Appendix A (i.e., page 119) to review the mapping matrix of the categories, institutional data, and quantitative codes associated with Quantitative Database 2. A detailed breakdown of each category and associated institutional data, data source, and quantitative codes are provided in the following sections.

Pre-entry attributes. The three variables associated with this category were: ethnicity, first-generation status, and gender. The institutional data for the ethnicity variable were collected from Banner for each of the 609 completers of the SYSA instrument. The institutional data for the first-generation status variable were provided by the Financial Aid Office for each of the 609 completers of the SYSA instrument. The institutional data for the gender variable were collected from Banner for each of the 609 completers of the SYSA instrument.

For the pre-entry attributes category, the institutional data that were mapped to the ethnicity variable were based on a “Yes (1)” or “No (0)” scale. The quantitative codes for the ethnicity variable and associated institutional data were AIndian, Asian, Black, White, and Hispanic. The institutional data that were mapped to the first-generation status variable were based on a “Yes (1)” or “No (0)” scale. The quantitative code for the first-generation status variable and associated institutional data were First Generation. The institutional data that were mapped to the gender variable were based on a “Female (1)” or “Male (0)” scale. The quantitative code for the gender variable and associated institutional data were GenderNew.

Cognitive. The four variables associated with this category were: self-efficacy, self-regulation, motivation, and future-time perspective. Institutional data were not used in Quantitative Database 2 for this category.

Academics. The three variables associated with this category were: credit hours, grade point average (GPA), and academic advisement. Institutional data were not used in Quantitative Database 2 for the academic advisement variable. The institutional data for the credit hours variable were collected from Banner for each of the 609 completers of the SYSA instrument. The institutional data for the GPA variable were collected from Banner for each of the 609 completers of the SYSA instrument. The

institutional data for the academic advisement variable (i.e., which had a quantitative abbreviation of AD) were provided by the UAC from the AdvisorTrax software for each of the 609 completers of the SYSA instrument.

For the academics' category, the institutional data that were mapped to the credit hours variable were based on the actual number of credit hours enrolled. The quantitative codes for the credit hours variable and associated institutional data were CE201080 (i.e., actual number of credit hours enrolled during Fall 2010), CE201110 (i.e., actual number of credit hours enrolled during Spring 2011), CE201180 (i.e., actual number of credit hours enrolled during Fall 2011), and CE201210 (i.e., actual number of credit hours enrolled during Spring 2011). This was one of the two variables that also was referred to as a discrete variable. The institutional data that were mapped to the GPA variable were based on a scale of four ranges: 1.0 - 1.49 (1) or All Other (0), 1.5 - 2.49 (1) or All Other (0), 2.5 - 3.49 (1) or All Other (0), and 3.5 - 4.0 (1) or All Other (0). The cumulative GPA from the Fall 2010, Spring 2011, Fall 2011, and Spring 2012 were utilized. The quantitative codes for the GPA variable and associated institutional data were CUMGPA4, CUMGPA3.49, CUMGPA2.49, and CUMGPA1.49. The institutional data that were mapped to the academic advisement variable were based on the actual number of advising visits. The quantitative code for the academic advisement variable and associated institutional data was AdvisingActual (i.e., actual number of advising visits from 1 thru 10 and 11 or more). This variable was not only one of the two discrete variables but also a categorical variable.

Social engagements. The two variables associated with this category were: faculty involvement and academic support programs. Institutional data were not used in Quantitative Database 2 for this category. However, the secondary data collected from the SYSA survey instrument for the tutoring and

career services variables--associated with the overall academic support programs variable--were equated with the 609 completers usage of UNM's CAPS and Career Services Office.

Financials. The three variables associated with this category were: student employment, state-funded lottery scholarship/other scholarships, and performance-based scholarship (i.e., VISTA). Institutional data were not used in Quantitative Database 2 for the student employment variable. The institutional data for the state-funded lottery scholarship/other scholarships variable were provided by the Financial Aid Office for each of the 609 completers of the SYSA instrument. The institutional data for the performance-based scholarship variable were provided by the Financial Aid Office for each of the 609 completers of the SYSA instrument.

For the financials category, the institutional data that were mapped to the state-funded lottery scholarship/other scholarships variable were based on a "Yes (1)" or "No (0)" scale. The quantitative code for the state-funded lottery scholarship/other scholarships variable and associated institutional data were LOTTSCH. The institutional data that were mapped to the performance-based scholarship variable were based on a "Yes (1)" or "No (0)" scale. The institutional data collected for this variable were equated with the 112 out of 609 completers that participated in the VISTA program at UNM. The quantitative code for the performance-based scholarship variable and associated institutional data were PartVISTA.

Sample Population

For the Fall 2010 pilot of the SYSA instrument, sophomore students that were enrolled at a broad cross-section of public and private and four-year and two-year postsecondary institutions participated in the normalization of this survey instrument (Ruffalo Noel-Levitz (2011). The UNM University Advisement Center (UAC) sent the following student data to Ruffalo Noel-Levitz for the

pilot: student name, UNM email address, and confirmation of the eligibility of the student to register during Fall 2010. In particular, student data was sent to 6,228 active sophomore students who were full-time and part-time students that were eligible to register and/or who registered for their sophomore year at UNM in Fall 2010. At UNM, a sophomore student was identified as someone who successfully earned between 27-60 credit hours. Ruffalo Noel-Levitz then emailed an invitation to participate with a link to the SYSA instrument. Out of the 8,613 sophomore students that participated, 41.2% came from four-year, private postsecondary institutions, 26.5% came from four-year, public postsecondary institutions, and 32.3% came from two-year postsecondary institutions (Ruffalo Noel-Levitz, 2011). Out of the 6,228 active sophomore students at UNM who were sent the invitation to participate, 789 partially completed the survey instrument and 609 completed the entire survey instrument. Of the 609 sophomore students who completed the survey instrument, 112 also participated in the VISTA performance-based scholarship program.

As illustrated in Table 3.2 below, 69.1% (i.e., N = 421) of the 609 UNM participants were female whereas 30.9% (i.e., N = 188) were male. In addition, 4.6% (i.e., N = 28) were Asian, 4.3% (i.e., N = 26) were Black, 42.2% (i.e., N = 257) were Hispanic, 6.9% (i.e., N = 42) were American Indian, and 42% (i.e., N = 256) were White. Also, 30% (i.e., N = 185) of the 609 UNM participants were first-generation and 70 % were not (i.e., N = 424).

There is a significant difference in the national and UNM student population percentages for American Indian and Hispanic participants because the State of New Mexico has a higher population of American Indians and Hispanics compared to other postsecondary institutions that participated in the Ruffalo Noel-Levitz pilot of the SYSA instrument. Also, the University of New Mexico (UNM) is designated as a Hispanic-serving institution. To be designated as a Hispanic-serving institution, at least

25% of the student population must be Hispanic. In Fall 2010, UNM had a total Hispanic student population of 40.2% (2009-2010 UNM Factbook. p. 7).

Table 3.2.

Comparisons of Demographic Percentages for Fall 2010

Ethnicity	National Participants N=8,628	UNM Participants N=609	UNM Student Population N=20,655
Black/African American	21.4	4.3	3.1
American Indian/Alaskan Native	0.09	6.9	6.1
Asian/Pacific Islander	3.7	4.6	3.4
White/Caucasian	57.3	41.9	41.5
Hispanic/Latino	10.4	42.2	40.2
Multiethnic/other ethnic origin	3.3	0	2.4
Prefer not to respond	2.2	0	3.3
Gender			
Female		69.1	55
Male		30.9	45
First-Generation Status			
Yes	N/A	30	
No	N/A	70	

Note: Percentage may not equal to 100% due to rounding.

It was notable that 38% more females completed the SYSA instrument. Another notable observation was that the percentages of Hispanic and White participants from UNM were nearly identical with only a 0.2% difference. For this research study, White students were designated as the reference group because they represented the largest overall student population at UNM. In addition, researchers from the Ruffalo Noel-Levitz organization found that 38% of the 8,628 participants earned between 31 - 45 college credit hours and 10% were enrolled in courses at other postsecondary institutions. This was important to note because the number of college credit hours a student earned as a sophomore influenced to some degree whether they persisted to the next semester (Kuh, Kinize, & Buckley, 2006).

Data Analysis Method

The logistic regression data analysis method was used to examine the effect of variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories on the persistence of a sample of sophomore students (i.e., $N = 609$) at the University of New Mexico (UNM). Logistic regression is a “viable statistical technique for studying a phenomenon such as the influential factors of persistence as it addresses dichotomous dependent variables with multiple explanatory variables that are continuous and categorical” (Nunnally & Bernstein, 1994, pp. 7-8). A series of student retention conceptual models were investigated as logistic regression models utilizing the Statistical Package for Social Science (SPSS) software. A total of five models were utilized by the researcher to examine the five guiding research questions of this research study. These models consisted of variables that were merged into a total of five sequential blocks. The use of the logistic regression method was significant because it allowed the researcher to sequentially test and analyze the statistical significance of the variables within each model.

A significant level or alpha level of .01, denoted by the symbol “ α ,” was applied to the five logistic regression models in order to determine which continuous, discrete, and categorical variables had a statistical effect on the persistence of the sample of UNM sophomore students that participated in the Fall 2010 piloted of the SYSA survey instrument (Trochim, 2006). The purpose of applying this alpha level value in the regression models was to avoid Type 1 errors, which would inaccurately indicate that a variable had an effect on persistence when it did not. Due to the low N-number of the sampled population, an alpha level of .01 instead of .05 was applied. Each logistic regression model was constructed with the following block structures:

Model 0. Model 0 represented the baseline (null) model. Model 0 focused only on persistence as the dependent variable without any of the continuous, discrete, or categorical variables, as independent variables, added to the model. In other words, Model 0 consisted of persistence as the baseline dependent variable against which the other models are sequentially compared. According to the institutional data that were provided by the University Advisement Center (UAC) from the AdvisorTrax software, 47.6% (i.e., N = 290) of the UNM participants persisted from the Fall 2010 to Spring 2011 semester and 52.4 % (i.e., N = 319) did not persist from the Fall 2010 to Spring 2011 semester. The quantitative code for the persistence variable was Perenrolle. The institutional data that were mapped to the persistence variable were based on a “Yes (1)” or “No (0)” scale.

