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# Influence of Academic Self-Efficacy on the Early Academic Success of Underrepresented Minority Nursing Students Enrolled in the First Semester of a Baccalaureate Nursing Program

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The Influence of Academic Self-Efficacy on the Early Academic Success of  
Underrepresented Minority Nursing Students Enrolled in the First Semester  
of a Baccalaureate Nursing Program

Presented in Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Philosophy of Nursing Education

Nova Southeastern University  
Connie S. Hataway  
2016

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## Abstract

The identification of reliable predictors of early academic achievement is imperative for the retention and graduation of all nursing students, and particularly underrepresented minority (URM) students. Students with a high sense of academic self-efficacy exhibit greater persistence and interest in their academic performance, a premise that led to this investigation of self-efficacy as a variable affecting early academic success among baccalaureate nursing students. The purpose of this study was to (a) to determine if a significant relationship existed between academic self-efficacy and successful progression for first semester baccalaureate nursing students in general and URM students specifically, (b) determine the predictive ability of academic self-efficacy on progression, and (c) determine if ethnicity moderates the predictive effect of self-efficacy. Self-efficacy theory, which is grounded in social cognitive theory, was the framework for this study. A cross-sectional, descriptive research design was employed utilizing the College Academic Self-Efficacy Survey (CASES). Correlational analysis and logistic regression were conducted to test the hypotheses. Demographic variables were analyzed regarding their relationship to academic self-efficacy. Although statistical analysis did not support any of the proposed hypotheses, a statistically significant relationship was demonstrated between academic self-efficacy and overall GPA, which, for this population, may have implications for retention. Age and transferring from a four-year institution were significant predictors of progression for this population. Although this study was limited by its lack of generalizability and small sample size, further research related to the effects of academic self-efficacy on academic success are warranted

## Dedication

This dissertation is dedicated first to my Lord and Savior Jesus Christ who provides the strength and wisdom to endure all things;

To my husband, Ferrell, who believes in me unconditionally. His untiring support of me through this process was and still is amazing. I couldn't have done this without him.

And finally to my children and their spouses, Angie and Chris and Drew and Felicia, who traveled this long road with me and offered unwavering encouragement.

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## **Chapter One**

### **Introduction**

#### **The Problem and the Domain of Inquiry**

Nursing practice involves psychomotor, technological, and communication skills supported by a substantial body of knowledge, which includes synthesis of information drawn from anatomy, pathophysiology, pharmacology, and theoretical models, describing the domain of our practice as nurses. Nursing coursework, therefore, is demanding and rigorous, challenging each student's early academic achievement. The identification of reliable predictors of early academic achievement is imperative to baccalaureate student nurse retention and graduation in order to meet the demand for a larger, more diversified workforce (Newton, Smith, Moore, & Magnan, 2007).

#### **Nursing Workforce and University Admissions**

Providing an adequate nursing workforce is a concern for schools of nursing, community stakeholders, and the nation. As indicated by the American Association of Colleges of Nursing (2012a), the need for nurses prepared at the baccalaureate (BSN) level will continue to rise as an overwhelming number of nurses reach retirement age, the United States (U.S.) population ages, and people live longer, requiring more nursing care. Additionally, patient acuity is also increasing and data supports that patient outcomes are positively affected when care is provided by a BSN-prepared nurse (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Estabrooks, Midodzi, Cummings, Ricker, & Giovannetti, 2005; Friese, Lake, Aiken, Silber, & Sochalski, 2008; Institute of Medicine

[IOM], 2011; Robert Wood Johnson Foundation, 2013; Tourangeau et al., 2007; Van den Heede et al., 2009). In its annual report to the U. S. Department of Health and Human Services (USDHHS), the National Advisory Council on Nurse Education and Practice (NACNEP, 2010) referred to a growing body of research that demonstrates a link between baccalaureate education of nurses and lower mortality rates. NACNEP (2010) emphasized that baccalaureate-prepared nurses are better able to recognize a deteriorating patient condition and respond accordingly before the problems become life threatening.

The ability to increase the number of applicants admitted into BSN nursing education programs and ultimately the number of graduate nurses entering the workforce is limited due to a shortage of nursing faculty, caused in part by the aging and retirement of current faculty and the increased demand for clinical placement sites. Because admissions are limited, it is vital for schools of nursing to admit the best and brightest students, ones who will persist to graduation and licensure. Finally, the high rate of attrition among nursing students is of great concern to nurse educators. The National League for Nursing (NLN, 2012) reported a national average of 20% to 42% of nursing students leave their program within the first year. These first-year students often underestimate the rigorous demands of a nursing program and overestimate their support systems, placing them at high risk for misperceptions, attrition, and/or poor academic outcomes (Jeffreys, 2004, Last & Fulbrook, 2003; Trotter & Cove, 2005).

The attrition rate is especially high among underrepresented minority students. Such attrition has a direct effect on efforts to improve the nursing workforce, despite increased URM student enrollment (Childs, Jones, Nugent, & Cook, 2004; Wells, 2003). Increasing the number of nursing students, especially URM students, who are retained

and graduate from schools of nursing is key to achieving a nursing workforce that mirrors the current population. Workforce diversity is important to strengthening patient provider relationships, reducing health care disparities, and improving the overall health of the nation (IOM, 2002).

However, in order to graduate more nurses to address the nursing shortage as well as attain racial/ethnic diversity, further attention needs to be directed to the identification of predictors of academic success (Boyle, 1986). Early identification of factors that restrict or support academic achievement and retention of all nursing students, and URM students in particular, must be a priority concern for nurse educators (Jeffreys, 1998).

### **Underrepresentation of Minority Nurses**

Despite the overall growth in the racial/ethnic diversity of the U.S. population, minorities in nursing are underrepresented. Initial findings from the 2008 Sample Survey of Registered Nurses (Health Resources and Services Administration [HRSA], 2010) indicated that although minorities constitute nearly 37% of the country's population, minority nurses make up only 16.8% of the total nursing population. According to the Department for Professional Employees of the AFL-CIO (2012), African-American registered nurses (RNs) make up 10.4%, and Latino RNs make up 5.1% of U.S. nurses. The 2012 annual report of the AACN (2012b) cited similar racial/ethnic diversity in nursing education programs for fall 2011. Of the 624 schools reporting, 10.3% of the total nursing student population was African American, 7% Latino or Hispanic, and 72% Caucasian (AACN, 2012b).

The growing diversity of the U.S. population is only one reason for increasing the number of minority nurses. C. Loftin, S. Newman, B. Dumas, Gilden, and Bond (2012)

asserted that the most compelling reason for increasing the number of minority nurses was the absence of equity associated with health care access and quality. Race and ethnicity play significant roles in the health care received even when other factors, such as health insurance and income, are considered equal (IOM, 2004). Healthy People 2010 (USDHHS, 2000) reported that certain racial groups and low-income communities lagged behind the majority of the U.S. population in nearly all health status indicators. Minority Americans are more likely to die in infancy, suffer higher incidence of chronic diseases, and have shorter life spans than majority Americans (LaViest, Gaskin, & Richard, 2011). In light of the increasing racial/ethnic diversity of the U.S. population, these findings take on a more serious urgency. Should current demographic trends continue, by 2048, it is predicted that minorities will become the majority of the U.S population, making up more than half of the country's total population (U.S. Department of State, 2008). A key component of increasing quality health care for minority populations is having a sufficient number of minority nurses with the ability and knowledge to lead in the delivery of culturally competent care for this increasing minority population.

According to the Sullivan Commission (2004a), increasing diversity in the health care workforce will result in improvement of the general health of the nation. Similarly, Saha and Shipman (2006) reported findings supporting the idea that an increase in workforce diversity may lead to better public health, principally through improved access to care for underserved populations and improved communication and relationships between patients and culturally competent health care providers.

An essential element of the solution to improve access to health care and increase health outcomes for underrepresented groups is to increase the numbers and diversity of

the health care workforce (Thacker, 2005). To accomplish this task, it is imperative that schools of nursing actively work to increase the number of admitted URM students, lower the rates of attrition among this population of students, and strengthen efforts to retain and graduate more ethnically diverse students (Stanley, Capers, & Berlin, 2007).

### **Factors Affecting Nursing Program Completion**

The current study is concerned with the early academic achievement of nursing students and seeks to identify factors that can predict early academic success and retention of underrepresented minority baccalaureate nursing students. Although the focus of the study is retention, it is important to identify factors that contribute to attrition and retention as a foundation for developing strategies that are predictably effective in increasing retention and graduation of underrepresented minority nursing students.

#### **Attrition**

Student attrition is a concern for all higher education programs, including nursing (Deary, Watson, & Hogston, 2003; Wells, 2003, 2007). Attrition can be defined as departure from all forms of higher education prior to completion of a degree or other forms of credential (Johnson, 2012) and is measured by the number of students enrolled in one year who do not complete and re-enroll in the following year. According to the 2012 annual report of the AACN (2012b), reporting data from 733 institutions, 101,060 applicants were accepted into generic baccalaureate nursing programs. During the same reporting period, the 733 institutions reported graduating 52,922 students between August 2012 and July 2011(AACN, 2012b). These numbers make it evident that many students apply and are accepted that never graduate. The class size in generic baccalaureate nursing programs dwindles from admission to graduation, which is a loss of revenue for



schools of nursing and a loss of graduate nurses for community stakeholders.

Although a certain amount of attrition is inevitable and affects all colleges and universities, the attention of educators is required to increase the number of graduates. Nowhere is this attention more certain than in schools of nursing, which are charged with graduating a workforce to meet the increasing demand for nurses who resemble the general population and who are able to provide culturally competent care (Gardner, 2005).

In 2009, Newton and Moore found that while enrollment overall had increased slightly in baccalaureate nursing programs, attrition remained as high as 50%. Morgan (2001) reported that 30% of students who enter a baccalaureate nursing education program do not graduate. Even more distressing, of this 30%, approximately 82.3% left the program in their first semester.

When considering URM students specifically, AACN (2012b) reported the percentage of URM students admitted to schools of nursing has increased, reaching 28% in 2011; however, there were high attrition rates among this group of students (Johnson, Johnson, Kim, & McKee, 2009; Mulholland, Anionwu, Atkins, Tappern, & Franks, 2008). Abdur-Rahman and Gaines (1999) maintain that the high attrition rate of minority nursing students has not been effectively addressed. The high attrition rates among nursing students, particularly among underrepresented minority students (URMS), have exacerbated nursing shortages and hindered efforts to improve nursing workforce diversity despite increased URM enrollments (Childs et al., 2004; Wells, 2003). Wells (2003) noted a paucity of recent research on nursing student attrition and even less on contributors to high nursing student attrition rates of non-Whites.

Attrition is a complex phenomenon with myriad causes, resulting in multiple consequences and is most evident among URM nursing students. The underrepresentation of URM nurses is directly linked to the large number of minority students who withdraw voluntarily or who fail to progress academically (Gardner, 2005).

### **Attrition of URM Students**

Estimates for minority nursing student attrition rates range from 15% to 85% (Gilchrist & Rector, 2007). Interestingly, as early as 1976, Bower (as cited in Boyle, 1986) reported minority attrition at 38% compared with 10% for all students, indicating minority nursing student attrition is not a new phenomenon. While numerical data is available related to minority attrition, there is a paucity of literature specific to ethnicity and causes of attrition (Pitt, Powis, Levett-Jones, & Hunter, 2012).

Although limited, some researchers have suggested that factors related to the admission process may be linked to higher attrition rates among minorities. A recurring theme is whether the predominantly cognitive admissions criteria are valid and reliable indicators of success for minority students. It is understood that factors related to attrition affect ethnic minority students differently from their Caucasian counterparts as supported by Haney, Michael, and Martois (1977) who concluded that predictors of success for Caucasians and minorities are different and cannot be interchanged successfully.

The admission process is focused on selecting applicants who are most likely to succeed. Researchers suggest that a combination of admission criteria is more effective in predicting student success than any one variable and that attention should be given to both cognitive and non-cognitive variables. Solely relying on objective tests and past

academic performance will not improve the selection process (Schmidt & MacWilliams, 2011).

Academic dismissal is an important factor in attrition, yet it is a phenomenon that has rarely been discussed in the literature. Dismissal occurs when a college student is academically unsuccessful, typically as a result of failing two or more required academic courses, and the student is not allowed to progress in an academic program or course of study (Berkovitz & O'Quin, 2007; Sorrentino, 2006). Academic dismissal of students is important to the discipline of nursing, especially regarding the future ethnic and racial composition of the nursing workforce.