Model 1. Model 1 also represented Block 1. Model 1 focused on the variables associated with the pre-entry attributes category, which was used to investigate guiding research question one. This category consisted of the following variables: ethnicity, gender, and students’ first-generation status.

The merging of the quantitative codes for each variable are displayed below.

$$\mathbf{Model\ 1} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})]$$

Model 2. Model 2 consisted of Block 1 and Block 2. Model 2 focused on the variables associated with the pre-entry attributes and cognitive categories, which were used to investigate guiding research question two. These categories consisted of the following variables: ethnicity, gender, first-generation status, self-efficacy, self-regulation, motivation, and future-time perspective.

The merging of the quantitative codes for each variable are displayed below.

$$\mathbf{Model\ 2} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})]$$

Model 3. Model 3 consisted of Block 1, Block 2, and Block 3. Model 3 focused on the variables associated with the pre-entry attributes, cognitive, and academics categories, which were used to investigate guiding research question three. These categories consisted of the following variables: ethnicity, gender, first-generation status, self-efficacy, self-regulation, motivation, future-time perspective, grade point averages, credit hours, and academic advisement.

The merging of the quantitative codes for each variable are displayed below.

$$\mathbf{Model\ 3} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSSTYR})]$$

Model 4. Model 4 consisted of Block 1, Block 2, Block 3, and Block 4. Model 4 focused on the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories, which were used to investigate guiding research question four. These categories consisted of the following variables: ethnicity, gender, first-generation status, self-efficacy, self-regulation, motivation, future-time perspective, grade point averages, credit hours, academic advisement, faculty involvement, and academic support programs (e. g., tutoring [Center for Academic Program Support (CAPS)] and career services).

The merging of the quantitative codes for each variable are displayed below.

$$\mathbf{Model\ 4} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSSTYR})] + [\beta_{17}(\text{HSTDYSKSTYR})] + \beta_{18}(\text{TUTORLSTYR}) + \beta_{19}(\text{CACRCHCELSTYR}) + \beta_{20}(\text{CAWKINTERLSTYR}) + \beta_{21}(\text{FIINTERACTINS})]$$

Model 5. Model 5 consisted of Block 1, Block 2, Block 3, Block 4, and Block 5. Model 5 focused on the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories, which were used to investigate guiding research question five. These categories consisted of the following variables: ethnicity, gender, first-generation status, self-efficacy, self-regulation, motivation, future-time perspective, grade point averages, credit hours, academic advisement, faculty involvement, academic support programs (e. g., tutoring [Center for Academic Program Support (CAPS)] and career services), student employment, state-funded lottery scholarship/other scholarships, and performance-based scholarship (e.g., VISTA).

The merging of the quantitative codes for each variable are displayed below.

$$\text{Model 5} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSSTYR})] + [\beta_{17}(\text{HSTDYSKLSYR}) + \beta_{18}(\text{TUTORLSTYR}) + \beta_{19}(\text{CACRCHCELSTYR}) + \beta_{20}(\text{CAWKINTERLSTYR}) + \beta_{21}(\text{FIINTERACTINS})] + [\beta_{22}(\text{WORKATALL}) + \beta_{23}(\text{LOTTSCH}) + \beta_{24}(\text{PARTVISTA})]$$

In order to effectively use the logistic regression data analysis method for this research study, dummy coding was applied to several of the continuous and categorical variables. Dummy coding only used ones and zeros to recode variables (O’Grady & Medoff, 1988). Along with quantitative codes, dummy coding was a method used for re-coding or quantifying continuous and categorical variables (O’Grady & Medoff, 1988). Refer to Appendix A on page 119 for a list of the survey/secondary data and institutional data that were dummy coded for this research study.

Tests of statistical significance. In a logistic regression model, the goodness of fit or prediction of model fit is measured by calculating the difference between the deviance of the model with no predictors (Dnull), which is a measure of the worst model possible compared to the perfect model, and

the deviance of the model with k predictors (D_k), which is a measure of the model with these k predictors compared to the perfect model. The G statistics (i.e., goodness of fit) are generated in SPSS by running the Hosmer-Lemeshow Test and are represented by the formula $D_{null} - D_k$, which is a measure of the goodness of the contribution from the predictor set. This formula also includes the X^2 distribution with k degrees of freedom. A pseudo R^2 index is calculated using the deviances and can be formulated as $R_L^2 = (D_{null} - D_k)/D_{null}$. The overall value range is from zero and one (Cohen, Cohen, West, & Aiken, 2003, p. 505).

SPSS includes two pseudo R^2 indices, the Cox and Snell (e.g., range of zero to .75) and the Nagelkerke (e.g., range of zero to one). The Nagelkerke R^2 index “corrects the Cox and Snell R^2 index by dividing the Cox and Snell index by the maximum possible value it can reach for a given proportion of cases” (Cohen, Cohen, West, & Aiken, 2003, p. 505). The Cox and Snell index is always lower than the Nagelkerke R^2 index. This research study reports on both of the pseudo R^2 indices as well as the -2 Log likelihood (-2LL), which is a measure of how successfully the model was able to predict the dichotomous outcomes. The lower the value for -2LL, the higher the predictive effect of the variables over the null model with no predictors (Cohen, Cohen, West, & Aiken, 2003).

The -2 Log Likelihood statistics and the Hosmer-Lemeshow Test are reviewed to "assess for significant improvement in the overall model" (Pallant, 2013, p. 183). The Hosmer-Lemeshow Test is used to examine the level of agreement between the predicted outcomes and the observe outcomes. In short, it tests the null hypothesis that the model is good. As the chi-square statistic increases, the p-value decreases. A model is considered good if the p-value is high. However, if the p-value is $<.05$, then the model does not adequately fit the variables. The SPSS Variables in the Equation and Classification Tables also are used by the researcher to evaluate the model fit (Pallant, 2013).

The Wald statistic is used to test the impact of a single variable in the prediction of the dichotomous outcome of whether or not persistence to the next semester occurred. The Wald statistic is a way of testing the significance of variables in a statistical model. It “is one of a number of ways of testing whether the parameters associated with a group of explanatory variables are zero” (Kyngas & Rissanen, 2001, p. 774). The standard Wald statistic for reporting a predictor variable as significant in a model is $p < .05$ (Pallant, 2013). The significance of each block within the five models as well as the individual predictor variables are evaluated using the Wald statistic. In each model, the variables are examined as to their contribution and likelihood in effecting the persistence of a sampled population of sophomore students at the University of New Mexico (UNM).

The Omnibus Test of Model Coefficient is used for predicting the effect of the 21 independent variables that comprise the five models on the outcome variable of persistence. The Omnibus Test “uses chi-square to see if there is significant difference between the Log-likelihood of the baseline model and the new model” (Using Statistical Regression Method, n.d., p.1).

Summary

Chapter 3 provides an overview of the quantitative research methodology that was used to implement this research study. The SPSS software was utilized to conduct a logistic regression data analysis on five student retention conceptual models. Chapter 4 outlines the statistical results in connection to the five guiding research questions. Lastly, Chapter 5 provides a discussion of the implications of the results in relation to the overall research question as well as in relation to student persistence and success.

Chapter 4: Results

Introduction

The purpose of this research study was to explore the persistence of a sample population of sophomore students at the University of New Mexico (UNM). In particular, the following overarching research question was investigated: What are the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and financials categories that effect the persistence of sophomore students?

In this chapter, the statistical analyses and results of this research study are discussed. The following five guiding research questions are analyzed in relation to the associated statistical results:

1. Do sophomore students' ethnicity, gender, and first-generation status effect their persistence?
2. Do sophomore students' motivation, self-efficacy, self-regulation and future-time perspective effect their persistence when they are sequentially merged with the variables associated with the pre-entry attributes category?
3. Do credit hours, grade point averages (GPAs), and academic advisement influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes and cognitive categories?
4. Do faculty involvement and academic support programs influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, and academics categories?
5. Do student employment, a state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship impact sophomore students' persistence when they are

sequentially merged with the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories?

Quantitative Databases Results

In this section, an overview is provided of the results that were collected from the Second-Year Student Assessment (SYSA) survey instrument, which was created Ruffalo Noel-Levitz, and the University of New Mexico (UNM). The results were based on a sampled population of 609 sophomore students from UNM who completed the survey in Fall 2010. These students were eligible for registration and/or were registered as sophomore students at UNM during the Fall 2010 semester. They entered as first-time, full-time, freshman students at UNM in Fall 2009. These students also had to have earned at least 26 credit hours in order to be classified as sophomore students at UNM. Sixty-nine percent of the sampled population was female. The largest ethnic population of students represented in the sample were Hispanic (i.e., 42.2%) and White (i.e., 42%). The second highest ethnic population was American Indian (i.e., 6.9%), with the Asian (i.e., 4.6%) and African American (i.e., 4.3%) student population representing the smallest group. In addition, 424 (i.e., 70%) of the students were not first-generation.

As for the financial demographics of the sampled population, 58.1% worked or had student employment. In regard to scholarship awards, 56.7% (i.e., N = 345) received financial support from the New Mexico Lottery Scholarship with 11.3% (i.e., N = 69) of the 609 completers having both the lottery scholarship and an additional nonperformance-based scholarship. Lastly, out of the 609 completers, 18.4% (i.e., N = 112) participated in the Vision Inspired Scholarship Through Academic (VISTA) Success performance-based scholarship program.

The results for Quantitative Database 1 and 2 were organized according to the following three types of variables, which were statistically examined in this research study: continuous, discrete, and

categorical. Refer to Appendix A on page 119 to access a mapping of the categories, data source, survey items and institutional data, quantitative codes, and ranges. Refer to Appendix B on page 127 to review statistical results associated with the five models. The sample size/frequency, mean (i.e., M), standard deviation (i.e., SD), and range (i.e. Likert Scales) were calculated for the following continuous variables: self-efficacy (i.e., SEJUDGEMENT, SECONFIOPIN, and SEFIQURING), self-regulation (i.e., SRAPPLYLRN, SRDLLBORING, and SRDEDICATED), future-time perspective (i.e., FTOPPORTACT and FTLEADERSHIP), and motivation (i.e., MOMOTIVE, MOPUREDUGO, and MOCONFUSED). These results were used in the logistic regression data analysis method in order to investigate the effect of the continuous variables on the persistence of the sampled population.