As a result of this gap in the literature, little is known about the academic characteristics of nursing students who are dismissed. It is known that minority students admitted to a BSN program are less likely to graduate from their respective nursing programs than are Caucasian BSN students but whether ethnic minority attrition is due to academic dismissal has not been clearly explained (Newton & Moore, 2009). Additionally, little is known about the academic characteristics that may identify minority BSN students at high risk for academic dismissal. In comparison to Caucasian students, ethnic and racial minority students have lower pre-nursing and overall grade point averages (Fischer, 2007; Jeffreys, 2007; Martinez, Sher, Krull, & Wood, 2009).

Newton and Moore (2009) conducted a study of ethnic minority BSN students who were academically dismissed and found insight into understanding how a BSN student satisfies a nursing program's admission requirements, which often focus solely on pre-nursing grade point average (GPA; Jeffreys, 2007; Newton, Smith, & Moore, 2007), may be underprepared for the rigors of the BSN curriculum. Factors associated with

dismissal include low scholastic aptitude, specifically pre-nursing GPAs at or near the minimum requirement for admission to the BSN program; a history of taking a larger number of pre-requisite courses at academic institutions (e.g., community colleges) other than the BSN program parent institution; and a pattern of repeating prerequisite courses, especially the core sciences (Newton & Moore, 2009).

A significant finding of Newton and Moore's (2009) study was that among ethnic minority BSN students who experienced academic dismissal, 42% had taken none of their prerequisite credits at the BSN programs' parent institution. Rather, 79% of these same students took more than half of the prerequisite courses at a community college (Newton & Moore, 2009). Although academically successful at the community college level, when transferring to a BSN program, the dismissed students experienced a drop in GPA that had a devastating effect on their progression in the BSN program. This finding provides preliminary evidence that transfer shock, a phenomenon involving various social adjustments that is often manifested by a drop in students' grades, may exist within baccalaureate nursing education (Newton, 2008). Transfer shock has the potential to contribute to ethnic minority BSN students' academic dismissal (Newton & Moore, 2009).

Similar findings have been reported for associate degree nursing students. Jeffreys (2007) found that among associate degree nursing students, 9% experienced "first semester failure attrition," a form of academic dismissal that occurs when a student fails one or more courses during the first semester of the nursing curriculum and who are then not re-admitted to the program. Jeffreys (2007) identified associate degree students who experienced academic dismissal had lower mean over all pre-nursing GPAs ( $M =$

2.96) than did the successful students ( $M = 3.10$ ) and that dismissed students tended to transfer in larger numbers of pre-requisite credits ( $M = 33.82$ ) than successful students ( $M = 18.31$ ).

Factors other than those attributed to academics also play a part in the attrition of ethnic minority nursing students. Boyle (1986) concluded that cognitive indicators alone cannot adequately predict attrition. This conclusion is supported by the earlier work of Schwirian (1976) who asserted that less than 50% of attrition is related to academic difficulty.

In a recent literature review, articles published between 1996 and 2011 were evaluated, and C. Loftin, S. Newman, B. Dumas, et al. (2012) organized perceived barriers to success for minority nursing students into themes, according to the concepts of the adapted model of institutional support. The themes were financial; emotional and moral support, including isolation, loneliness, discrimination, and family issues; advising and academic support; mentoring; professional socialization; and technical support. These themes represented barriers that minority students reported experiencing during their undergraduate nursing education. These barriers were in addition to typical challenges faced by majority nursing students.

The findings from C. Loftin, S. Newman, B. Dumas, et al. (2012) indicated that the successful completion of a nursing degree is complicated with numerous barriers to overcome. Interestingly, none of the studies included participants who had been unsuccessful or left their nursing program prior to graduation. Instead, they focused only on barriers faced by successful students. URM students who are not able to persist to program completion may have dissimilar needs or additional barriers to success that were

not identified by students that were successful. C. Loftin, S. Newman, B. Dumas, et al. (2012) concluded that locating unsuccessful students for participation in future studies would be difficult and may be a precipitating factor for why there is so little information related to URM attrition.

In order to stem the tide of students failing out of programs of nursing, the battle against rising student attrition rates must rely to some extent on universities, specifically schools of nursing, to facilitate and support students' progress to graduation. Educators must find methods to improve the admission process, identify at-risk students early, and design proven interventions to assure student success. Identification of factors that affect students' progression, performance, and completion is instrumental in the planning and development of programs that ensure quality outcomes for students, which in turn leads to retention and graduation (Boyle, 1986; Pitt et al., 2012). It is important to determine factors that support retention among students, specifically URM students, in an effort to learn more about the reasons why minority students are underrepresented in programs of nursing and the profession.

### **Retention**

Retention can be defined as program retention or course retention, and within nursing education, the term refers to cohorts of students who start and complete a nursing program or a nursing course (Porter, 2008). For the purposes of the current study, retention is defined as successful completion of coursework necessary to progress. Once qualified students are admitted, the challenge is how to retain them. Successful student retention relies on more than identifying and admitting students who will persist and progress to graduation. A second, equally important aspect of retention, is identifying

admitted students who are struggling and at risk of attrition.

Despite adversities faced by undergraduate nursing students, some will persist while others do not (Jeffreys, 2012). As discussed, there is the expectation that an undetermined percentage of students will leave the program, despite the intervention of faculty and administrators. Some of these students decide nursing is not for them. Life events interfere and disrupt their education, and others will be dismissed or fail to progress due to poor academics. However, there is another group of students that will choose to persist. According to Tinto (1993), retention in programs of nursing is influenced by two groups of students: one group who will persist by simply electing to stay in the program and a second group who will work to attain and maintain a predetermined level of academic performance. Nurse educators can influence both these groups of students in the classroom by providing functional and psychological support. Students who receive both types of support from within the nursing program are more likely to persist and succeed on the National Council Licensure Exam (Ramberg, 2007; Rees, 2006).

### **Retention of Minority Students**

Research on retention of minority students in colleges and universities places more emphasis on recruitment than retention (Childs et al., 2004). Recruitment of qualified applicants poses very little challenge. In reality there are more applicants than seats available (AACN, 2009). However, the targeted recruitment and retention of minority students remains a high priority for professional nursing programs (AACN, 2001).

The National Advisory Council on Nurse Education and Practice (2000)

addressed issues related to the underrepresentation of racial and ethnic minorities in nursing education and practice, concluding that the majority of research that has been conducted is qualitative and focused on non-cognitive barriers that affect minority nursing graduation rates. NACNEP asserted that more research must be carried out to better understand the factors that affect the retention and graduation of minority nursing students and stressed that it is unacceptable for schools of nursing to continue to accept homogenous student cohorts.

Factors that predict retention among the general college student population differ for ethnically diverse students and Caucasian students, suggesting that for ethnically diverse students, non-cognitive variables may be more of an issue than cognitive variables (Palmer & Young, 2009). Palmer and Young (2009) reported that self-confidence, realistic appraisal of academic skills, and familiarity with the academic environment are more predictive of college retention for African American students than for Caucasian students.

Evans (2013) explored the predictive value of certain non-cognitive variables for the intention of minority baccalaureate nursing students to complete their degrees. Using regression analysis, Evans found that the non-cognitive variables of age, race, gender, academic development, faculty interaction, hours worked, and faculty concern accounted for 29% of the variation in student intention to complete their degree. Additionally, academic development, peer interaction, faculty concern, and limited employment were positively associated with retaining students in general, suggesting schools of nursing should focus retention efforts in these areas (Evans, 2013). Recommendations were made for institutions and schools of nursing to create programs for both pre-nursing and



pre-licensure students that focus on factors needed to be successful. These factors included the following:

1. Creating financial aid and/or grant opportunities to decrease the time needed to work while going to school.
2. Recruiting well qualified minority faculty and staff to serve as mentors for minority students.
3. Providing occasions for students to socialize with faculty outside of the classroom environment.
4. Encouraging the development of interpersonal relationships with peer cohort members.
5. Reevaluating admission criteria to determine if minority students are placed at a disadvantage. (Evans, 2013)

Although intention and retention are not synonymous, Bean (1982) emphasized the importance of using student intention to stay or leave to predict enrollment staying and leaving behaviors. However, the graduation rates of minority nursing students and their dismal representation in the nursing profession imply that intention alone is not sufficient to ensure program completion. If minority representation in the nursing profession is to increase, questions need to be raised about variables other than intention to complete the program.

Among those students who meet admission qualifications, the challenge facing nurse educators is to understand why some students persist and succeed while others are academically unsuccessful. Are there additional variables in nursing school admission processes and/or the overall program experience that should be examined in an effort to

predict student retention? One cognitive factor that may prove promising in understanding student persistence is self-efficacy.

### **Self-Efficacy**

The concept of self-efficacy is derived from the psychological research of Albert Bandura. Albert Bandura introduced self-efficacy in 1977 as a component of social cognitive theory, which had its beginnings in a theory of social learning. Since its introduction, it has been discussed at length in the literature investigating academic success (Chemers, Hu, & Garcia, 2001; Gore, 2006; Majer, 2009; Vuong, Brown-Welty, & Tracz, 2010). According to Bandura's self-efficacy theory, behavior is dependent on an individual's self-efficacy beliefs, which determine the behaviors one chooses to perform, the amount of effort one will expend on an activity, how long one will persevere when confronting obstacles, and how resilient one will prove in the face of adverse situations (Bandura, 1977). Bandura proposed two types of expectancies that influence behavior: efficacy expectations, a belief about one's ability to perform a behavior successfully, and outcome expectancies, a belief about the likelihood of the behavior leading to a specific outcome. These behaviors can be applied to student persistence in nursing education. The decision to apply for admission to a nursing program is determined by whether the potential student believes that the outcome, graduation from the program, is worth pursuing and is achievable. Once admitted, the decision to persist until graduation is influenced by the student's beliefs of whether success is possible (efficacy expectations) and whether the benefits of continuing (outcome expectancies) outweigh the costs involved on the path to completion (Shelton, 2012). In other words, the students' belief in their capabilities (self-efficacy) must be strong enough to support

their choice of behavior, effort on tasks, perseverance, and resilience to the point of persistence to graduation.

### **Self-Efficacy and Its Influence on Retention**

Self-efficacy is a significant factor influencing an individual's actions, performance, and persistence. Self-efficacy is a cognitive factor that has been strongly linked to academic motivation, level of effort, and persistence (Zimmerman, 2000). Likewise, academic self-efficacy has proven to be a predictor of college persistence (Gore, 2006; Pajares, 1996; Peters, 2005). In Jeffrey's (2012) nursing undergraduate retention and success model, self-efficacy is proposed as an important factor, influencing retention among non-traditional students. Elias and Loomis (2000) investigated the effect of academic self-efficacy in predicting university persistence and found the higher or stronger a person's self-efficacy, the more likely it is that he or she will persist.

### **Self-Efficacy and Its Influence on GPA**

Elias and Loomis (2000) also examined the relationship between academic self-efficacy and university major persistence for a variety of undergraduate academic majors. Interestingly, positive associations were found between GPA and general course efficacy scores,  $r(96) = 0.52, p = .01$ , and milestone efficacy scores,  $r(96) = 0.63, p = .01$ . Although a causal relationship cannot be inferred from a correlation coefficient, findings indicated that students were more likely to have a higher GPA when they believed in their ability to succeed at completing most academic tasks. This finding is significant in light of Bandura's self-efficacy theory that suggests self-efficacy can be enhanced. Elias and Loomis (2000) concluded that future experimental studies should be conducted to determine if their findings could be replicated and if and how efficacy beliefs can be

manipulated such that academic performance would improve. Finally, Chemers et al. (2001) found that students' self-efficacy had predictive powers of expectations, performance, and success.

### **Self-Efficacy and Student Success**

Researchers have demonstrated that students with higher levels of self-efficacy are more likely to be successful in their academic pursuits (Chemers et al., 2001). Self-efficacy and learning strategies have also been linked with academic performance (Chemers et al., 2001; Pintrich & Schrauben, 1992). For these reasons and others, it has been suggested that institutions can foster student success and subsequent retention as well as improve prediction of academic outcomes in college by focusing their attention on academic preparation and factors, such as self-efficacy (Lampert, 2007). However, there are gaps in knowledge related to the relationship and predictive ability of academic self-efficacy and the successful progression of URM nursing students.

### **Self-Efficacy and URM Students**

Although some of the available research findings indicated that minority students held lower perceptions of competence than nonminority students, such research has been confounded by socioeconomic status in which middle-class Caucasian children were compared with lower class minority children (Graham, 1994; Pintrich & Schunk, 1996). In conducting a review of published literature on African-American students and their achievement motivation, Graham (1994) found little support for the belief that African Americans have lower perceptions of competence than do Caucasian students when socioeconomic status is controlled. African Americans often maintain a sense of optimism even in the face of social and economic disadvantage (Graham, 1994). Graham

also found that even though the expectations of African Americans are high, their performances often fall short of expectations (Schunk & Pajares, 2001). Episodes of incongruence such as these are often found in self-efficacy research. It is not known if this incongruence is significantly different from that found in non-minorities. Further research is needed (Schunk & Pajares, 2001). It is known is that self-efficacy can be enhanced using the appropriate interventions.

### **Problem Statement**

Despite meeting admission criteria, baccalaureate nursing students often experience academic difficulties (Glossop, 2001; Symes, Tart, & Travis 2005), which is particularly true of URM nursing students (Johnson et al., 2009; Mulholland et al., 2008). It has long been known that students with a high sense of academic self-efficacy exhibit greater persistence and an inherent interest in their academic learning and performance (Schunk, 1984, 1989). Therefore, investigation into self-efficacy as a variable affecting the successful completion of the first semester of a baccalaureate nursing program, and by URM students in particular, warrants investigation.

### **Purpose of the Study**

The purpose of this study was threefold. The first purpose was to determine if a significant relationship existed between academic self-efficacy and successful progression for first semester baccalaureate nursing students in general and specifically among URM students ( $H_1$ ). The second purpose was to determine the extent academic self-efficacy is a predictor of successful progression when controlling for traditional predictors of success, such as overall GPA, pre-nursing GPA, and prerequisite science course grades ( $H_2$ ). The third purpose was to determine whether the association between

academic self-efficacy and successful progression was moderated by ethnicity (H3). Academic self-efficacy might affect general nursing students and URM students in different ways. For example, increase in academic self-efficacy may promote academic success more significantly for URM students than others. Demographic variables collected for analysis included race/ethnicity, gender, age, and transfer or native university status.

### **Research Hypotheses**

#### **Hypothesis 1**

There is a positive association between college academic self-efficacy scores and successful progression for first semester baccalaureate nursing students while adjusting for demographic variables.

#### **Hypothesis 2**

Academic self-efficacy scores of first semester baccalaureate nursing students predict progression to the second semester when controlling for demographic variables as well as the traditional predictive factors of overall GPA, pre-nursing GPA, and prerequisite science course grades.

#### **Hypothesis 3**

The predictive effect of academic self-efficacy on successful progression to second semester is moderated by ethnicity, such as there is an interaction between academic self-efficacy and ethnicity. The effect of academic self-efficacy might differ for general nursing students and for URM students.

### **Significance of the Study**

The current study will contribute to the body of knowledge related to the

construct of academic self-efficacy and its usefulness in predicting first semester success among baccalaureate nursing students, specifically URM students, as a method to reduce student attrition. The findings of this study may serve as a foundation for developing effective intervention programming for retention. Findings may also direct attention to the need to change or augment admission criteria. The addition of intervention programming and changes in admission criteria may lead to a decrease in attrition, an increase in student success, and ultimately an increase in the number of nursing school graduates and increased diversity of the nursing workforce.

### **Nursing Education**

The data from the current study will be significant in determining how the construct of academic self-efficacy affects student success and retention. This knowledge can also be useful in the admission process at a time when qualified applicants are increasingly being turned away from schools of nursing. When a student decides to withdraw, it leaves a costly vacant seat that could have been filled by a student with the cognitive attributes known to lead to success and ultimately retention. Adding the characteristic of high academic self-efficacy, which has been shown to lead to success, into the admission process may result in graduating more nurses and decreasing the cost of attrition. Findings may also prove beneficial in developing programming that is helpful in intervening to prevent attrition of currently enrolled students. Data from this study may also help to explain the high attrition rate of URM nursing students, leading to efforts to stem the flow of minority students withdrawing, failing, and being dismissed from nursing programs, which in turn would lead to a more diverse nursing workforce. Finally, knowledge of the consequences of academic self-efficacy may also enable the

nurse educator to focus attention on the effects of students' perceptions when developing classroom structure and teaching and learning strategies (Robb, 2012)

### **Nursing Practice**

The study is significant to the nursing profession in that it provides information that is useful to schools of nursing in retaining students through completion of the program of study. Retention would increase the number of available nurses and add to the diversity of the current workforce in an effort to mirror the population of our nation, which in turn would lead to greater access to care for underserved populations and better interactions between patients and health professionals. Increasing students' perceived self-efficacy will help to narrow the theory-practice gap (Kuiper, Murdock, & Grant, 2010; Kuiper & Pesut, 2004).

### **Nursing Research**

Although student success and its relationship to retention has been widely studied, there is a paucity of research related to the cognitive factor of academic self-efficacy and its relationship to nursing student success and retention. Increasing this knowledge base is important for structuring programming, improving admission practices, and increasing student success. Educational research related to non-academic cognitive factors, such as self-efficacy, would provide insight into the multifaceted process of successful completion of a nursing program.

### **Philosophical Underpinnings**

Self-efficacy is best understood in the context of social cognitive theory. This theory is an approach to understanding human cognition, action, motivation, and emotion that assumes that we are active shapers of our environments rather than simply passive



reactors to our environments (Bandura, 1986, 1997).

Albert Bandura's (1986) social cognitive theory is considered by many intellectuals to exemplify a behaviorist or neo-behaviorist view of human behavior. However, there are scholars who contend Bandura's type of social cognition represents a social constructivist view of human learning and development (Simon, 2001).

To understand the nature of constructivist theory and determine where and how social cognitive theory fits within it, it is necessary to briefly describe the history of epistemology, the branch of philosophy that deals with the nature of knowledge (Dennick, 2008).

Two key epistemological schools of thought can be traced back to the Greeks. Plato taught that true knowledge was located in and could be created by the rational, thinking mind. He proposed that the human mind included innate ideal "forms" of knowledge and that the goal of humanity was to understand these ideal and universal forms in areas, such as beauty, truth, goodness, and logical reasoning. Reason was seen as a higher faculty than emotions or feelings. By contrast, sensory experiences were viewed as an area of error, and the uncertainty and knowledge derived from sensory experiences was not trustworthy. The idea that our minds contain innate knowledge and that new knowledge can be created by means of reason alone became known as rationalism (Dennick, 2008).

The other school of thought, empiricism, can be traced back to Aristotle and his interest in the natural world. He emphasized the senses as the ultimate origin of knowledge (Dennick, 2008).

These two epistemological theories drew notice when coming into conflict in the 17<sup>th</sup> century at a time when the Christian world view in western civilization started to break down and fragment due in part to the discoveries of Kepler, Copernicus, Galileo, and ultimately Newton. During this period, known as the Enlightenment, empiricist philosophers, such as Locke and Hume, asserted that the mind was a “tabula rasa,” a blank slate written on by sensory experience. On the other hand, empiricists avowed the idea that there was nothing in the mind that was not previously presented to the senses. Empiricists believed thinking and reasoning were simply a matter of connecting and relating ideas and thoughts that in the final analysis came from sensory experience. Empiricists, in contrast to the rationalists, were comfortable with the idea that the world of sensory experience was unsure. They actively supported the idea that knowledge was uncertain and provisional and encouraged an attitude of skepticism (Dennick, 2008).

On the other hand, rationalist philosophers, such as Descartes, Leibniz, and Spinoza, reiterated the Platonic idea that the human mind was an inherent source of reason that could generate knowledge by thought alone without the need for any sensory input. They were supported in this position by their belief that knowledge could be obtained through the use of reason, logic, and mathematics. They assumed that because the world was God’s creation that God’s laws would be fixed in our minds, and reason alone allowed understanding of God’s world. According to Plato’s teachings, rational knowledge was considered to have higher importance than knowledge derived from the senses because it was knowledge of purity and truth (Dennick, 2008).

In the 18th century, it was the philosopher Immanuel Kant who combined these two epistemological positions (Kant, 1983 as cited in Dennick, 2008). Kant contended

that combining these two processes could create knowledge. He proposed our knowledge of the world is created from sensory experience filtered through and by the rational processes of the mind. Kant became known as the father of modern constructivism based on his assertion that there is an interaction between reason and sensory experience to build knowledge (Dennick, 2008).

In the 19th and early 20th centuries, Charles Pierce, William James, and John Dewey all made significant contributions to constructivist thought (Buchler, 1955 as cited in Dennick, 2008; Dewey, 1938 as cited in Dennick, 2008; James, 1901 as cited in Dennick, 2008). However, the largest contribution came from child psychologists Piaget and Vygotsky who developed a large body of empirical and theoretical work supporting the constructivist position (Dennick, 2008).

Piaget's main assertion was that the human mind constructed and internalized a model of how the world works through experience and that this was an inherent, biological, adaptive process. The work of Vygotsky complements and supports much of Piaget's thinking although there are some significant differences. Vygotsky's important contribution to constructivist learning theory was to emphasize that learning is not just an individual event, it is also a social and cultural process mediated through a culture's symbols and language; he proposed that social interaction and the role of teachers is of vital importance to learning. Bandura's social cognitive theory (Bandura, 1977) can be traced directly to the work of Vygotsky and his stress on the social, contextual, and constructivist nature of learning (Dennick, 2008). In summary, within the social cognitive view, people are neither driven by inner forces nor automatically shaped and controlled by external stimuli, which conforms to the constructivist approach.

## Theoretical Framework

Self-efficacy is grounded in Bandura's larger theoretical framework of social cognitive theory, which suggests that human achievement depends on interactions among the individual's behavior, environment, and cognitive factors (e.g., thoughts and beliefs; Bandura, 1986, 1997). Social cognitive theory provides a useful framework for understanding how determinants of behavior operate together to explain actions (Bandura, 1977). Self-efficacy originated from Bandura's psychological research in a therapeutic context and was introduced as a key component in social cognitive theory. Bandura (1997) initially presented the concept of self-efficacy as a theoretical framework to explain and predict psychological changes attained by different treatment modalities.

Bandura (1997) defined perceived self-efficacy as belief in one's abilities to plan and implement the necessary actions required to produce a given outcome. According to Bandura (1977, 1986), individuals with a strong sense of perceived self-efficacy in relation to a particular task or goal think, feel, and act differently from those who see themselves as inefficacious. According to the theory, behavior is dependent on an individual's self-efficacy beliefs, which determine which behaviors one chooses to perform, the amount of effort one will expend on an activity, how long one will persevere when confronting obstacles, and how resilient one will prove in the face of adverse situations (Bandura, 1977).

Bandura (1977) proposed two types of expectancies that influence behavior: efficacy expectations and outcome expectancies. Bandura defined outcome expectancy as an individual's estimate that a given behavior will lead to desired outcomes. In contrast, efficacy expectation is the confidence that one can successfully perform the

behavior to produce the desired outcomes (Bandura, 1977). Hence, behavior results from an individual's belief that he or she is able to complete a task (self-efficacy) combined with a belief that the action of completing the task will lead to a desired outcome (outcome expectancy).

Bandura (1986, 1995, 1997) posited that expectations of personal efficacy are derived from four sources of information. Individuals acquire information to appraise their self-efficacy from their actual performances, their vicarious experiences, the persuasions they receive from others, and their physiological responses. Performance accomplishments are the primary contributing source of self-efficacy and refer to an individual's history of successes and failures (Bandura, 1986, 1997). These experiences with success or failure are internalized and have a direct influence on self-efficacy. Those individuals who feel more efficacious toward learning or a specific task participate more willingly, work harder, persist longer when facing difficulties, and achieve at higher levels than those who doubt their capabilities for learning or a specific task. Performance accomplishments provide evidence of whether one has the capability to be successful. As expected, successful experiences encourage confidence and a strong sense of self-efficacy while failing experiences decrease one's sense of self-efficacy (Bandura 1986, 1997).

While personal performances are the primary influence on perceived self-efficacy, individuals can also be influenced through vicarious experiences (Bandura, 1994). Observing others succeed in achieving a goal raises the observer's beliefs that he or she can also accomplish the same task (Bandura, 1994).