These results are illustrated in Table 4.1 below.

Table 4.1.

Results of the Continuous Variables

Variable	Quantitative Code	M	SD	Likert Scale Range (1 thru 7)
	SEJUDGEMENT	6.11	1	SD1,D2,SD3,N4,SA5,SA6,SA7
Self-Efficacy (SE)	SECONFIOPIN	5.92	1.09	SD1,D2,SD3,N4,SA5,SA6,SA7
	SEFIQURING	5.26	1.34	SD1,D2,SD3,N4,SA5,SA6,SA7
	SRAPPLYLRN	5.41	1.32	SD1,D2,SD3,N4,SA5,SA6,SA7
Self-Regulation (SR)	SRDLLBORING	5.29	1.4	SD1,D2,SD3,N4,SA5,SA6,SA7
	SRDEDICATED	6.42	1.06	SD1,D2,SD3,N4,SA5,SA6,SA7
Future-Time Perspective (FT)	FTOPPORTACT	4.42	1.64	CD1,MD2,SD3,NSD4,SS5,MS6,CS7
	FTLEADERSHIP	4.43	1.55	CD1,MD2,SD3,NSD4,SS5,MS6,CS7
Motivation (MO)	MOMOTIVE	6.11	1.19	SD1,D2,SD3,N4,SA5,SA6,SA7
	MOPUREDUGO	5.99	1.09	SD1,D2,SD3,N4,SA5,SA6,SA7
	MOCONFUSED	4.97	0.35	SD1,D2,SD3,N4,SA5,SA6,SA7

The sample size/frequency, mean (i.e., M), standard deviation (i.e., SD), and range (i.e. actual number (Min-Max)) were provided for the following discrete variables: earned credit hours (i.e., CE201080, CE201110, CE201180, and CE201210) and academic advisement (i.e., AdvisingActual). It is important to note that the results associated with the earned credit hours included a minimum and maximum value of 0 and 22 for the Fall 2010, 0 and 27 for Spring 2011, 0 and 21 for the Fall 2011, and 0-21 for the Spring 2012 semesters. For the actual number of advising visits, the minimum and maximum value was 0 and 30. These results were used in the logistic regression data analysis method in order to investigate the effect of the discrete variables on the persistence of the sampled population.

These results are illustrated in Table 4.2 below.

Table 4.2.

Results of the Discrete Variables

Variable	Quantitative Code	M	SD	Actual Number Range (Min-Max)
Earned Credit Hours (Fall 2010)	CE201080	9.67	7.9	0-22
Earned Credit Hours (Spring 2011)	CE201110	14.15	4.35	0-27
Earned Credit Hours (Fall 2011)	CE201180	11.37	6.12	0-21
Earned Credit Hours (Spring 2012)	CE201210	10.96	6.27	0-21
Academic Advisement	AdvisingActual	6	4.1	0-30

The sample size/frequency, mean (i.e., M), standard deviation (i.e., SD), and range (i.e. dummy coded (0-1)) were provided for the following categorical variables: ethnicity (i.e., AIndian, Asian, Black, White, and Hispanic), first-generation status (i.e., First Generation) gender (i.e., GenderNew), cumulative grade point average (GPA) (i.e., CUMGPA4, CUMGPA3.49, and CUMGPA2.49), academic advisement (i.e., ADSLACPROGLSTYR, ADACADPLANLSTYR, and CAGOALSLSTYR), academic

programs (i.e., HSTDYSKLSYR, TUTORLSYR, CACRCHCELSTYR, and CAWKINTERLSYR), lottery scholarship and/or other scholarships (i.e., LOTTSCH), performance-based scholarship (i.e., PartVISTA), and student employment (i.e., WORKATALL). These results were used in the logistic regression data analysis method in order to investigate the effect of the categorical variables on the persistence of the sampled population.

These results are illustrated in Table 4.3 below.

Table 4.3.

Results of the Categorical Variables

Variable	Quantitative Code	M	SD	Dummy Coded Range (0-1)
Ethnicity	AIndian	0.069	0.253	0-1
	Asian	0.046	0.209	0-1
	Black	0.043	0.202	0-1
	Hispanic	0.422	0.494	0-1
First-Generation Status	First Generation	0.304	0.46	0-1
Gender	GenderNew	0.691	0.462	0-1
Cumulative GPA	CUMGPA4	0.43	0.495	0-1
	CUMGPA3.49	0.471	0.499	0-1
	CUMGPA2.49	0.09	0.286	0-1
Academic Advisement	ADSLACPROGLSTYR	0.567	0.496	0-1
	ADACADPLANLSTYR	0.204	0.403	0-1
	CAGOALSSTYR	0.346	0.476	0-1
Academic Programs: Tutoring (CAPS)	HSTDYSKLSYR	0.284	0.451	0-1
	TUTORLSYR	0.35	0.477	0-1
Academic Programs: Career Services	CACRCHCELSTYR	0.261	0.439	0-1
	CAWKINTERLSYR	0.199	0.399	0-1
Student Employment	WORKATALL	0.581	0.493	0-1
Lottery Scholarship/Other Scholarships	LOTTSCH	0.113	0.317	0-1
Performance-based Scholarship	PartVISTA	0.184	0.387	0-1

Statistical Results

As discussed in Chapter 3, five logistic regression models were created to address the five guiding research questions for this research study. The model design was used to statistically measure the effect of various variables on the persistence of sophomore students. In order to ensure that the five models were properly configured, the nonexistence of multicollinearity was determined by calculating the Variance Inflation Factor (VIF) value. The VIF value for each model was below the standard VIF threshold of 10, which indicated that there was little variance inflation between the variables (Cohen, Cohen, West, & Aiken, 2003). As a result, multicollinearity was not detected, which meant that none of the variables had to be removed from any of the models.

Logistic regression Models 1 thru 5 were built upon Model 0. The -2 Log Likelihood, Hosmer-Lemeshow Test, and the SPSS Variables in the Equation and Classification Tables were used to evaluate the effect of the independent variables on the dependent variable of persistence in order to determine if Model 5 illustrated a higher impact on the persistence of sophomore students compared to Models 0 thru 4. The baseline results associated with Model 0 were that 47.6% (i.e., N = 290) of the 609 UNM participants persisted from the Fall 2010 to Spring 2011 semester (i.e., dummy coded as 1) and 52.4 % (i.e., N = 319) did not persist from the Fall 2010 to Spring 2011 semester (i.e., dummy coded as 0). The -2 Log Likelihood value steadily decreased as each model was examined. The steady decrease indicated that the sequential addition of variables in each model increasingly impacted persistence.

According to Pallant (2003), the Hosmer and Lemeshow Test was used to determine the goodness of fit of a model by calculating the chi-square statistic, degrees of freedom (i.e., df), and statistical significance (i.e., p-value) of the independent variables in the model. A chi-square statistic was considered poor if the p-value was $<.05$. Moreover, the p-value represented the probability of

obtaining the chi-square statistic if there was no effect of the categories and their associated independent variables on the dependent variable of persistence (Logistic Regression SPSS Annotated Output, n.d.). The SPSS Variables in the Equation Table displayed the p-value associated with each variable based the Hosmer and Lemeshow Test. In Model 1, the pre-entry attributes category had a p-value of .634. In Model 2, the cognitive category had a p-value of .013. In Model 3, the academics category had a p-value of .011. In Model 4, the social engagements category had a p-value of .000. In Model 5, the financials category had a p-value of .319. Based on the average p-values, there was a good fit between the variables in Models 1 and 5. On the other hand, there was not a good fit between the variables in Models 2, 3, and 4.

The SPSS Classification Table provided the percentage to which the model either correctly predicted that persistence did occur (i.e., sensitivity) or correctly predicted that persistence did not occur (i.e., specificity). Models 3 and 4 had a higher sensitivity than specificity at 69% and 68.3%, respectively. In other words, 66.5% of the participants were correctly classified as persisting to the next semester in Model 3; and 66.7% of the participants were correctly classified as persisting to the next semester in Model 4. On the other hand, Models 1, 2, and 5 had a higher specificity than sensitivity at 62.1%, 65.8%, and 74.9%, respectively. In other words, 55% of the participants were correctly classified as not persisting to the next semester in Model 1; 58.5% of the participants were correctly classified as not persisting to the next semester in Model 2; and 70.1% of the participants were correctly classified as not persisting to the next semester in Model 5.

The remainder of this section provides a detailed breakdown of the statistical results for each model.

Model 0. The quantitative code for the persistence dependent variable was Perernolle. It was used as the baseline to determine the effect of the independent variables or covariates on persistence as they were sequentially added in Model 1 thru 5. As the null model and as expected, the specificity was higher than the sensitivity in Model 0, which meant that the classification of 52.4% of the participants as not persisting to the next semester was predictively correct.

Model 1. Model 1 analyzed the variables associated with the pre-entry attributes category, which was used to investigate guiding research question one. This category consisted of the following variables: ethnicity, gender, and first-generation status.

The merging of the quantitative codes for each variable is displayed below.

$$\text{Model 1} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})]$$

Based on the Omnibus Test that was ran on both Model 1 and Block 1, the chi-square statistic was 11.805 with a p-value of .066. Even though the average p-value for Model 1 is greater than .05, the African American variable had a p-value of .018, which is less than .05. Thus, demonstrating that this variable was statistically significant. For Model 1, the African American variable was the only variable that had a p-value that was less than .05. Model 1 shows that there is an increase in the prediction from 52.4% in Model 0 to 55% of the participants being classified as not persisting to the next semester. The specificity for Model 1 is 62.1%. In other words, the pre-entry attributes category may have consisted of at least one variable that negatively impacted persistence.

The pseudo R^2 indices, Cox and Snell and Nagelkerke, have a value of .019 and .026, respectively. These results indicate that Model 1 accounts for between 1.9% and 2.6% of the variance in persistence indicating that adding the pre-entry attribute variables to the model added significantly to the model to predict students' persistence for the six variables in model 1.