Several researchers have supported that culturally diverse nursing students' self-

efficacy perceptions were significantly influenced by educational and health care experiences (Jefferys, 2010; Jefferys & Smodlaka, 1999). For example, in one longitudinal study, self-efficacy perceptions for inefficacious students were raised to medium (strong) levels, and self-efficacy perceptions for supremely efficacious students were lowered to medium levels, following an educational experience that integrated specific skills (Jeffreys & Smodlaka, 1999). Novice students had overall lower self-efficacy perceptions while the more experienced students had overall higher self-efficacy perceptions. Ethnic/racial group identity was statistically insignificant, suggesting that self-efficacy measures can be designed to capture the effect of educational experiences across culturally diverse groups (Jeffreys, 2010; Jeffreys & Smodlaka, 1999)

An individual's belief in his or her capability to perform successfully can also be influenced by verbal persuasion. In other words, if one is persuaded to believe one possesses the ability to master a task successfully, one is more likely to apply greater effort in attaining the goal. Finally, emotional arousal or physiological states are also a contributing source of self-efficacy. Fear of failure, anxiety, and mood can all have a positive or negative outcome effect. Of the four sources that contribute to self-efficacy, emotional arousal is the least powerful and should be given less consideration (Bandura, 1986).

The following are antecedents of self-efficacy and must take place prior to developing self-efficacy for a particular behavior. First, an event occurs. Next, the individual reacts to the event and interprets which behaviors are required to reach the desired outcome. Finally, the individual forms a judgment of his or her capabilities to perform the required behaviors (Bandura, 1982, 1994).

The expected outcome, self-efficacy, is dependent on the individual's perceptions of the event, the behavior required, and judgment of his or her capabilities of performing the identified behavior (Bandura, 1982, 1994). One of the following occurs. The individual decides to perform or not perform the behavior, or the individual performs the event after verbal persuasion (Zulkosky, 2009).

The principles of self-efficacy have been tested in a variety of disciplines and settings. Self-efficacy has been the focus of studies in health behavior, nutrition (Trachan & Brawley, 2009), childhood obesity (Whittemore, Jeon, & Grey, 2013), diabetic self-care (Lee et al., 2011), depression (Gordon, Tonge, & Melvi, 2012), athletic performance (Hepler & Feltz, 2012), and smoking behaviors (Cupertino et al., 2012). In the last 2 decades, self-efficacy beliefs have received increased attention in educational research in the areas of academic motivation, learning, and achievement (Pajares, 1996; Schunk, 1991; Zimmerman, 2000.), self-regulated learning (Klassen, 2010; Usher & Pajares, 2008) and academic performance (Gore, 2006). Choi (2005) reported a positive relationship existed between self-efficacy and academic performance in a sample of 230 college students enrolled in general education courses. Research by Blackman, Hall, and Darmawan (2007) indicated students' self-rated self-efficacy levels predicted academic achievement. The researchers found that individuals with a strong degree of perceived self-efficacy were able to earn greater academic success through identification and application of behaviors needed for goal attainment (Blackman et al., 2007). Gore (2006) and Ferla, Valcke, and Schuyten (2009) agreed that a strong sense of self-efficacy influences a student's ability to take on more challenging tasks, expend greater effort, persist longer in the face of opposition, better self-regulate the learning process, and

apply more cognitive strategies to their learning. The concept of self-efficacy has also been used in research related to nursing education (Burke & Mancuso, 2012; Harvey & McMurray, 1994; Robb, 2012; Townsend & Scanlan, 2011).

### **Academic Self-Efficacy**

Academic self-efficacy is grounded in self-efficacy theory. Self-efficacy theory supports the belief that academic self-efficacy may fluctuate in strength as a result of task difficulty. Some individuals may trust they are most efficacious on difficult tasks while others believe they are most efficacious on easier tasks (McGrew, 2008). Self-efficacy is viewed as a situational rather than stable trait such that students differentiate between their self-efficacy across different academic domains (McGrew, 2008).

Derived from Banduras efficacy and outcomes expectations, two general categories of academic expectancy beliefs have been postulated. Academic outcome expectations are a student's beliefs that specific behaviors will lead to certain outcomes. For example, "if I study a little every day, I will improve my exam grades." Academic efficacy expectations are a student's beliefs in his or her ability to perform a certain outcome. An example would be "I am confident I can study hard for this exam." The difference in these forms of belief is parallel to perceived self-efficacy. The one is expectation that a certain behavior produces a certain outcome (outcome expectancies), and the other is a belief that one can or cannot perform the behavior necessary to achieve the outcome (efficacy expectation; McGrew, 2008).

In the current study, self-efficacy theory formed the framework for research related to identifying a significant and predictive relationship between academic self-efficacy, successful academic performance, and persistence among underrepresented

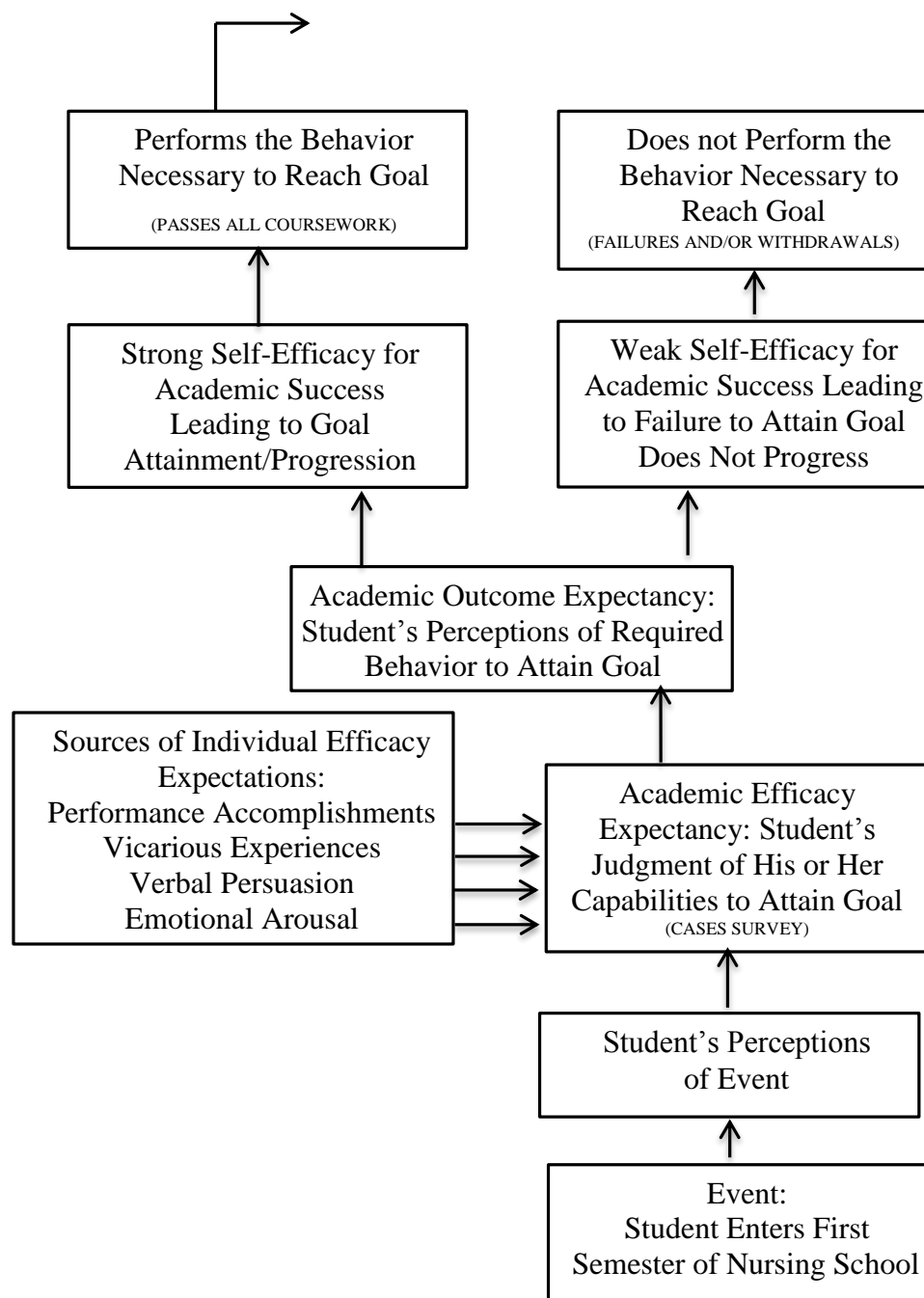


minority students in a baccalaureate nursing program. Bandura (1977) proposed that expectations alone would not generate desired performance. There are many things that people can do with certainty of success that they choose not to perform because they have no incentives to do so. Given appropriate skills and adequate incentives, however, efficacy expectations are a major determinant of 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 (Bandura, 1977). The current study is based on the premise that URM students have the incentives to perform successfully during their first semester in a nursing program. No one enters a nursing program to fail; the students' incentive (goal) is to progress in the nursing program. The incentive to progress will result in behavior based on an individual's belief that he or she is able to complete a task (successful completion of the first semester in a nursing program, an efficacy expectation) combined with a belief that the action of completing the task will lead to a desired outcome (progression/retention in the nursing program, an outcome expectancy). Self-efficacy has demonstrated a positive impact on success by influencing effort, persistence, and perseverance (Bandura & Schunk, 1981).

According to Bandura (1977, 1986), individuals with a resilient sense of efficacy tend to view difficult tasks as challenges to be surmounted instead of problems to be avoided. Highly efficacious individuals are also more likely to perceive success and failure differently from those with lower self-efficacy. The former tend to ascribe failure to insufficient effort resulting in the expenditure of more energy and dedication in an effort to overcome failure and attain their goals. Whereas, individuals with low self-efficacy tend to concentrate on their failures and self-doubts, thus impeding their

motivation, commitment, and persistence in attaining their goals (McLaughlin, Moutray, & Muldoon, 2007). Which leads one to postulate that students with high self-efficacy would be successful in attaining their goal of progression, whereas those with lower self-efficacy would concentrate on their failures and perhaps not be as successful in completing the first semester.

Goal Met:  
Progression from 1<sup>st</sup> to 2<sup>nd</sup>  
semester



*Figure 1.* Conceptual model of academic self-efficacy applied to early academic success in nursing.

### Theoretical Assumption

A significant assumption of social cognitive theory is that personal determinants, such as self-reflection, do not exist unconsciously within individuals. People can

consciously change and develop their cognitive functioning. This assumption is important to the construct of self-efficacy in that it can also be changed or improved. From the perspective of social cognitive theory, people are capable of influencing their own motivation and behavior, according to a model of triadic reciprocity in which personal determinants, such as self-efficacy, environmental conditions, and behavior, are mutually interactive influences (Center for Positive Practices, n.d.).

Other assumptions linked with self-efficacy are that it is highly individualized, subjective, task specific, temporal or momentary, perceived, control related to an outcome, and as mentioned in the preceding paragraph, based on cognitive processes that require consciousness.

### **Definition of Terms**

#### **Academic Self-Efficacy**

**Conceptual.** Academic self-efficacy is defined as an individual's confidence in his or her ability to successfully perform given academic tasks at designated levels (McGrew, 2008).

**Operational.** The College Academic Self-Efficacy Scale (see Appendix A; Owen & Froman, 1988), consists of 33 items representing typical academic behaviors on which respondents rate their degree of confidence in completing routine and frequent academic behaviors.

#### **Academic Success**

**Conceptual.** Academic success, for the purpose of this study, is defined as meeting the progression policy as outline in the school of nursing handbook for the participating nursing school: achieving a grade of "C" or higher in didactic coursework

and a grade of passing in all lab, skills, or practicum coursework in the first semester of the nursing program.

**Operational.** Successful progression from first to second semester in the first year of enrollment in a baccalaureate nursing program.

### **Failure to Progress**

**Conceptual.** Unsuccessful, for the purpose of this study, is defined as failure to meet the progression policy as outlined in the school of nursing handbook for the participating nursing school. The policy states two course failures, or two course withdrawals, or one withdrawal and one failure results in ineligibility to progress in the nursing program as outlined in the individual student's program of study, leading to dismissal from the school of nursing.

**Operational.** Failure to progress from first to second semester in the first year of enrollment in a baccalaureate nursing program.

### **Underrepresented Minority**

**Conceptual.** The U.S. Census Bureau (2010) categorizes the following groups as minorities: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Hispanic or Latino. For respondents unable to identify with any of these categories, inclusion of a sixth category, Some Other Race, was added in 2000. Respondents are also allowed to identify with more than one race.

**Operational.** The current study includes a demographic questionnaire, asking participants to identify their race/ethnicity as White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander,

Hispanic/Latino, other, and biracial.

### **Chapter Summary**

In summary, researchers have established that URM nursing student attrition rates are high (Johnson et al., 2009; Mulholland et al., 2008). Despite limited research, Taxis (2002) found minority students hold lower self-efficacy beliefs than nonminority students. Researchers have demonstrated that students with a strong sense of self-efficacy are more likely to be successful in their academic pursuits (Chemers et al., 2001). Likewise, academic self-efficacy has also been determined to be a predictor of college persistence (Gore, 2006; Pajares, 1996; Peters, 2005,). Research, applying self-efficacy to nursing education and minority nursing student persistence, is limited, indicating a need for further inquiry. Gaining insight into the concept of academic self-efficacy in relationship to students enrolled in nursing programs may prove useful in predicting first semester success among baccalaureate nursing students as a method to reduce student attrition. Study findings may be helpful in developing effective intervention programming to potentially increase retention. Data may also indicate that the addition of nonacademic cognitive factors, such as self-efficacy, add a missing dimension to admission criteria, leading to a decrease in attrition, an increase in student success, and ultimately an increase in the number of nursing school graduates.

## **Chapter Two**

### **Literature Review**

In order to determine the process that best increases the number of nursing students who are retained and graduated from schools of nursing, research must focus on the identification of predictors of academic success (Boyle, 1986). Early identification of factors that restrict or support academic achievement and retention of all nursing students, and URM students specifically, must be a priority concern for nurse educators (Jeffreys, 1998).

The review of literature for this study involves the appraisal and synthesis of literature relevant to selected cognitive and demographic variables and their influence on the early academic success of nursing students. The focus was narrowed to specifically review the influence of these independent variables on the academic success of underrepresented minority nursing students. The independent cognitive variables include pre-nursing GPA, pre-nursing science GPA, overall GPA, and academic self-efficacy. The demographic variables of interest are age, gender, ethnicity, and transfer or native institution status. The variable of transfer or native institution status can have influence on the cognitive variables of interest but is not truly cognitive in nature and was considered a demographic variable for the purposes of this study.

Various dependent variables have been studied in assorted combinations by researchers when examining the success and retention of nursing students. The variables often characterize a range of time periods during the nursing program, varying from first semester to program completion to licensure. The dependent variable of interest in the

proposed study is first semester academic success.

Academic success has been operationalized along the same lines by which it has been measured: grades in specific nursing courses, overall GPA at the end of a specific semester or year, cumulative GPA, graduation from a nursing program, and/or initial success on the RN licensure exam. Academic success for the purpose of this study is operationalized as progression from first to second semester (retention). Notably, the majority of studies on baccalaureate nursing student success have examined the dependent variable of passing the National Licensure Examination for Registered Nurses (NCLEX-RN; Abbott, Schwartz, Hercinger, Miller, & Foyt, 2008; Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Bondmass, Moonie, & Kowalski, 2008; Campbell & Dickson, 1996; Carrick, 2011; Crow, Handley, Morrison, & Shelton, 2004; Cunningham, Stacciarini, & Towle, 2004; Daley, Kirkpatrick, Frazier, Chung, & Moser, 2003; Haas, Nugent, & Rule, 2004; Jeffreys, 2007; Newton & Moore, 2009; Seldomridge & Dibartolo, 2004; Simon, McGinnis, & Krauss, 2013; Uyehara, Magnussen, Itano, & Zhang, 2007). However, measuring student success following licensure does nothing to decrease attrition or guarantee retention. Research findings indicated attrition rates are highest during the first year, and intervention needs to occur early if it is to increase the likelihood of nursing student success (Jeffreys, 2004; Ehrenfield, Rotenberg, Sharon, & Bergman, 1997). These findings support early identification of at risk students as key to providing interventions leading to an increase the number of nursing graduates.

First semester students are at high risk for attrition and/or poor academic outcomes (Fleming & McKee, 2005; Jeffreys, 1993, 1998, 2004; Last & Fulbrook, 2003; Trotter & Cove, 2005). Current research related to early academic success during this



critical juncture in a nursing program is limited, making a notable gap in the literature (Newton et al., 2007; Newton, Smith, Moore, & Magnan, 2007; Potolsky, Cohen, & Saylor, 2003).

### **Attrition**

Attrition in nursing education is defined as a loss of students from a nursing program, resulting in a difference between the numbers of students beginning the program and the numbers of students finishing the program (Urwin et al., 2010). The goal of all nursing programs is to reduce attrition and increase retention. It would be remiss to only investigate and measure retention rates. Understanding attrition and determining its causes can lead to interventions to decrease the rate of attrition, increase retention and the number of students that progress to program completion. Intervening with appropriate programing, revision of admission criteria, and institutional involvement can decrease attrition and in turn increase retention (Boyle, 1986; Jeffreys, 1998; Pitt et al., 2012).

### **Defining Undergraduate Student Attrition**

Using Tinto's (1975) student integration model, the basic elements that tend to define student attrition include characteristics of students that appear to affect persistence and attrition, programmatic characteristics associated with student dropout, and characteristics related to student interactions with the program.

### **Student Characteristics**

Hirschy, Bremer, and Castellano (2011) conducted a study on success in community colleges and categorized student characteristics as stable or malleable. The more malleable student characteristics were those that could be addressed by the program

or environment leading to persistence or retention. Those characteristics included disposition and skills, such as motivation, self-efficacy, locus of control, coping skills, resilience and study skills, and educational and employment goals and intentions. The stable student characteristics included socio-demographic attributes, such as race; ethnicity; gender; age; parental education level; ability to pay; pre-college academic preparation and performance; and student commitments to and responsibilities to their work, family, and community (Hirschy et al., 2011). College programs and policies can provide support for the students with certain stable characteristics, such as ability to pay, in an effort to avoid attrition.

### **Programmatic Characteristics**

Student characteristics can also be affected by the characteristics of their chosen educational program. One characteristic of educational programs that invariably influences its student attrition rate is the program's admissions criteria and process (Dodge, Mitchell, & Mensch, 2009; Glossop, 2002; Newton & Moore, 2009; Tinto, 1975). Procedures used to select students into a program have a direct impact on the characteristics of the program. In other words, if admission criteria are less rigorous, a large number of students will be admitted that meet minimal requirements, increasing the odds that the attrition rates will increase (Ascend Learning, LLC, 2012).

When investigating nursing program characteristics related to attrition, specifically admission criteria, researchers have supported the use of admission tools and criteria to effectively differentiate between students who will be successful from those who will not in an effort to address attrition issues (Newton & Moore, 2009). Defining the population of students prior to admittance into a program can have a direct impact on

student attrition rates, which is especially germane at a time when, despite being pressured to increase enrollment to meet the rising demand for nursing care, colleges and universities are turning students away. Buerhaus (2008) pointed out that in spite of tremendous interest in nursing, thousands, as many as 100,000 qualified applicants, are declined enrollment into nursing each year. With qualified students clamoring to obtain admission to programs of nursing, when a student decides to withdraw, it leaves a costly vacant seat that could have been filled by a student with the attributes known to lead to success and ultimately retention.

### **Interactions between Student and Program Characteristics**

Finally, attrition is often the result of the interaction between student and program characteristics, which suggests that integration into the program requires an academic and a social perspective in order to achieve student success (Dodge et al., 2009). For example, students frequently find that their expectations of a program do not match the actual experience. This type of disillusionment is a contributing factor to student attrition (Wells, 2007).

Andrew et al. (2008) reported nursing students who leave a nursing program after their first semester, much like the general undergraduate population, also cite disillusionment as one of a variety of reasons for dropping out of a nursing program. Other reasons included the rigor of the program, the quality or lack of academic preparation prior to entering the program, finding they are not suited to the profession, competing roles outside the program, or that nursing simply is not what they thought it was. Attrition can also be examined as the result of academic and non-academic influences. More commonly, problems with academic factors lead to failure to progress

in a program while non-academic factors have more influence on attrition with students who choose to drop out of a program.

### **Academic Factors**

Pitt et al. (2012) reported academic factors that influenced attrition among the student nurse population include admission qualifications and within-program indicators, such as relationships between students' academic performance at early and later stages of the nursing program. Within-program indicators included factors, such as students' first semester grades, performance in specific courses or assessments, and exit examinations.

Newton (2008) reported the initiation of postsecondary education at a community college rather than a four-year college or university may affect the academic preparedness of students who apply to BSN programs and lead to attrition. Nursing students who transferred from a community college may be less prepared for academic success than native students (Berger & Malaney, 2003). There is also an equally important non-academic component associated with transfer students. Not only do these students face potential academic struggles, they also are likely to experience a complex adjustment to a BSN program that involves not only academics but also includes factors within the social and psychological domains, which can affect the attrition of students transferring from community colleges (Newton, 2008), which creates a unique challenge for BSN programs to develop and implement interventions to meet the distinctive needs of disadvantaged and URM students, two groups who often use the community college system as a gateway to BSN preparation. Baccalaureate nursing programs that are committed to nurturing community college transfer students will decrease attrition and retain these students through graduation ultimately impacting the nation's need for more

BSN prepared nurses, as well as help diversify the professional nursing workforce (Newton, 2008).

### **Non-Academic Factors**

Although grades have been shown to be a primary variable used to forecast student outcomes and attrition, other factors in combination with grades should be considered when examining student outcomes and attrition (Robbins et al., 2004). Factors, such as self-esteem, self-efficacy, and stress, may also be associated with college student attrition.

The relationship between self-esteem and student attrition has been studied. Fletcher, Bryden, Schneider, Dawson, and Vandemeer (2007) conducted an expository descriptive study ( $N = 412$ ), examining social, academic, psychological, and physical health issues that had the potential to affect not only the health but also the academics of first year college students. Issues related to self-esteem were the most commonly cited concern among students. When asked about student concerns they encountered, 91% of the faculty and staff ( $N = 23$ ) reported issues of self-esteem, and 100% reported issues involving stress, which is concerning because the presence of these issues has been highly associated with attrition. Whereas, Toews and Yazedian (2007) found that high levels of self-esteem were predictive as better adjustment to college and lower rates of attrition.

Peterson-Graziose, Bryer, and Nikolaidou, (2013) conducted a descriptive correlational study ( $N = 34$ ) to determine whether self-esteem, self-efficacy, and life stressors were significantly related to student attrition in the first-semester of an associate degree nursing program. A nonprobability convenience sample of first-semester

associate degree nursing students was used. Of the participants, 76.5% were Caucasian, 8.8% were African American, 8.8% were Hispanic, 2.9% Asian, and 2.9% other racial ethnicity. There was a 29% attrition rate for the sample study. Self-esteem was significantly correlated with student attrition in the first semester; however, self-efficacy and life-stressors were not significantly related to attrition.

Another factor that affects student attrition and persistence is self-efficacy. A study of first generation college sophomores found the likelihood of completing a semester and returning the following semester was significantly related to self-efficacy (Vuong et al., 2010). Self-efficacy was also found to be associated with decisions to remain in a program and consequently affected attrition rates (Bong, 2001; Zimmerman, 2000). Choi (2005) concluded a positive relationship exists between self-efficacy and academic performance. Finally, Blackman et al. (2007) showed nursing students' self-rated self-efficacy levels predicted academic achievement. Individuals with a strong degree of perceived self-efficacy were able to achieve greater academic success.

Pitt et al. (2012) conducted a literature review and found students' social-support-seeking behaviors demonstrated an impact on both progression and attrition. Moore (2008) found that U.S. students with more social support from families, friends, university, and/or community during their studies had better overall GPAs. The relationship between support seeking behaviors and attrition was explored by Shelton (2003) who determined that associate degree nursing students ( $n = 458$ ) with a higher perception of faculty support, psychological support, and functional support were less likely ( $p < .05$ ) to withdraw from the program.

This finding was supported by Bowden (2008) who interviewed eight United Kingdom (U.K.) graduates who had given serious consideration to leaving a nursing program. Six of the students interviewed identified the important role of tutor support. In a phenomenological study, 12 mature-aged students reported choosing to remain in the program because of the support gained from significant others and peers (Rudel, 2006).

Life stressors among nursing students are also recognized as important risk factors for attrition (Brodie et al. 2004; Evans & Kelly, 2004; Gibbons, Dempster, & Moutray, 2008; Prymachuk & Richards, 2007). High stress levels in nursing students has been associated with poor learning and academic performance, subsequently resulting in higher attrition (Peterson-Graoise et al., 2013). Jeffreys (2007) noted multiple role-responsibilities, multiple-role stress, and feelings of cultural incongruence as factors associated with student attrition. Although the factors are numerous, it is evident that attrition is a combination of many factors, interacting to result in student drop out, failure, or program dismissal.

### **Multiple Factors Affecting Attrition**

In response to predicted workforce shortages and government initiatives within the U K, Pitt et al. (2012) conducted an integrative literature review, spanning 10 years in an effort to identify factors that influence nursing students' academic performance, clinical performance, and attrition. Four major categories of factors associated with attrition were identified. Demographic factors included age, gender, English as a second language, and number of hours of part-time employment. Academic factors were admission qualifications and within-program indicators included science course performance through the program. Critical thinking was the only cognitive factor

identified. Personality/behavior factors included personality, anxiety, self-efficacy, support seeking, and academic engagement. These findings support the concept that attrition is a multifaceted phenomenon with numerous causes.