Taking into consideration the crosstab and the fit model, ethnicity has an effect on persistence. The Omnibus Test of the Model Coefficients is used to check the overall indication of how well the model performs, over and beyond the results obtained in Model 0 (Null)'. Therefore, with a value of .066, the variables do not fit within the model.

Regarding the logistic regression results for Model 1, there was a statistical significance for the African American sophomore students. The Omnibus Test shows that overall indication of how well the model performs, over and beyond the results obtained in Model 0. Therefore, with an overall model value of .066, the variables do not fit within the model.

Model 2 = Block 1 + Block 2. Model 2 focused on the variables associated with pre-entry attributes and cognitive categories, which were used to investigate guiding research question two. These categories consisted of the following variables: ethnicity, gender, first-generation status, motivation, self-efficacy, self-regulation, and future-time perspective.

The merging of the quantitative codes for each variable is displayed below in Model 2.

$$\text{Model 2} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})]$$

Model 2 shows that there is an increase in the percent of cases the model correctly classified from 52.4% in the null model to 58.5% with the cognitive variables. Prediction for students who did not persist was more precise than those who did persist. The proportion of correctly classified as not persisting (65.8%) (magnitude of specificity) compared to the proportion of correctly classified as those who persist (50.3%) (magnitude of sensitivity). At 58.5%, the overall correction prediction shows an improvement of the effect of the variables in Model 2 over the null model. The Cox and Snell of .022 and Nagelkerke R Square of .029 are on the lower end of the minimum. This suggests that between 2.2% and 2.9% of the

variability is explained by these variables. No variables in this model had a Wald statistic of less than or equal to .05. Therefore, none of the variables were statistically significant for this model.

Model 2 contained the ten variables that represent the cognitive category. Model 2 was designed to explore the effect of the cognitive and pre-entry variables to test the predictive ability of the outcome above and beyond the previous model. In model two, there was an improvement over model 1 ($\chi^2 (10) = 13.467$), indicating that adding the additional cognitive predictors to the model added significantly to the model. Subsequently, none of the cognitive variables in the model prove to be statistically significant. Regarding the logistic regression results for Model 2, there was a statistical significance for the African American sophomore students. However, American Indian sophomore students are 1.199 times more likely to persist.

As sophomore students' level of self-efficacy, self-regulation, motivation, and future-time perspective increases the higher the percentage of students persisting. Across all ethnicity of the sophomore student that completed the SYSA, African American students had the highest percentage (33.3%) of persisting if they had a high level of self-efficacy. Hispanic students have the second highest percentage of self-efficacy at (18.1%). For self-regulation, Hispanic students have the highest percentage of 22.8% at level 19 of self-regulation calculation in persisting if they had a high level of self-regulation. See tables 4.7-4.10 in the appendix for further results of the cognitive categories. No variable in this model had a Wald statistic of less than or equal to .05. Therefore, none of the variables were statistically significant for this model.

The Omnibus Test shows that overall indication of how well the model performs, over and beyond the results obtained in Model 0. Therefore, with an overall model value of .198, the variables do not fit within the model.

Model 3 = Block 1 + Block 2 + Block 3. Model 3 focused on the variables associated with pre-entry attributes, cognitive, and academics categories, which were used to investigate guiding research question three. These categories consisted of the following variables: ethnicity, gender, whether or not students were first-generation, motivation, self-efficacy, self-regulation, future-time perspective, grade point average, credit hours, and advisement.

The merging of the quantitative codes for each variable is displayed below in Model 3.

$$\text{Model 3} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSSTYR})]$$

Model 3 (Academics) shows that there is an increase in the percent of cases the model correctly classified from 52.4% in the null model to 66.5% with the academic variables. Prediction for students who did persist was more precise than those who did not persist. The proportion of correctly classified as persisting (69%) (magnitude of sensitivity) compared to the proportion of correctly classified as those who did not persist (64.3%) (magnitude of specificity). At 66.5%, the overall correction prediction proves an improvement over the null model. The Cox and Snell of .137 and Nagelkerke *R* Square of .183 are on the lower end of the minimum. This suggests that between 1.4% and 1.8% of the variability is explained by these variables.

Model 3 contained the four variables that represent the academic category. Model 3 was designed to explore the effect of the outcome with the cognitive and pre-entry variables, which represent 17 previous variables, to test the predictive ability of the outcome above and beyond the previous model. In model three, the block showed a statistically significant improvement over model 2 ($\chi^2(21) = 89.70, p < .001$), indicating that adding the additional cognitive predictors to the model was statistically

significant for the full model. Of the four categories of variables in this model, only Spring 2011 credit earned hours was statistically significant with a p-value of .000. Students that met with their academic advisor (ADACADPLANLSTYR) will persist 1.277 times more to the next semester. There were six variables: motivation(.003), CUMGPA4(.000), CUMGPA3.49(.000), CUMGPA2.49(.000), AdvisingActual(.001), ADSLACPROGLSTYR(.001) and CACRCHCELSTYR(.000) showed significance for the model.

In order to provide a bigger picture of the advising visits, the data represents first by the actual advising from 1 to 10 and then grouped from 11 or more visits. Regardless of students' ethnicity and first-generation status, female students had the highest number of visits and persisted. With one advising visit for both male and female., males persist at 42.9% whereas females persisted at 57.1%. With ten advising visits, males persisted at 31.3% and females at 68.8%.

The Omnibus Test shows that the overall indication of how well the model performs, over and beyond the results obtained in Model 0. Therefore, the overall significant for the model is .000, the variables are statistically significant with a 'goodness of fit' beyond model 0.

Model 4 = Block 1 + Block 2 + Block 3 + Block 4. Model 4 focused on the variables associated with pre-entry attributes, cognitive, academics, and social engagements categories, which were used to investigate guiding research question four. These categories consisted of the following variables: ethnicity, gender, whether or not students were first-generation, motivation, self-efficacy, self-regulation, future-time perspective, grade point average, credit hours, advisement, faculty involvement, and academic support programs (e. g., tutoring [Center for Academic Program Support (CAPS)] and Career Services). In this research study, this model also was referred to as Model 4.

The merging of the quantitative codes for each variable is displayed below in Model 4.

$$\text{Model 4} = \beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSLSTYR})] + [\beta_{17}(\text{HSTDYSKLSTYR})] + \beta_{18}(\text{TUTORLSTYR}) + \beta_{19}(\text{CACRCHCELSTYR}) + \beta_{20}(\text{CAWKINTERLSTYR}) + \beta_{21}(\text{FIINTERACTINS})]$$

Model 4 (Social Engagement) shows that there is an increase in the percent of cases the model correctly classified from 52.4% in the null model to 66.7% with the social engagement variables. Prediction for students who did persist was more precise than those who did not persist. The proportion of correctly classified as persisting (68.3%) (magnitude of sensitivity) compared to the proportion of correctly classified as those who did not persist (65.2%) (magnitude of specificity). At 66.7%, the overall correction prediction proves an improvement over the null model. The Cox and Snell of .140 and Nagelkerke *R* Square of .186 are on the lower end of the minimum. This suggests that between 1.4% and 1.9% of the variability is explained by these variables.

Model 4 consisted of 5 variables that represent the engagement category. Model 4 was designed to explore the effect of engagement, academics, cognitive and pre-entry variables, which represent 21 previous variables, to test the predictive ability of the outcome above and beyond the previous model. In model four, the block showed a statistically significant improvement over model 3 ($\chi^2(26) = 91.5$, $p < .001$), showing that adding additional engagement predictors to the model was statistically significant for the full model. There is a total of 26 variables in this model. None of the engagement variables prove to be statistically significant. However, African American and Spring 2011 credit earned hours were statistically significant with a p-value of .016 and .000, respectively. There were six variables: motivation(.003), CUMGPA4(.000), CUMGPA3.49(.000), CUMGPA2.4(.000), AdvisingActual(.001), ADSLACPROGLSTYR (.001) and CACRCHCELSTYR(.000) showed significance for the model.

Regardless of gender and the first-generation status, and being completely dissatisfied with their level of faculty interaction, Asian students persisted at 16.7% whereas American Indian persisted at 4.5%. For students that were completely satisfied, White students persisted at 8.9%, and Hispanic students persisted at 7.9%. Students that had any engagement with faculty were 1.046 times more likely to persist. The Omnibus Test shows that the overall indication of how well the model performs, over and beyond the results obtained in Model 0. Therefore, the overall model value of .000, the variables ‘goodness of fit’ within the model.

Model 5 = Block 1 + Block 2 + Block 3 + Block 4 + Block 5. Model 5 focused on the variables associated with pre-entry attributes, cognitive, academics, social engagements, and financials categories, which were used to investigate guiding research question five. These categories consisted of the following variables: ethnicity, gender, whether or not students were first-generation, motivation, self-efficacy, self-regulation, future-time perspective, grade point average, credit hours, advisement, faculty involvement, and academic support programs (e. g., tutoring [Center for Academic Program Support (CAPS)] and Career Services), and student employment, state-funded lottery scholarship/other scholarships, and performance-based scholarship (e.g., VISTA).

The merging of the quantitative codes for each variable is displayed below in Model 5.

Model 5 = $\beta_0 + [\beta_1(\text{AFRICAN AMERICAN}) + \beta_2(\text{AMERICAN INDIAN}) + \beta_3(\text{ASIAN}) + \beta_4(\text{HISPANIC}) + \beta_5(\text{FIRST-GENERATION}) + \beta_6(\text{GENDER})] + [\beta_7(\text{SELF-EFFICACY}) + \beta_8(\text{SELF-REGULATION}) + \beta_9(\text{MOTIVATION}) + \beta_{10}(\text{FUTURE-TIME PERSPECTIVE})] + [\beta_{11}(\text{CUMGPA}) + \beta_{12}(\text{CREDIT EARNED}) + \beta_{13}(\text{ADVISINGACTUAL}) + \beta_{14}(\text{ADSLACPROGLSTYR}) + \beta_{15}(\text{ADACADPLANLSTYR}) + \beta_{16}(\text{CAGOALSSTYR})] + [\beta_{17}(\text{HSTDYSKLSSTYR}) + \beta_{18}(\text{TUTORLSTYR}) + \beta_{19}(\text{CACRCHCELSTYR}) + \beta_{20}(\text{CAWKINTERLSTYR}) + \beta_{21}(\text{FIINTERACTINS})] + [\beta_{22}(\text{WORKATALL}) + \beta_{23}(\text{LOTTSCH}) + \beta_{24}(\text{PartVISTA})]$

Model 5 shows that there is an increase in the percentage of cases the model correctly classified from 52.4% in the null model to 70.1% with the cognitive variables. Prediction for students who did not

persist was more precise than those who did persist. The proportion of correctly classified as not persisting (74.9%) (magnitude of specificity) compared to the proportion of correctly classified as those who persist (64.8%) (magnitude of sensitivity). At 70.1%, the overall correction prediction proves an improvement over the null model. The Cox and Snell of.218 and Nagelkerke *R* Square of.291 are on the high end of the minimum. This suggests that between 21.8% and 29.1% of the variability is explained by these variables. This would suggest that the model is guardedly describing a reasonable amount of variance.