The identification of factors, which affect students' progression, performance, and completion, is instrumental in the planning and development of programs to ensure best outcomes for both the institution and the student. Therefore, it is important to examine the reasons for attrition in order to determine specific, cause-related interventions in an effort to slow attrition. Likewise, it is equally important to understand the results of attrition and the affects these results have on students, institutions, community stakeholders, and, ultimately, the nursing workforce.

The timing of nursing students' failure to achieve academic success and progression is significant when considering the effect of attrition on programs of nursing and students. If nursing students leave programs early, for example in the first semester, less of the students' time is squandered in an unsuccessful attempt (California Postsecondary Education Commission [CPEC], 2003). Likewise, fewer university resources are spent on students who might ultimately fail and be dismissed from a nursing program (CPEC, 2003).

### **Retention**

Like attrition, retention is a complicated, multilayered, and significant issue that has been studied in depth. The significance of retention is highlighted by the fact that less than half of college students in the US graduate within 5 years, and 35% of those who leave do so for academic reasons (Morrow & Ackermann, 2012).



The issue of retention is even further complicated by the fact that the majority of research on retention was carried out in the 1970s and 1980s and does not address the current student population of non-traditional students (Wells, 2003). A large volume of the research on retention is based on the works of Astin (1975) and Tinto (1975). Many of the studies that form the foundation of our knowledge about retention in higher education take a historical view of the traditional student, one who is female and White, rather than a realistic view of today's diverse student population (Pascarella & Terenzini, 1998; Wells, 2003). Additionally, academic variables that were predictive of the traditional, White, female student in the past may no longer be applicable to successful student retention of today's diverse student population (Wells, 2003). Therefore, when reviewing the relationships between demographic variables and retention, it is important to keep in mind that the demographic characteristics of undergraduate students continue to change (National Center for Education Statistics [NCES], 2001). For these reasons, it is important to review current literature related to retention and the demographics of current undergraduate students, specifically nursing student populations, and the variables that may contribute to early academic success, retention, and progression.

### **Demographic Variables and Undergraduate Retention**

While demographic variables represent only a small portion of the variables that may affect retention, numerous demographic changes within the undergraduate student population are being reported. Researchers cite an overall increase in the diversity of undergraduate college students in the United States (Keller, 2001; Pascarella & Terenzini, 1998; Woodard, Love, & Komives, 2000). Most often cited is the increasing diversity among racial and ethnic identities of college students (Pascarella & Terenzini,

1998). Likewise, there is increasing diversity in the age of undergraduate students. Between 2009 and 2010, the enrollment of students under age 25 increased by 27% while enrollment of students 25 and older rose to over 43% during the same time period (NCES, 2010). Finally, gender is also of interest. Women became the majority of higher education students around 1980 (NCES, 2001), and the number of women enrolling in postsecondary institutions continues to increase (Woodard et al., 2000). The demographic variables of interest in the current study are age, gender, and ethnicity.

### **Race and Ethnicity**

Race and ethnicity are frequently identified in the literature related to predicting retention (Peltier, Laden, & Matranga, 1999). However, findings of retention related to race and ethnicity can be conflicting because race and ethnicity are often combined into one variable (Reason, 2009).

The racial and ethnic makeup of undergraduate college students has changed radically. Pascarella and Terenzini (1998) reported that between 1984 and 1994, the number of undergraduate students of color increased 61% compared with a 5.1% rise in Caucasian students attending college during the same time period. Students of color accounted for approximately one fourth of the undergraduate population in 1994, an increase of one-fifth from a decade earlier. According to the NCES (2001), 21% of all undergraduate degrees in 2000 were conferred upon students of color.

Early studies predicting trends regarding the increasing racial and ethnic diversity within higher education during the first decade of the 21st century have held true. (Keller, 2001; Woodard et al., 2000) Today's educational statistics support the predicted growth of students of color. The percentage of American college students who are

Hispanic, Asian/Pacific Islander, and African Americans has increased from 1976 to 2009. The percentage of Hispanic students rose from 3% in 1976 to 12.5% in 2009, the percentage of Asian/Pacific Islander students rose from 2% to 6.5%, and the percentage of African American students rose from 9% to 14.3%. During the same period, the percentage of Caucasian students fell from 83% to 62.3%, a decrease of 20.7%. Nonresident aliens, for whom race/ethnicity is not reported, made up 3.4% of the total enrollment in 2009 (NCES, 2010).

A review of the literature focused on the relationship between race and retention demonstrated statistically significant relationships consistently found throughout several decades of study (Peltier et al., 1999). In more recent studies of retention, however, the impact of race was less consistent, especially in multivariate models (Murtaugh, Burns, & Schuster, 1999; St. John, Hu, Simmons, & Musoba, 2001). Nonetheless, practical and statistical differences remain in the retention rates of racially diverse students. Recent studies, for example, indicated that Asian American and/or White students were most likely to be retained in college while other racial groups were less likely to be retained (Astin, 1997; Murtaugh et al., 1999; Peltier et al., 1999).

In a study of approximately 9,000 students at Oregon State University in the early 1990s, Murtaugh et al. (1999) conducted stepwise univariate and multiple regression analyses to create hazard ratios for several racial categories. Hazard ratios were defined as “factors by which a student’s hazard of withdrawal is multiplied by a unit increase in the predictor” (Murtaugh et al. 1999, p.361). Establishing the retention rate of Caucasian students equal to one allowed the researchers to compare retention across racial categories. Using a univariate model, only Asian American students achieved a hazard

ratio less than one, meaning that Asian American students were less likely than Caucasian students to drop out of college. African American, Hispanic, American Indian, and Pacific Islander students had hazard ratios greater than one, indicating they were more likely than Caucasian and Asian American students to drop out of college. Hazard ratios for African American, Hispanic, and American Indian students were statistically significantly greater. The effects of race were mitigated when other demographic variables were included in the analysis (Murtaugh et al., 1999). When age, country of residence, college major, high school GPA, first-quarter college GPA, and participation in a freshman orientation class were considered, much of the difference between racial groups disappeared or reversed. The difference between Asian American and Caucasian students remained relatively constant although this relationship became statistically significant in the multivariate analysis. The hazard ratio for African American students remained statistically significant but moved below one. This result meant that African American students, holding all other variables constant, were more likely to be retained than White students.

As indicated in the reviewed research, ethnicity in relation to retention has been studied with mixed results. Prymachuk et al. (2009) found that minorities were more likely to have lower retention rates. This finding is consistent with other studies (Swail, Redd, & Perna, 2003; Tart, Travis, & Adamson, 2003). In general, retention rates were lower for African Americans and Hispanics. However, such findings are inconsistent with the findings of a study conducted by Woods (2010) in which six participants not retained were one Caucasian, two Hispanics, two Black/African Americans, one Asian,

and one mixed ethnicity. The inconsistency in this one study may be the result of the small sample size and unequal group sizes.

As has been alluded to, race has been determined to be a significant predictor of the retention of undergraduate students (Astin, 1997; Murtaugh et al., 1999; Peltier et. al., 1999); however, additional researchers concluded that there is an assortment of other variables that significantly predict retention for specific racial groups (Allen, 1999; Hall, 1999). Different racial groups tend to have diverse experiences related to education, which can affect how variables impact their retention rates. Therefore, race may be both a predictor and a mediator of other variables related to retention (Reason, 2009).

### **Gender**

Research results differ regarding the effect of gender on retention. Astin (1975), Astin, Korn, and Green (1987), and Tinto (1987) found gender was significantly related to student retention. Pelitier et al. (1999) reported gender was predicative of persistence with women being more likely to persist than men. However, in a large study on retention, Reason (2001) found that gender failed to reach significance. In two studies using a multivariate model, gender failed to reach significance and was removed from the final model. Yet, when using a simple model, gender was a significant predictor. These results indicated that gender interacted with other variables in the models. Such interactions concealed the effects of gender leading to a need for further research to determine the specific interactions between variables (Reason, 2009).

Gender also played a less important role in a recent study by St. John et al. (2001), which tested three increasingly more inclusive regression models. Gender was not significant in the model that included only variables related to gender, age, race,

financial dependence on parents, family income, and SAT/Merit-Index. Gender was significant in the second model, which added variables related to first semester college GPA. Gender failed to remain significant when institutional variables were added to the model. The institutional variables, type of institution, degree program, and housing type were significantly related to retention; however, gender failed to achieve significance when these variables were added. For this reason, St. John et al. (2001) determined that some interaction occurred among the variables, stating that males have some advantage compared to females related to the type of college attended or the increased likelihood of living on campus. St John et al. (2001) concluded that gender differences and college persistence is a topic that warrants further investigation.

The type of interaction found by St. John et al. (2001) is similar to the findings of other studies. Murtaugh et al. (1999) and Leppel (2002) found relationships between gender and race that influenced retention. These findings supported Pascarella and Terenzini's (1998) position that the interaction effects of variables have increased in importance as the diversity within higher education has increased.

### **Age**

The composition of the current population of higher education students is changing. As the United States population continues to grow older, higher education must be ready to serve students who are diverse in age (Keller, 2001; Murdock & Nazrul Hoque, 1999). The interaction of age and race will continue to move higher education toward a more diverse student population (Murdock & Nazrul Hoque, 1999).

In recent years, the increase in the number of students age 25 and over has been larger than the percentage increase in the number of younger students, and this pattern is

expected to continue (NCES, 2010). From 2010 to 2019, NCES projects a rise of 9% in enrollments of students under 25, and a rise of 23% in enrollments of students 25 and over (NCES, 2010).

The overall increasing age of the undergraduate population does not necessarily mean an increase in retention. The finding that age is an important predictor of achievement is questionable. Williams (1994) studied attrition rates and age and found that there were no significant correlations between age and attrition rates.

### **Initiation of Post-Secondary Education: Transfer Versus Native Status**

During their college experience, approximately one third of students have transferred institutions at least once. Transfer from two-year public institutions to four-year institutions occurs most often. In 2010, 13 million community college students were enrolled in credit and non-credit programs, representing almost half of the nation's undergraduate students (American Association of Community Colleges, 2012a). Indeed, more than half of the nation's Native American and Hispanic students are enrolled in community colleges (American Association of Community Colleges, 2012a). The National Center for Education Statistics (2011) reported 40% of college students begin at two-year institutions, and of these students, two-thirds aim to pursue a baccalaureate degree.

While the impact of where students receive their initial postsecondary education may be a contributing factor to the academic preparedness of prospective BSN students, it has not received a lot of attention in nursing literature. However, outside of nursing, there is an abundance of literature indicating that initiation of postsecondary education at

the two-year college level does not necessarily lead to academic success at the baccalaureate level (Berger & Malaney, 2003; Laanan, 2001; Poisel & Stinard, 2005).

Mullen and Eimers (2001) conducted a study at one multi-campus research university system. Attendance at one of the residential university campuses and transfer GPA were positively associated with graduating; being a minority student was negatively associated with graduating ( $N = 11,150$ ). Additionally, when GPA and credit hours were controlled, first time freshmen ( $N = 16,936$ ) graduated at a higher rate than transfer students. An earlier study conducted at the same university in 1997 found that the best predictors of graduation among students who transferred to the university in 1987 and 1988 were transfer GPA and having enrolled at the engineering campus (Eimers & Mullen, 1997). In addition, minority students who transferred were less likely to graduate than White or Asian-American students. When credit hours and GPA were held constant, the earlier study also found that first-time freshmen were generally more likely to graduate than transfer students, a finding that was also true of the later study.

Porter (1999) compared transfer students and native students at a major research university. While controlling for several key variables, Porter (1999) concluded (a) transfer students did more poorly than native students in one-year retention, (b) transfer students were retained at rates 1% to 9% lower than native students, (c) transfer students graduated at rates 2% to 8% lower than native students, (d) transfer students earned grade point averages 0.1 to 0.2 of a grade point lower than native students, and (e) were academically dismissed at rates 3% to 6% higher.

Other studies found that transfer grade point average (Saupe, 1994 as cited in Mullen & Eimers, 2001; Townsend, McNerny, & Arnold, 1993) and transfer hours



(Saupe, 1994 as cited in Mullen & Eimers, 2001) were variables associated with persistence and graduation of transfer students. Eimers and Mullen (1997) conducted a study at one large Midwestern university and determined transfer GPA and the number of credit hours transferred were the best predictors of whether a transfer student would graduate. When credit hours and GPA were controlled, first-time freshmen were more likely to graduate than transfer students (Eimers & Mullen, 1997). A follow up study at the same university found that among transfer students, the odds of graduating increased by 3.9% for each 0.1 increase in GPA and 6% for each increase of 10 transfer credit hours (Mullen & Emiers, 2001).