Model 5 consisted of 5 variables that represent the financial category. Model 5 was designed to explore the effect on the outcome with the engagement, academics, cognitive and pre-entry variables, which represent 21 previous variables, to test the predictive ability of the outcome above and beyond the previous model. In model four, the block showed a statistically significant improvement over model 5 ($\chi^2 (29, N = 609) = 150., p <.001$), indicating that adding the additional financial predictors to the model was statistically significant for the full model. Since Model 5 was statistically significant, it was used as the final model for this research study. Of the finance variables, LOTSCH and PartVISTA were statistically significant, with p-value at.003 and.000, respectfully. Subsequently, Spring 2011 and Fall 2011 credit earned hours was statistically significant with a p-value of .001 and .030, respectfully. Students that participated in VISTA are 5.532 times more likely to persist to the next semester than those that did not. There were nine variables: Asian(.019), Gender (.030), CUMGPA4(.000), CUMGPA3.49(.000), CUMGPA2.4(.000), CE201210(.029), ADSLACPROGLSTYR (.004), HSTDYSKLLSTYR(.003) and CACRCHECELSTYR(.000) showed significance for the model.

The Omnibus Test shows that the overall model indicated of how well the model performs, over and beyond the results obtained in Model 0. Therefore, the overall model value of .000, the variables

‘goodness of fit’ within the model. A complete analysis of all five models can be found in Appendices B. Table 4.4. shows the advance of improvement of persistence of each model.

Table 4.4.

Estimation and Model Fit Logistic Regression Analysis

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Omnibus Test of Model	11.339	11.805	13.476	89.65	91.515	150.01
Coefficients						
-2 Log Likelihood	842.872	831.067	829.396	753.213	751.357	692.862
Hosmer & Lemeshow		4.315	19.345	19.713	34.518	9.289
Nagelkerke R Square		0.026	0.029	0.183	0.186	0.291
Cox & Snell R Square		0.019	0.022	0.137	0.14	0.218
Percent Predicted	52.4%	55%	58.5%	66.5%	66.7%	70.1%

The above table 4.4. represents how each model fits within the analysis. As the variables are entered into each model, the percent predicted if a student would persist increase from the 52.4% from Model 0.

All 24 variables were used to solve the logistic equation.

Statistical Analysis of Guiding Research Questions

1. Do sophomore students’ ethnicity, gender, and first-generation status effect their persistence?

To analysis guiding research **question one** of do students’ ethnicity, gender, first-generation status (i.e., pre-entry attributes variables) predict their academic persistence? The variables were used to predict the outcome of persistence. By adding the variables into model 1, one can predict with 55% accuracy that a student’s ethnicity has an effect on persistence. White students were used as the

reference ethnicity group for this analysis. The initial analysis was conducted using five ethnicities (African American, American Indian, Asian, and Hispanic). The results illustrate that female students outnumbered male students as it relates to persisting. As a result of the analysis, the ethnicity predictor shows that African American students were the only ethnic group to be statistically significant at .018. However, gender and first-generation status were not statistically significant for this model.

Table 4.5 below shows that the Wald Statistic indicates that African American students ($X^2(1) = 5.645, p < .001$) are significant in the overall model. Whereas, Hispanic students ($X^2(1) = 2.493, p > .001$) is not significant in the model. American Indians are 1.168 times more likely to persist than White Students. Whereas, Hispanics are 1.098 times more likely to persist than Asian students.

Table 4.5

Logistic Regression Analysis of Model 1- Pre-Entry Variables on Persistence

Predictor	Block 0				Block 1			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Intercept	-0.095	0.081	1.380	0.909	-0.464	0.407	1.299	0.629
Model 1								
American Indian					0.156	0.335	0.217	1.168
Asian					0.244	0.403	0.366	1.276
African American					-1.148	0.483	5.645	0.317
Hispanic					0.093	0.178	0.273	1.098
Gender					0.288	0.179	2.594	1.334
First-Generation					-0.232	0.18	1.669	0.793

Using the dependent variable of persistence, across all ethnicity groups, Hispanic females had the highest percentage rate of not persisting. Whereas Asian females had a 32.1% rate of persistence. African American had 3.8% males across all ethnicity groups had the lowest percentage rate of persistence. American Indian males had only a 14.3% for persisting to the junior year. Non-first-generation Hispanic male students persist at a much higher rate than first-generation male. American Indian first-generation students were 3.9% more than African American first-generation students. First-Generation females across all ethnicity groups persisted at a higher rate than their male counterparts. In comparing Hispanic and White students, since their population was almost equal, the results show that white female students persist slightly better than Hispanic female students by 5.9%. Whereas Hispanic male had a lower percentage of persisting to the junior year than White students. More Hispanic females participated in the SYSA, but they still had a lower rate of persisting compared to White female students.

2. Do sophomore students' motivation, self-efficacy, self-regulation and future-time perspective effect their persistence when they are sequentially merged with the variables associated with the pre-entry attributes category?

To analysis guiding research **question two** regarding do students' motivation, self-efficacy, self-regulation, and future-time perspective (i.e., cognitive variables) predict their persistence beyond the previous variables (i.e., pre-entry attributes variables)? Model 2 was analyzed with all the previous variable from Model 1. Based on the result, none of the variables proved to be statistically significant for this research study. However, when adding variables of model 2 in with variables from model 1, the percentage corrected from the classification table increased from 55% to 58.5%, which is a 3.5% increase of the probability of sophomore students will persist. Even though, the variables in this model

were not statistically significant, Table 4.5. shows that sophomore students with high motivation are 1.031 more likely to persist.

Table 4.5.

Logistic Regression Analysis of Model 2 - Cognitive Variables on Persistence

Predictor	Model 0				Model 2			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Intercept	-0.095	0.081	1.380	0.909	-0.22	0.692	0.098	0.805
Model 2								
Self-Efficacy (SE)					-0.020	0.037	0.294	0.98
Self-Regulation (SR)					-0.038	0.042	0.852	0.962
Future-Time					0.022	0.031	0.511	1.023
Perspective (FT)								
Motivation (MO)					0.031	0.042	0.529	1.031

The measure of self-efficacy was measured based on three questions from the SYSA survey instrument. The average mean of self-efficacy is 5.7. This shows that on average those students in this research study agree they trust their self-efficacy abilities. Ninety-two percent of the students trusted their judgment on making decisions. Eighty-nine percent of the students felt about acting on their opinions. Whereas 10% of the students felt that they were not good at figuring out what materials were most important for the exam.

The average score for self-regulation was 5.7. The score represents that on average students satisfied with their ability to self-regulation. Of 609 students that completed the SYSA, 8.5% of them cannot find ways of applying what they have learned in the class to other parts of their life. Whereas, 73.4% agree that when course materials are dull and boring, they can keep working on the assignment

until it is finished. Ninety-four percent of students believe that they are self-regulated enough to finish college.

The average score for motivation was 5.6. This score represents that on average students agree with their ability to motivate themselves to do well in college. Of 609 students that completed the SYSA, 4.6% of are not motivated to do well in college. However, 90.6% of the students agree that they are actively pursuing their educational goal. Ninety-four percent of students believe that they are self-regulated enough to finish college know matter what it takes.

The measure of future-time was measured using a 7-point Likert Scale ranged from completely dissatisfied to completely satisfied. The average combined score for future-time perspective is 4.4. This indicates that on average students did not participate in many activities that related to their future goals or career. Twenty-two- percent of the students were dissatisfied or satisfied with opportunities to get involved in activities and events related to their intended major. Based on the analysis for future-time prospective students are less confident in opportunities that area afforded to them to cultivate their future goals.

3. Do credit hours, grade point averages (GPAs), and academic advisement influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes and cognitive categories?

To analysis guiding research **question three** of do academic performance and participation in academic advisement (i.e., academics variables) influence students' academic persistence beyond the previous variables (i.e., pre-entry attributes and cognitive variables)? Model 3 was analyzed with the all the previous variables. Once the academic attribute variables were added to the model, the probability of sophomore students' persisting to the junior year was 66.5%. This was a 14.1 percent increase from the

intercept only model (Model 0). The Omnibus Test showed that the model was statistically significant at.000.

Students' GPA is a critical variable that is used to determine a student's persistence. Students with a cumulative GPA between 1.0 – 1.49 was removed from the analysis. One reason this GPA group was removed because students with that GPA range were not eligible for any scholarships, lottery or VISTA. Forty-seven percent of students had a cumulative GPA ranging of from 2.5 – 3.49. There were a 37.9 percentage point differences between students that had a 1.5 -2.49 cumulative GPA. Over 90% of the students had a cumulative GPA that would have made them eligible for the lottery other scholarships and VISTA.

Earned credit hours were collected from Fall 2010 to Spring 2012. The mean earned hours was higher (14.16) during the Spring 2011 semester. Eighty-seven percent of the students earned 12 or more hours. Student earned hours was stable between 13 to 15 hours. Seventy-nine percent of students did not prepare an academic plan for graduation, and only 56% selected a major. The result shows that there is a disconnect between identifying a student's major and creating an academic plan to assist with reaching the end goal of earning a degree. The number of visits that a student had with an academic advisor varied. Fifty-three percent of students had between 1 to 10 advising visits.

For model 3, on the credit hours earned in the Spring 2011 (CE201110) was statistically significant at.000 with a $p < .05$. Table 4. shows that in CUM GPA variables were statistically significant with a Wald of, 000, below the $p < .05$. Sophomore students with a prepared written academic plan for graduation last year (Spring 2009) were 1.217 more likely to persist to the junior year.

Table 4.6.*Logistic Regression Analysis of Model 3 - Academic Attribute Variables on Persistence*

Predictor	Block 0				Block 3			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Intercept	0.095	0.081	1.380	0.909	-22.85	17842.5	0.000	0.000
Model 3								
CUMGPA 3.5 to 4.0					21.27	17842.5	0.000	1727126
CUMGPA 2.5 to 3.49					20.931	17842.5	0.000	1230586
CUMGPA 1.5 to 2.49					19.807	17842.5	0.000	4001625
Credit Hour Earned Fall 2010					0.02	0.011	3.053	1.02
Credit Hours Earned Spring 2011					0.105	0.026	16.4	1.111
Credit Hours Earned Fall 2011					0.037	0.022	2.769	1.038
Credit Hours Earned Spring 2012					0.008	0.021	0.145	1.008
Advising Visits					0.000	0.022	0.000	1.000
ADSLACPROGLSTYR					0.004	0.192	0.000	1.004
ADACADPLANLSTYR					0.196	0.229	0.731	1.217
CAGOALSLSTYR					-0.284	0.202	1.974	0.753

The model explains 18% of the variance variation in students persisting to the junior year.

4. Do faculty involvement and academic support programs influence sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, and academics categories?

To analysis guiding research **question four** of do faculty and academic student support programs (i.e., engagement variables) influence students' academic persistence beyond the previous variables (i.e., pre-entry attributes, cognitive and academic attribute variables). Model 4 was analyzed with the all the previous variables. Once the social engagement variables were added to the model, the probability of sophomore students' persistence to the junior year was 66.7%. This was a 14.3 percent increase from the intercept only model (Model 0). The Omnibus Test showed that the model as a whole was statistically

significant at.000. The model explains 18% of the variance variation in students persisting to the junior year.

Of the 609 that completed the SYSA, only 173 (28.4%) stated that they received assistant with study skills (HSTDYSKLSTYR). In addition, only 213 (35%) stated that sought tutoring two or more courses. Conversely, 64% of students explored advantages and disadvantage for career choice (CACRCHCELSTYR). Whereas only over 80% of students have not been able to identify work experience with internship opportunities. The Omnibus Test for Model 4 revealed that the model as a whole was statistically significant at.000. However, the none of the individual variables were statistically significant in the model. Interestingly, students that received help with study skills were 1.176 times more likely to persist. Table 4.7. shows that students had a low level of interaction (.045) with faculty (FIINTERACTINS).

Table 4.7.

Logistic Regression Analysis of Model 4 - Social Engagement on Persistence

Predictor	Model 0				Model 4			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Intercept	0.095	0.081	1.380	0.909	22.84	17788.3	0.000	0.000
Model 4								
HSTDYSKLSTYR					0.162	0.218	0.554	1.176
TUTORLSTYR					0.188	0.200	0.88	0.829
CACRCHCELSTYR					0.004	0.245	0.000	0.996
CAWKINTERLSTYR					0.174	0.256	0.461	1.19
FIINTERACTINS					0.045	0.072	0.39	1.046

5. Do student employment, a state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship impact sophomore students' persistence when they are sequentially merged with the variables associated with the pre-entry attributes, cognitive, academics, and social engagements categories?

To analysis guiding research question five of the New Mexico Lottery Scholarship, student working, and other finances (i.e., financial variables) effect students' academic persistence beyond the previous variables (i.e., pre-entry attributes, cognitive, academics and engagement variables)? Model 5 was analyzed with the all the previous variables. Once the financial variables were added to the model, the probability of sophomore students' persistence to the junior year was 70.1%. This was a 17.7 percent increase from the intercept only model (Model 0). The Omnibus Test showed that the model as a whole was statistically significant at.000. The model explains 29% of the variance variation in students persisting to the junior year. The model has a goodness of fit of .319.

The Model 5 consisted of data on whether students worked, a state-funded lottery scholarship and/or other scholarships, and being part of a performance-based scholarship program. If students had other scholarships, outside of lottery and VISTA, they were used in the analysis. Other scholarships can range from private scholarship to UNM Scholarships.

From the variables that were included in model 5, LOTSCH and PartVISTA were statistically significant,0003 and.000, respectively. Variables were provided from previous models also were found statistically significant. From model 1, African American remained statistically significant for all models. Nevertheless, in model 5, African American was statistically significant at a level of.011. In addition, in model 1, first-generation status became statistically significant at.045, which is slightly less

than $p < .05$. For the academic attributes variables, none of them were statistically significant in the previous models. However, in model 5, Spring 2011 credit earned (CE201110) and Fall 201180 credit earned (CE201280) were statistically significant at .0001 and .030, respectively in model 5. Table 4.8. provides an overview of model 5. Sophomore students that had the lottery and other scholarships were 2.778 times more likely to persist. Not surprisingly, sophomore students who participated in VISTA (PartVISTA) were 5.532 times more likely to persist to the junior year.

Table 4.8.

Logistic Regression Analysis of Model 5- Financial Variables on Persistence

Predictor	Block 0				Block 4			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Intercept	-22.71	16820.09	0.00	0.99	-22.84	17788.31	0.00	0.00
Model 4								
WORKATALL					0.13	0.19	0.27	1.10
LOTTSCH					1.02	0.34	8.87	2.77
PartVISTA					1.71	0.27	37.80	5.53

Each model was able to answer the effect on persisting for the guided research question that was associated with the model. Of the five models, models 3 and five were statistically significant and prove to have an effect on persistence. In order to fully address and analysis the overarching research question of what are the variables associated with the pre-entry attributes, cognitive, academics, social engagements and financial categories that predict the probability that sophomore students would persist, the significant statistical variables in model 5 which contained 29 variables was used to solve the equation.

Since the variables for model 5 had categorical and continuous variables a specific pattern of analysis was used to determine how to solve the equation to determine the probability of sophomore students persisting to the junior year. It was conceptualized that the following process would be used: 1. All ethnic variables would be used in the equation because they were a string of dummy variables even though African American was only statistically significant; 2. The average scores from the cognitive variables were used (self-efficacy, self-regulation, future-time perspective and motivation); 3. All three of the CUMGPA variables were analyzed after coding them into dichotomous variables; 4. All four of the semester showing the earned credits was entered. The semesters were multiplied by 12 in the equation because students had to earn at least 12 credit hours per semester to qualify and maintain lottery, scholarships, and continued to participate in VISTA; 5. The average advising visit of 6 was multiplied by the beta for the four semester; 6) Assistance with major (ADSLACPROGLSTYR), prepared an academic plan (ADACADPLANLSTYR), define goals for major and career interest (CAGOALSSTYR), received help with study skills (HSTDYSKLSSTYR), found tutoring for 2 or more courses (TUTORLSTYR), explored advantage/disadvantages for career choice (CACRCHCELSTYR), identify work experience/internships (CAWKINTERLSTYR), worked or not (WORKATALL), had the state-funded lottery scholarship and/or other scholarships (LOTTSCH) or participated in (PartVISTA) were multiplied their beta's by one; and 7) level of student-faculty interaction (FIINTERACTINS) was determined using a Likert 7-point scale of satisfaction, therefore the middle option of somewhat satisfied with a score of 4.66 was multiplied by the beta for FIINTERACTINS.

Given that the equation had 29 variables and infinite amount of possible combinations, a limited number of meaningful combinations were selected to analysis the overarching research question of what are the variables associated with the pre-entry attributes, cognitive, academics, social engagements, and

financials categories that effect the persistence of sophomore students? For the remainder of Chapter 4, the results will be discussed as it relates to solving the equation for 29 variables. The following is the formula that was used to solve the equation for 29 variables

$$=1/(1+\text{EXP}(-(-22.714+0.154*0+0.064*0-1.364*1+0.063*0-0.036*1-0.432*1-0.046*17.3-0.04*17.1+0.037*8.9+0.015*18+21.339*0+21.134*1+19.985*0+0.016*12+0.088*12+0.052*12-0.004*12-0.011*6+0.013*1+0.255*1-0.329*1+0.013*1-0.178*1+0.003*1+0.111*1+0.048*4.66+0.103*1+1.022*1+1.711*1)))$$

Below are a few meaningful combinations that were solved.

Using the above formula, the predicted probability that a sophomore student from the sampled population of students will enroll versus not enroll in the junior year is 60% when the student is African American; male first-generation; with average cognitive scores on the Second-Year Student Assessment (SYSA); a GPA between 2.5 and 3.49; with a least 12 earned credit hours for four semesters; participated in a range of advisement, career, and tutoring services, was somewhat satisfied with interactions faculty; had a job; received lottery and other scholarships; and participated in the Vision Inspired Scholarship Through Academic (VISTA) Success program.

The predicted probability that a sophomore student from the sampled population of students will enroll versus not enroll in the junior year is 61% when the student is African American; female first-generation; with average cognitive scores on the Second-Year Student Assessment (SYSA); a GPA between 2.5 and 3.49; with a least 12 earned credit hours for four semesters; participated in a range of advisement, career, and tutoring services, was somewhat satisfied with interactions faculty; had a job; received lottery and other scholarships; and participated in the Vision Inspired Scholarship Through Academic (VISTA) Success program.

The predicted probability that a sophomore student from the sampled population of students will enroll versus not enroll in the junior year is 85% when the student is White; male first-generation; with average cognitive scores on the Second-Year Student Assessment (SYSA); a GPA between 2.5 and 3.49; with a least 12 earned credit hours for four semesters; participated in a range of advisement, career, and tutoring services, was somewhat satisfied with interactions faculty; had a job; received lottery and other scholarships; and participated in the Vision Inspired Scholarship Through Academic (VISTA) Success program.

The predicted probability that a sophomore student from the sampled population of students will enroll versus not enroll in the junior year is 86% when the student is white; female first-generation; with average cognitive scores on the Second-Year Student Assessment (SYSA); a GPA between 2.5 and 3.49; with a least 12 earned credit hours for four semesters; participated in a range of advisement, career, and tutoring services, was somewhat satisfied with interactions faculty; had a job; received lottery and other scholarships; and participated in the Vision Inspired Scholarship Through Academic (VISTA) Success program.