D'Amico, Dika, Elling, Algozzine, and Ginn (2014) reported there are many potential contributors to the success of transfer students as identified in the literature, including majoring in non-technical fields, such as science (Carlan & Byxbe, 2000; Mullen & Eimers, 2001), being female, being of higher socioeconomic status (Wang, 2009), and being non-minority (Mullen & Eimers, 2001). But, the majority of studies on community college transfer students focus on academic achievement as the primary indicator of student success at four-year institutions. Researchers indicated that transfer students' grades tend to drop after transfer and were lower than those earned by native students who enter college or university as a freshman (Laanan, 2001; Townsend, 1995). This drop in academic performance immediately following transfer is not unusual for community college transfer students and is a phenomenon commonly referred to in the literature as "transfer shock." Hills (1965) indicated that two-year college transfer students should expect a lower initial GPA at the four-year institution than the previous community or two-year college (i.e., transfer shock). The dip in grades of transfer

students tends to be one-half of a grade point or less (Diaz, 1992). This finding is supported by Carlan and Byxbe (2000) who found that transfer students' first semester GPAs at the senior institution were 0.3 of a point less than their cumulative GPAs at the community college. Comparably, native students maintained nearly the same upper and lower division GPA. Glass and Harrington (2002) found that there appeared to be evidence of transfer shock for the transfer students who's GPA fell by 0.44 from the spring semester to the fall semester.

However, it is important to note that students should expect to recover from the initial shock in GPA following transfer (D'Amico et al., 2014). Carlan and Byxbe (2000) and Glass and Harrington (2002) found that following the slight initial dip in performance following the first semester at a four-year institution, community college transfer students performed at an equivalent level to native students. Also of importance is the fact that data further indicates the first academic year following transfer from a community college as the most critical for student success because that is the year of greatest student attrition from the university (Poisel & Stinard, 2005)

The successful transition of the transfer student into a four-year institution has many factors outside the obvious one of academic preparedness. Transfer shock can take many forms and may include psychological and social adjustments to the academic, social, and personal demands of attending a four-year college or university (Eggleston & Laanan, 2001; Poisel & Stinard, 2005).

Tinto (2006) commented in his review of Derek Bok's book, *Our Underachieving Colleges: A Candid Look at How Much Students Learn and Why They Should Be Learning More*, community colleges serve a disproportionate number of students who are

academically under-prepared and of lower socioeconomic status as well as an increasing number of students for whom English is not their native spoken language. These groups have traditionally been underrepresented at four-year colleges and universities and adjustment to transfer shock may bring added barriers to attaining success at the baccalaureate level.

### **Demographic Variables and Student Nurse Retention**

Numerous factors associated with a student's ultimate success, failure, or withdrawal from a nursing program have been identified in the literature (Benn & Pacquiao, 2010; DeLapp, Hautman, & Anderson, 2008; Gilchrist & Rector, 2007; McEnroe-Pettite, 2010; Sutherland, Hamilton, & Goodman, 2007). The relationship between the demographic variables of gender, ethnicity, age and initiation of post-secondary education as a transfer or institution native to nursing student retention and success have been reported in the literature to have varying degrees of effect on a student's ability to progress within a nursing program (Jefferys, 2007, McCarey, Barr, & Rattray, 2006; Tart et al., 2003).

#### **Gender**

Walls (2010) found gender was found to have a significant relationship with retention. A greater proportion of women ( $n = 158$ ) remained in the nursing programs than did men ( $n = 14$ ). Likewise, in her study of 171 beginning first degree nursing students, Woods (2010) found gender to have a significant relationship with retention. When compared to males, females were 10.7 times more likely to remain in the nursing program. However, these findings do not support the findings of Swafford (1992) and Williams (1994) who found no correlation between gender and retention. Woods'

findings are consistent with findings by Pryjmachuk et al. (2009) who found males were more likely to have lower retention rates than females.

McLaughlin, Muldoon, and Moutray (2010) conducted a longitudinal study to investigate differences between completers and non-completers of a nursing program. A questionnaire, including measures of gender role identity and perceived gender appropriateness of careers, was administered to 384 students early in the first year of the course and attrition rates were obtained at the end of the program.

A total of 350 students were followed to completion of the study. Three hundred and seven participants completed the program and 43 dropped out. This finding represents a 12% rate of attrition, which by comparison to attrition rates elsewhere in the United Kingdom and worldwide, is relatively low. Of the 43 that withdrew, 34 were female and nine were male (McLaughlin et al., 2010). Chi-square analysis was performed to assess association between course completion and gender. There was a significant relationship between gender and course completion ( $\chi^2 = 8.200$ ,  $df = 1$ ,  $p = 0.009$ ); males (28.1% of all males) were more likely to withdraw from their course than females (10.7% of all females; McLaughlin et al., 2010).

McLaughlin et al. (2010) noted that the high male attrition rate found in their study is not that remarkable. The widely held stereotypes of male nurses (Roth & Coleman, 2008), the discrimination and isolation that is sometimes reported (O'Lynn, 2004), and the lack of successful male role models (Brady & Sherrod, 2003), all add to the difficulty in recruiting and retaining men in nursing.

In an Australian study ( $n = 352$ ) conducted by Salamonson et al. (2011), findings indicated that while males were slightly more likely than females to drop out of the

nursing program, the finding was not statistically significant. The researchers noted the low percentage of males in nursing programs when compared to their female counterparts and reported that it may not be possible to statistically determine a relationship between males and retention.

There is much work to be done to retain males in nursing. Tumminia and Peterson (1984) noted to be successful in the retention of male nurse students, educators must continue to develop learning strategies that support functioning in a female-dominated environment. Kelly, Shoemaker, and Steele (1996) maintained that nurse educators can improve retention of male nursing students by dispelling traditional nurse role stereotypes and avoiding the tendency to isolate male students. Finally, in a review of literature, Scott (2004) pointed out that despite increasing numbers of males being recruited into nursing courses, attrition rates are significant. Among male students who enter nursing programs, it is estimated that 40% to 50% do not complete the program (Evans, 2004; Wilson, 2005).

### **Ethnicity**

A number of studies have found that race was a statistically significant ( $p > .05$ ) variable related to perceived likelihood of completing a nursing program (Jeffreys, 2007; Lyons, 1999; Tart et al., 2003; Vincent, 1992). Tart et al. (2003) reported attrition rates of 50% for African Americans and Hispanics, 33% for Asians/Pacific Islanders, and 5% for Caucasians. In contrast, Uyehara et al. (2007) found no relationship between ethnicity and program success.

Symes, Tart, Travis, and Toombs (2002) conducted a study at Texas Women University, and found 98 students were admitted to the nursing program. Of that number,

51% were Caucasian non-Hispanic, and 49% were Asian, African American, Hispanic, or other ethnic groups. During the first semester of the nursing program, attrition was 4% for Caucasian students and 35% for non-Caucasian students (Symes et al., 2002).

Attrition due to failure to progress was also higher among ethnically diverse students. Lewis (2011) determined a significantly higher percentage of ethnically diverse students (14%) failed to progress in their nursing program compared with 3% among their Caucasian counterparts. Similarly, Childs et al. (2004) found the graduation rate for African American nursing students to be lower than any other ethnic group.

In a secondary quantitative analysis of students' academic records for student graduating between 2006 and 2008, there was a statistically significant difference in the graduation rate between White and non-White nursing students, ( $p = .013$ ; Benn & Pacquiao, 2010). Additionally, findings determined a statistically significant difference in the graduation rate among racial and ethnic groups of Africans and African Americans, Asians and Hispanics, and White nursing students ( $p = .034$ ). There were also significant differences in the graduation GPA among of different ethnic groups of students (Benn & Pacquiao, 2010).

Many minority groups have been identified in the literature as being at risk for poor outcomes in a nursing program (Sutherland et al., 2007). These include but are not limited to African Americans (Coleman, 2008; Loftus & Duty, 2010), Hispanics (Moceri, 2010; Velez-McEvoy, 2010), Native Americans (DeLapp et al., 2008); Metz, Cech, Babcock, & Smith, 2011) and men (Stott, 2007). However, close attention needs to be given to the variety of ways that race is operationalized in nursing research. Race, ethnicity, and English as a second language are often combined as one variable (Reason,

2009), making it difficult in some instances to compare research findings. Additionally, a majority of studies include only one racial or ethnic group.

### **Age**

Age has been found to be a significant predictor of academic achievement in nursing programs (Eccles, 2001; Jeffreys, 2007). In a British study of 154 pre-registration Diploma of Nursing students, McCarey et al. (2006) demonstrated that mature students, over the age of 26, achieved better average marks in coursework and examinations than their younger peers. However, Williams (1994) studied attrition rates and age and found no statistically significant correlations between age and attrition rates.

### **Initiation of Post-Secondary Education: Transfer Versus Native Status**

Administrators of nursing programs want to admit students who will succeed, thus keeping attrition rates low. One factor that affects student success is academic preparedness. Where a student chooses to initiate his or her postsecondary education may have an effect on preparedness for post-secondary education and ultimately on BSN program retention.

Two-year institutions serve as a critical gateway into college for a substantial percentage of college bound students, and for many, these institutions are just one stop on the road to the student's final degree destination. This is a common pathway for many students pursuing a baccalaureate degree in nursing. Most BSN nursing programs designate specific courses as prerequisites to be satisfied prior to admission (Aber & Arathuzik, 1996; Griffiths, Bevil, O'Connor, & Weiland, 1995; Lewis & Lewis, 2000). However, they do not require the courses be completed at the parent institution of the BSN program (Newton, 2008). As a result, many BSN applicants fulfill required

prerequisite nursing coursework at other academic institutions, including community colleges.

Because applicants can satisfy nursing prerequisite courses at a BSN program's parent (native) institution, a community college, or at a different four-year institution, there is a lack of course grade and course rigor comparability between institutions in which students complete their prerequisite coursework. This factor ultimately makes it difficult, if not impossible, to determine the academic preparedness of students applying to a BSN program. A growing number of entry-level BSN students are beginning their post-secondary educations at the community college level, increasing the need to understand the potential impact of entry-level BSN student retention following community college transfer (Newton, 2008).

Although there may be numerous reasons why prospective BSN students chose to initiate their postsecondary education at the community college level, no empirical literature was found on this topic. DiBartolo and Seldomridge (2005) suggested that students perceive courses at community colleges to be easier than those at four-year institutions. Due to this perception, whether or not it is true, many students choose to take courses at community colleges to improve their chances of receiving a higher grade, which in turn raises their GPA and improves the likelihood of BSN admission (Newton, 2008). Despite receiving high grades, a problem lies with the academic foundation provided by community college institutions, which may not adequately prepare students for the rigors of a BSN program, increasing the probability of issues with attrition. It may be expressly problematic for BSN programs that allow transfer of coursework from community colleges in which course standards differ with the character of the institution,



their requirements for giving grades, and the characteristics of the student population (Griffiths et al., 1995; Wold & Worth, 1990). Lewis and Lewis (2000) reported that students who were successful at the BSN level (defined as having a cumulative GPA of 2.5 or greater) were more likely to have transferred from a four-year rather than a two-year institution.

As discussed in the general undergraduate population of transferring students, transfer shock and its repercussions on BSN students is of particular concern for a number of reasons. First, all BSN programs have progression policies outlining the academic standards students must meet in order to continue in the program. These standards are usually in the form of course grades or overall nursing GPA. For this reason, even a half point drop in the GPA of a transferring student could result in dismissal from the nursing program.

The American Association of Community Colleges (2012b) reported that approximately 43% of all first-time college students attend two-year institutions, indicating that students at two-year institutions represent a growing group of potential applicants to BSN schools of nursing. Because baccalaureate students who transfer from community colleges may be less prepared for academic success than native students (Berger & Malaney, 2003), it is critical to understand and implement programming that will ensure the retention and graduation of community college transfer students.

There is also an equally important non-academic component associated with transfer students. Not only do these students face potential academic struggles, they also are likely to experience a complex adjustment to a BSN program that involves not only academics but also includes factors within the social and psychological domains, which

can also affect the attrition of students transferring from community colleges (Newton, 2008). It creates a unique challenge for BSN programs to develop and implement interventions to meet the distinctive needs of disadvantaged and URM students, two groups who often use the community college system as a gateway to BSN preparation (Gardner, 2005; Thacker, 2005; Zuzelo, 2005). Baccalaureate nursing programs that are committed to nurturing community college transfer students will decrease attrition and retain these students through graduation ultimately affecting the nation's need for more BSN prepared nurses as well as help diversify the professional nursing workforce (Newton, 2008).