When solving the equation of meaningful combination regardless of the pre-entry attribute variables, cognitive variables, academic attributes, and social engagement variables did not have an overwhelming effect on persistence to the junior. However, out of the Model 5 (financial), LOTTSCH, PartVISTA has a huge effect on sophomore students persisting to the junior year. Even through, African American sophomore students were statistically significant throughout all five models; they are still hampered the most with persistence especially if they did not have LOTTSCH or participated in VISTA (PartVISTA). There is at least at ten to 20 percent difference in persistence of African American sophomore students when compared to White and Hispanic students. The comparison was conducted on

White students because they were the reference ethnicity for this research study. The comparison with Hispanic students was conducted because the University of New Mexico is classified as a Hispanic Serving Institution by the Federal Department of Education with having over 25% Hispanic undergraduate students at full-time enrollment level.

In comparing the -2LL to the baseline, as the -2LL is reduced as each model is introduced into the logistic regression it shows that the next model gets better at explaining more of the variance in the outcome. Therefore, all the models showed improvement in accurately determining student persistence.

Summary

The results from this research study showed that for this sampled population of 609 sophomore students from UNM, that being African American, having state-funded lottery scholarship and/or other scholarships, and participating in the performance-based scholarship (VISTA) had an impact on sophomore students' persistence. Chapter 5 provides a discussion of the implications of the results in relation to the overall research question as well as in relation to student persistence and success.

Chapter 5: Conclusion and Recommendations

Introduction

This chapter begins with a brief overview of the research study findings and conclusions. The findings and conclusions are presented in the framework of the research literature. Recommendations are then suggested that could help guide practice and policy as it relates to the statistically significant variables that effected the sampled population of sophomore students at the University of New Mexico (UNM). Also, the chapter will conclude with suggestions for future research on sophomore students.

Post-secondary sophomore students are an invisible population of students. They are usually the population of students that receive the least amount of structured academic support. However, the last few years, more institutions have started to provide additional resources and programs to support sophomore students. The sophomore year can be a major milestone for students. It is the time that students start to gain their independence, start to understand their academic and cognitive abilities and how to navigate the campus experience. The overarching research question for this study asks: What are the variables associated with the pre-entry attributes, cognitive, academics, social engagements and financial categories that predict the probability that sophomore students would persist? The basic finding in the study supports earlier research from both Tinto (1975, 1993) and Astin (1984). Tinto was able to prove that pre-entry variables had an effect on persistence. This research study supported the fact that ethnicity had a direct effect on students' persisting. Astin found that engagement had an effect on a student persisting. This research study showed that social engagement had very little effect on the sampled sophomore students' persistence. However, this research study was in alignment with D'Amico, Morgan and Robertson's (2011) and Doyle (2012) research that showed that having a combination of scholarships can assist student in persistence. In addition, research conducted by MDRC also showed

that students that participated in a performance-based scholarship were more likely to persist to the next semester. The results of this research held consistent with the literature that stress the significance of having financial support to persist in post-secondary education.

As we have moved through the history and issues with sophomore students, we must address some of the factors that can affect students' persistence. College Administrators have begun to look at the sophomore differently. For decades' institutions have top loaded programs and initiatives for first-year students to assist them to persist to the third semester (Tinto, 1993, Bean, 1980, Passarella, 1985 and Adelman 2006). However, with the shift in funding from legislatures to provide funding based on the number of students that matriculate into the first-year as first-time, full-time student, to number of students that graduate, it is time to rethink how the sophomore year can have an impact on students; persistence to semester to semester and on to graduation. The results from this research study helps to confirm that improvement is still needed on addressing the "Sophomore Slump."

Findings and Conclusions

This study is significant to the field of higher education because there is a limited amount of research on the effect of the sophomore year and how various variable such as a state-funded lottery scholarship and/or other scholarships, and a performance-based can impact a student's persistence to graduation. There is substantial research on the first-year the addresses pre-entry, self-efficacy, self-regulation, and motivation of students. More research is needed on those particular variables for the sophomore year. Even though some research has started to focus on these variables for the sophomore year more research is needed.

Based on the research results from this sampled population of sophomore students at UNM there are some policy improvements that can be addressed. The study revealed that if a sophomore student

experienced the "Sophomore Slump" it was statistically significant because of financial issues (i.e. state-funded lottery scholarship and/or other scholarships, and a performance-based scholarship (VISTA).

Limitations of Study

As mention in Chapter 1, it is imperative that more research is conducted on the influences of sophomore student persisting. There are various factors that could limit the conclusions that may be drawn from the study. Some are related to the scope of this research study. Other limits are because the study is restricted to using secondary data. The primary limitation of this study was the use of secondary data. By using secondary data, the data was already collected therefore there was no control on how the data was collected or what questions were asked to students. In addition, to enrich the results, a small focus group could have been utilized to help expand on some of the research questions.

Implications and Recommendations for Future Research

Administrators, educators, and other professional have to realize that students attend college for multiple reasons. Whether they are attending college to be able to get a good to just be an educated person it does not matter. The focus must still be on getting the student engaged and involved. A student's involvement in a balance of campus extracurricular activities could entice the student to stay academically engaged. In addition, a student's level of involvement could be a good indicator of retaining the student and the student persisting to degree completion (Ravitch, 2003).

To assist with that balance, professional advisors should create an advising space that is conducive to student learning while engaging the student in discourse to help them reach their potential (Drake, 2011). There is a correlation between degrees of involvement with a student's GPA. When involvement is recognized by key stakeholders then resources could be allocated to support the programs for students. (Geocaris & Goad, 2004).

As previously stated, UNM has done an excellent job at providing programs and financial support to assist students to the persist to the third semester. However, more work needs to be done to assist sophomore students to persist to the fifth semester and beyond. Sophomore students still need the additional financial support that is given to first-year students. Based on result of this study, I would suggest the following:

1. The Enrollment Management Office, Financial and Scholarship partner with Student Affairs to research more performance-based grant scholarship opportunities that would support sophomore students. For example, UNM could reach out to MDRC (funded the VISTA Program Scholarship).
2. Re-institute the “Summer Success Scholarship” that was offered eight years ago for freshmen students that needed to take summer courses to maintain their GPA or lottery scholarship. There should be a direct funding for sophomore students.

In order for the Sophomore Slump to not have a major impact on students’ persistence, the Regents, Legislatures, President, Enrollment Management and other constituents review the data on the persistence of sophomore students and a develop policies and/or initiatives that will financially support sophomore students. Without the additional financial support for sophomore students, UNM will continue to see an increase in sophomore students not returning, which will hamper the great stride that UNM has made with graduation rates.

To continue to increase the general knowledge of sophomore students’ persistence as it relates to financial support to help them stay on track to persisting to the next semester and on to degree completion. Future research should focus on examining scholarships (lottery and performance-based) that support sophomore students to avoid the “sophomore slump” as it relates to financial barriers.

Appendix A
Variables Mapping Matrix

Categories	Data Sources	Survey Items/ Institutional Data	Quantitative Codes	Scales	Models
Not Applicable	UAC- AdvisorTrax	If the student persisted or not	Perenrolle	Yes(1)/No(0)	Model 0
Pre-Entry Attributes	Banner	American Indian	AIndian	Yes(1)/No(0)	Model 1
Pre-Entry Attributes	Banner	Asian	Asian	Yes(1)/No(0)	
Pre-Entry Attributes	Banner	African American	Black	Yes(1)/No(0)	
Pre-Entry Attributes	Banner	White	White	Yes(1)/No(0)	
Pre-Entry Attributes	Banner	Hispanic	Hispanic	Yes(1)/No(0)	
Pre-Entry Attributes	Financial Aid Office	First-Generation	First-Generation	Yes(1)/No(0)	
Pre-Entry Attributes	Banner	Gender	GenderNew	Female(1)/Male(0)	
Cognitive: Self- Efficacy (SE)	SYSA Q14	14. I trust my own judgment in the decisions I make.	SEJUDGEMENT	SD1,D2,SD3,N4,SA5,SA6, SA7	Model 2
Cognitive: Self- Efficacy (SE)	SYSA Q39	39. I feel confident of my own opinions and am willing to act on them.	SECONFIOPIN	SD1,D2,SD3,N4,SA5,SA6, SA7	
Cognitive: Self- Efficacy (SE)	SYSA Q40	40. I am good at figuring out what material is most important for an exam.	SEFIQURING	SD1,D2,SD3,N4,SA5,SA6, SA7	

Appendix A
Variables Mapping Matrix

Categories	Data Sources	Survey Items/ Institutional Data	Quantitative Codes	Scales	Models
Cognitive: Self-Regulation (SR)	SYSA Q27	27. I can usually find ways of applying what I'm learning in class to something else in my life.	SRAPPLYLRN	SD1,D2,SD3,N4,SA5,SA6,SA7	Model 2
Cognitive: Self-Regulation (SR)	SYSA Q44	44. Even when course materials are dull and boring, I manage to keep working until I finish.	SRDLLBORING	SD1,D2,SD3,N4,SA5,SA6,SA7	
Cognitive: Self-Regulation (SR)	SYSA Q49	49. I am strongly dedicated to finishing college – no matter what obstacles get in the way.	SRDEDICATED	SD1,D2,SD3,N4,SA5,SA6,SA7	
Cognitive: Future-Time Perspective (FT)	SYSA Q70	70. Opportunities to get involved in activities and events associated with my (intended) major.	FTOPPORTACT	CD1,MD2,SD3,NSD4,SS5,MS6,CS7	
Cognitive: Future-Time Perspective (FT)	SYSA Q73	73. Leadership opportunities in student government and other organizations.	FTLEADERSHIP	CD1,MD2,SD3,NSD4,SS5,MS6,CS7	
Cognitive: Motivation (MO)	SYSA Q12	12. I am motivated to do well in college.	MOMOTIVE	SD1,D2,SD3,N4,SA5,SA6,SA7	
Cognitive: Motivation (MO)	SYSA Q15	15. I actively pursue my educational goals.	MOPUREDUGO	SD1,D2,SD3,N4,SA5,SA6,SA7	
Cognitive: Motivation (MO)	SYSA Q30	31. When I become confused about something I'm reading for class, I go back and try to figure it out.	MOCONFUSED	SD1,D2,SD3,N4,SA5,SA6,SA7	

Appendix A
Variables Mapping Matrix

Categories	Data Sources	Survey Items/ Institutional Data	Quantitative Codes	Scales	Models
Academics	Banner	CUMGPA range 3.5 - 4.0	CUMGPA4	All Other(0)/3.5 - 4.0(1)	Model 3
Academics	Banner	CUMGPA range 2.5 - 3.49	CUMGPA3.49	All Other(0)/2.5 - 3.49(1)	
Academics	Banner	CUMGPA range 1.5 - 2.49	CUMGPA2.49	All Other(0)/1.5 -2.49(1)	
Academics	Banner	CUMGPA range 1.0 - 1.49	CUMGPA1.49	All Other(0)/1.0 - 1.49(1)	
Academics	Banner	CE earned Fall 2010	CREDIT EARNED 201080	Actual number enrolled	
Academics	Banner	CE earned Spring 2011	CREDIT EARNED 201110	Actual number enrolled	
Academics	Banner	CE earned Fall 2011	CREDIT EARNED 201180	Actual number enrolled	
Academics	Banner	CE earned Spring 2012	CREDIT EARNED 201210	Actual number enrolled	
Academics	UAC- AdvisorTrax	Number of Advising Visits	ADVISINGACTUAL	Actual number of visits	
Academics	SYSA (Q52)	52. Select an academic program or major - I received assistance last year.	ADSLACPROGLSTYR	Yes(1)/No(0)	
Academics	SYSA (Q53)	53. Prepare a written academic plan for graduation - I received assistance last year.	ADACADPLANLSTYR	Yes(1)/No(0)	
Academics	SYSA Q56	56. Define goals suited to my major/career interest(s) - I received assistance last year.	CAGOALSSTYR	Yes(1)/No(0)	

Appendix A
Variables Mapping Matrix

Categories	Data Sources	Survey Items/ Institutional Data	Quantitative Codes	Scales	Models
Academics	SYSA Q50	50. Get help with my study skills (time management, concentrating, note-taking, exam skills, etc.) - I received assistance last year.	HSTDYSKLS TYR	Yes(1)/No(0)	
Social Engagements	SYSA Q51	51. Find tutors for one or more of my courses - I received assistance last year.	TUTORLS TYR	Yes(1)/No(0)	Model 4
Social Engagements	SYSA Q57	57. Explore advantages and disadvantages of my career choice - I received assistance last year.	CACRCHCELSTYR	Yes(1)/No(0)	
Social Engagements	SYSA Q58	58. Identify work experiences or internships related to my major - I received assistance last year.	CAWKINTERLS TYR	Yes(1)/No(0)	
Social Engagements	SYSA Q65	65. Level of interaction with my instructors.	FIINTERACTINS	CD1,MD2,SD3,NSD4,SS5,MS6,CS7	

Categories	Data Sources	Survey Items/ Institutional Data	Quantitative Codes	Scales	Models
Financials	SYSA Q1	Worked or Not	WORKATALL	Yes(1)/No(0)	Model 5
Financials	Financial Aid Office	Had lottery and scholarship	LOTTSCH	Yes(1)/No(0)	
Financials	Financial Aid Office	Participated in performance-based scholarship (VISTA) program	PartVISTA	Yes(1)/No(0)	

Legend: Second-Year Student Assessment (SYSA) Survey Instrument Likert Scales

- | | |
|------------------------------------|--|
| 1 – Strongly disagree (SD1) | 1 – Completely dissatisfied (CD1) |
| 2 – Disagree (D2) | 2 – Mostly dissatisfied (MD2) |
| 3 – Somewhat disagree (SD3) | 3 – Somewhat dissatisfied (SD3) |
| 4 – Neither agree or disagree (N4) | 4 – Neither satisfied or dissatisfied (NSD4) |
| 5 – Somewhat agree (SA5) | 5 – Somewhat satisfied (SS5) |
| 6 – Agree (SA6) | 6 – Mostly satisfied (MS6) |
| 7 – Strongly Agree (SA7) | 7 – Completely satisfied (CS7) |

Appendix B

Logistic Regression Analysis Results of UNM Sampled Population

Predictor	Model 0					Pre-Entry Variables Model 1					Cognitive Model 2				
	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)
Intercept	0.095	0.081	1.380	0.24	0.909	0.464	0.407	1.299	0.254	0.629	0.217	0.692	0.1	0.754	0.805
American Indian						0.156	0.335	0.217	0.642	1.168	0.181	0.338	0.3	0.591	1.199
Asian						0.244	0.403	0.366	0.545	1.276	0.251	0.409	0.4	0.54	1.285
African American						1.148	0.483	5.645	0.018	0.317	1.139	0.484	5.5	0.019	0.32
Hispanic						0.093	0.178	0.273	0.602	1.098	0.088	0.179	0.2	0.622	1.092
Gender						0.288	0.179	2.594	0.107	1.334	0.287	0.18	2.5	0.11	1.332
First-Generation						0.232	0.18	1.669	0.196	0.793	-0.22	0.181	1.5	0.224	0.803
Self-Efficacy											-0.02	0.037	0.3	0.588	0.98
Self-Regulation											0.038	0.042	0.9	0.356	0.962
Future-Time Perspective											0.022	0.031	0.5	0.475	1.023
Motivation											0.031	0.042	0.5	0.467	1.031

Appendix B

Logistic Regression Analysis Results of UNM Sampled Population

Predictor	Academics Model 3					Engagement Model 4					Finance Model 5				
	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)
Intercept	22.854	17842.5	0.000	0.999	0.000	-22.84	17788.3	0.000	0.999	0.000	22.714	16820.1	0.000	0.999	0.000
American Indian	0.123	0.360	0.117	0.733	1.131	0.09	0.364	0.061	0.804	1.094	0.154	0.382	0.162	0.687	1.166
Asian	0.121	0.439	0.076	0.782	1.129	0.125	0.439	0.081	0.776	1.133	0.064	0.464	0.019	0.89	1.066
Black	-1.221	0.499	5.979	0.014	0.295	-1.206	0.502	5.766	0.016	0.3	-1.364	0.536	6.463	0.011	0.256
Hispanic	0.129	0.192	0.449	0.503	1.137	0.145	0.193	0.565	0.452	1.156	0.063	0.205	0.094	0.759	1.065
Gender	0.134	0.194	0.472	0.492	1.143	0.118	0.195	0.365	0.546	1.125	-0.036	0.208	0.03	0.862	0.965
First-Generation	-0.164	0.195	0.703	0.402	0.849	-0.171	0.197	0.756	0.385	0.843	-0.432	0.216	4.022	0.045	0.649
Self-Efficacy	-0.034	0.04	0.701	0.402	0.967	-0.038	0.041	0.867	0.352	0.963	-0.046	0.043	1.158	0.282	0.955
Self-Regulation	-0.027	0.044	0.377	0.539	0.973	-0.029	0.045	0.428	0.513	0.971	-0.04	0.047	0.725	0.395	0.961
Future-Time Perspective	0.052	0.034	2.291	0.13	1.053	0.045	0.036	1.578	0.209	1.046	0.037	0.038	0.984	0.321	1.038
Motivation	0.003	0.045	0.003	0.956	1.003	-0.003	0.046	0.003	0.955	0.997	0.015	0.048	0.094	0.76	1.015
CUMGPA4	21.27	17842.5	0.000	0.999	1.7E+09	21.312	17788.3	0.000	0.999	1.8E+09	21.339	16820.1	0.000	0.999	1.85E+09
CUMGPA3.49	20.931	17842.5	0.000	0.999	1.2E+09	20.966	17788.3	0.000	0.999	1.3E+09	21.134	16820.1	0.000	0.999	1.51E+09
CUMGPA2.49	19.807	17842.5	0.000	0.999	4E+08	19.863	17788.3	0.000	0.999	4.2E+08	19.985	16820.1	0.000	0.999	4.78E+08
CE201080	0.02	0.011	3.053	0.081	1.02	0.019	0.011	2.932	0.087	1.019	0.016	0.012	1.93	0.165	1.017
CE201110	0.105	0.026	16.39	0.000	1.111	0.105	0.026	16.23	0.000	1.111	0.088	0.027	10.824	0.001	1.092
CE201180	0.037	0.022	2.769	0.096	1.038	0.039	0.022	2.971	0.085	1.039	0.052	0.024	4.689	0.03*	1.054
CE201210	0.008	0.021	0.145	0.703	1.008	0.007	0.021	0.118	0.731	1.007	-0.004	0.023	0.029	0.865	0.996
AdvisingActual	0.000	0.022	0.000	0.986	1.000	0.001	0.022	0.001	0.974	1.001	-0.011	0.024	0.214	0.643	0.989
ADSLACPROGLSTYR	0.004	0.192	0.000	0.985	1.004	0.005	0.195	0.001	0.981	1.005	0.013	0.206	0.004	0.948	1.013
ADACADPLANLSTYR	0.196	0.229	0.731	0.393	1.217	0.163	0.235	0.482	0.487	1.177	0.255	0.247	1.064	0.302	1.29

CAGOALSLSTYR	-0.284	0.202	1.974	0.16	0.753	-0.338	0.224	2.276	0.131	0.713	-0.329	0.236	1.938	0.164	0.72
HSTDYSKLSTYR						0.162	0.218	0.554	0.457	1.176	0.013	0.233	0.003	0.954	1.013
TUTORLSTYR						-0.188	0.200	0.88	0.348	0.829	-0.178	0.211	0.709	0.4	0.837
CACRCHCELSTYR						-0.004	0.245	0.000	0.987	0.996	0.003	0.257	0.000	0.992	1.003
CAWKINTERLSTYR						0.174	0.256	0.461	0.497	1.19	0.111	0.274	0.165	0.685	1.117
FIINTERACTINS						0.045	0.072	0.39	0.532	1.046	0.048	0.077	0.384	0.535	1.049
WORKATALL											0.103	0.194	0.279	0.597	1.108
LOTTSCH											1.022	0.343	8.875	0.003	2.778
PartVISTA											1.711	0.278	37.804	0*	5.532

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