### **Academic Variables and Student Nurse Retention**

For the purposes of this study, the independent academic variables were determined through a review of literature and include pre-nursing GPA, pre-requisite science GPA, and overall GPA. The variables have been measured in numerous studies by determining their relationship to the dependent variable academic success, which has been as operationalized as retention, progression, program completion and success on NCLEX-RN first-time pass rates. For the purposes of this study, academic success is operationalized as first semester academic success measured by retention and progression to the following semester. The literature is very limited when the dependent variable is narrowed to first-semester academic success. For that reason, academic success has been reviewed in broader terms to better understand the relationship between academics and nursing program success.

Researchers have determined that the measures of pre-nursing GPA, pre-requisite science GPA, and overall GPA influence students' academic success and retention;

however, it is also well documented that early academic difficulties contribute to issues of retention and progression (CPEC, 2003; Childs et al., 2004; Newton, Smith, Moore, & Magnan 2007; Newton, Smith, & Moore, 2007). Therefore, it is not uncommon to find conflicting results when reviewing the literature as demonstrated by the following studies.

### **Pre-Nursing GPA**

Grades in pre-nursing coursework have been positively correlated with retention of nursing students to graduation (Ali & Naylor, 2010; Salvatori, 2001; Wong & Wong, 1999). Researchers have established that students with higher overall pre-nursing GPAs tend to demonstrate greater persistence in their nursing programs (Akin-Palmer, 2008; Newton, Smith, & Moore, 2007; Phillips, Spurling, & Armstrong, 2002). Likewise, Symes et al. (2005) examined academic factors available at admission (GPA, a subset of GPA and science GPA) and found a significant correlation with graduation.

Williams (1994) conducted a study of 137 students that were no longer in a nursing program due to graduation or attrition. Using multiple correlation and semi-partial correlation techniques, Williams found a significant correlation between pre-nursing GPA and attrition rates. A lower pre-nursing GPA was shown to increase attrition and conversely a high pre-nursing GPA resulted in lower attrition rates and improved progression.

In a study of 164 sophomore nursing students enrolled in a BSN program, Newton, Smith, Moore, and Magnan (2007) found that scholastic aptitude, a measurement based on students' pre-nursing GPA and scores on the Assessment Technology Institutes (ATI) test of Essential Academic Skills (TEAS) examination, was

indicative of early academic success. Early academic success was based on students' grades in four didactic nursing courses taken in the first semester of the program. Ugehara et al. (2007) found that prerequisite GPA was not a significant predictor of program success. This finding was consistent with the finding reported by Jeffreys (2007) who found that pre-nursing GPA did not correlate with program success or attrition.

### **Pre-Requisite Science Course Grades and Academic Success**

Student performance in pre-nursing science courses has been identified as an important factor related to retention and nursing program success. The following studies support the finding that students who have earned higher grades in the required pre-requisite science courses are more likely to be successful in the nursing program; however, program success is operationalized by a variety of definitions (i.e., cumulative GPA, program completion, and/or NCLEX-RN success).

McGahee, Gramling, and Reid (2010) conducted a retrospective correlational study ( $n = 153$ ) to examine the relationship of predictor variables to the dependent variable NCLEX-RN success or failure at first sitting. In the final analysis, the independent variables included pre-nursing science GPA, the four course grades in the first semester of the nursing program (Fundamentals of Nursing, Health Assessment, Pathophysiology, and Theoretical Foundations), and an RN assessment test that is designed to be predictive of NCLEX-RN success.

Science GPA was found to be significant in four different interaction models. This finding was consistent with earlier studies for both associate degree and baccalaureate programs. The courses included in the calculation of the science GPA in

this study were anatomy, physiology, and chemistry. These courses form a foundation for many of the nursing courses, such as pathophysiology, health assessment, pharmacology, and the specific clinical courses, so it was not surprising that they would be included in a predictor model of success on the NCLEX-RN (McGahee et al., 2010).

Seldomridge and Dibarolo (2004) conducted a retrospective descriptive study ( $n = 186$ ) to determine variables that best predict NCLEX-RN success and failure. Although the study explored a dependent variable other than the one in the current study, their findings are pertinent to this study. Thirteen independent variables were identified based on a review of the literature. Variables included entry as native or transfer student, preadmission GPA, GPA after completing one semester of nursing courses, cumulative GPA at graduation, grades earned in prerequisite and core nursing courses, test averages in beginning and advanced medical/surgical nursing courses, and performance on the NLN Comprehensive Achievement Test for Baccalaureate Students (NLNCATBS).

The percentile score on the NLNCATBS demonstrated the highest correlation with NCLEX-RN success ( $r = .452, p = .000$ ), followed by grades in pathophysiology ( $r = .377, p = .000$ ; Seldomridge & Dibarolo, 2004). The finding related to pathophysiology grades may be of limited use as an indicator of the significance of pre-nursing science grades to success because pathophysiology may be a within-nursing major course rather than a prerequisite course; however, Potolsky et al. (2003) used pathophysiology as an outcome measure of early nursing program success and found that it was significantly correlated with prerequisite grades in chemistry, microbiology, and anatomy and physiology.

The descriptive, correlation design study ( $n = 37$ ) was conducted to determine, in part, if there were an association between pre-requisite science course grades and academic performance of first semester nursing students in a BSN program (Potolsky et al., 2003). Subjects for the study consisted of a convenience sample of first semester nursing students enrolled in pathophysiology and/or pharmacology. Through a review of student records, data were collected from pre-requisite science course grades (anatomy, physiology, microbiology, organic chemistry, and inorganic chemistry) and final pathophysiology and pharmacology course grades. In analyzing prerequisite science course grades, findings indicated that 40.5% of the students received a C in both inorganic and organic chemistry; 35.1% received a B in anatomy; 29% received a C in physiology; and 32.4% received a B in microbiology. The mean grade for all combined prerequisite science course grades was a B. Findings indicated that 29.7% of the study participants did not pass pathophysiology and 24.3% did not pass pharmacology. The mean pathophysiology grade was a C and the mean pharmacology grade was a C+. A two-tailed Pearson correlation coefficient showed a high positive correlation between the average prerequisite science course grades and the mean pathophysiology grade ( $r = .77$ ,  $p = .01$ ) and a moderate positive correlation between the mean prerequisite science course grades and the mean pharmacology grade ( $r = .60$ ,  $p = .01$ ). The findings support the hypothesis that prerequisite science course grades have a relationship to academic performance in first semester nursing students.

Potolsky et al. (2003) suggested that prerequisite science course performance is a reliable predictor of academic performance. Therefore, to reduce attrition and increase overall performance of first semester nursing students, the authors suggested that

baccalaureate nursing programs consider establishing the required GPA for prerequisite science courses at a grade of B. Additionally, programs might consider denying admission to students who have repeated prerequisite science courses due to a failed grade or employing an average of the two grades when calculating the required GPA (Potolsky et al., 2003). Additionally, on the basis of a 10-year review and meta-analysis of nursing research, Campbell and Dickson (1996) found that grade point averages in nursing and science courses were the greatest cognitive predictors of NCLEX-RN examination success.

Byrd, Garza, and Nieswiadomy (1999) conducted an ex post facto study ( $n = 278$ ) to examine the predictive value of demographic variables and admission and progression criteria on students' completion of a baccalaureate nursing program. The predictor variables were age on entry in the nursing courses, ethnicity, previous baccalaureate degree, cumulative science GPA, cumulative social science GPA, cumulative pre-nursing GPA, and letter grade achieved in each nursing course during the first and second semester of the upper-division nursing program. Using logistic regression, three predictor models were tested. The models represented the time periods before enrollment in nursing courses and after the first and second semesters. Byrd et al. (1999) determined a higher cumulative science GPA was a predictor of graduation for students prior to enrollment in upper-division courses. The predictive model based on data prior to enrollment in upper division nursing courses ( $n = 221$ ) included the predictor variables of age, ethnicity, science GPA and pre-nursing GPA. The model successfully predicted graduation in 77% of all students; science GPA and pre-nursing GPA were significant in the model (Byrd et al., 1999).

An executive summary for the Research and Planning Group for California Community Colleges, describing the results of the of the Associate Degree Nursing: Model Prerequisites Validation Study, reported a positive relationship between college GPA, English GPA and core biology GPA (anatomy, physiology and microbiology); the higher the value of each of the three variables, the greater the probability that an applicant would successfully complete an RN program. Conversely, there was a strong negative relationship between the number of times an applicant has repeated the core biology courses and their predicted success rate (Phillips et al., 2002).

The study, conducted in 2002, used a statistical framework based on a joint study, conducted by the Center for Student Success of a five-year cohort of nursing students enrolled in associate degree nursing programs. The cohort involved 5,007 students from 20 different colleges in California. Using regression models, the study tested the predictive power of almost 50 variables commonly associated with student success in registered nurse (RN) programs. The variables that were strongest and best correlated with student success included overall college GPA, English course GPA, composite GPA of core biology courses (anatomy, physiology and microbiology) and the number of repeats in biology courses (Phillips et al., 2002).

In preparing to design and implement approaches to increase student success, the admission committee of an associate of applied science (AAS) nursing program collected and evaluated retrospective data on student cohorts from fall 2007 to spring 2010. Utilizing these data, the committee determined that the anatomy and physiology grades were a strong indicator when evaluating student success. Students who received a grade of C or D or withdrew from anatomy and physiology were found to repeat a nursing



course more frequently than students who received an A or a B grade. Utilizing chi-square calculations, students who repeated anatomy and physiology or received a C grade were statistically more likely to fail or withdraw from a nursing course (Harris, Rosenberg, & O'Rourke, 2014).

The majority of studies reviewed support the finding that students with high GPAs in prerequisite science courses were more likely to be successful in a nursing program than students with lower prerequisite science GPAs. This finding held true if the sciences were taken as a prerequisite or as a part of nursing coursework.

### **GPA within Nursing Coursework**

Within nursing program GPA, either GPA in a specific course or a group of courses has been used to predict and/or measure success within nursing education. Shulruf, Wang, Zhao, and Baker, (2011) conducted a study ( $n = 134$ ) to identify predictors of student achievement (GPA) in their first year in an undergraduate nursing program. Shulruf et al. suggested that previous academic achievements measured by student GPA are the best predictors for achievement in a nursing program, particularly in the first year. Although the study was conducted in New Zealand, the findings were similar to previous U.S. studies (Ali & Naylor, 2010; Bissett, 1995; Campbell & Dickson, 1996; Newton & Moore, 2007; Smith, Nsiah-Kumi, Jones, & Pamies, 2009; Wong & Wong, 1999).

Uyehara et al. (2007) conducted a study ( $n = 280$ ), focusing on the predictors of program and NCLEX-RN success. Data was collected over a five-year period with students being tracked from admission until graduation or withdrawal from the program. Collection was completed for 224 students who graduated and for 56 students until the

time of their withdrawal. The dependent variables were program success and withdrawal and NCLEX-RN passing. The independent variables included pre-admission, within admission, and end of program predictors. There were a total 213 program completers (students who met the studies definition of program success, completing the program within one semester of expected completion) and 11 students who were unsuccessful. Of all the independent variables in the study, only the pathophysiology course grades were significant ( $n = 271, p < .0001$ ). The higher the pathophysiology grade, the higher a student's probability of success. For each one-point increase in letter grade of the course grade, the odds of withdrawal were expected to drop as much as 79.4% or as little as 44.8%. Twenty seven (48.21% of the 56 students that withdrew) had a grade of C or below in pathophysiology.

Further analysis of the 56 students that withdrew determined that the major reason for withdrawing was academic failure (20 of 56 students, 35.7%). Of those withdrawing, 12.5% (7 students) withdrew in the first semester of the nursing program. Five of the 56 students were unable to maintain the academic requirements for progression (Uyehara et al., 2007).

Like prerequisite science GPA, the dependent measure of success varied in these studies. Findings support that higher within coursework GPAs lead to greater success, increased retention and higher NCLEX pass rates.

### **Underrepresented Minority Student Nurse Attrition**

Looking specifically at URM student nurse attrition, it is important to reiterate that the United States is becoming an increasingly racially and ethnically diverse nation. Should current demographic trends continue, by 2048 minorities will make up more than

half of the U.S. population (U.S. Department of State, 2008). A racially and ethnically diverse nursing workforce is needed to meet the health care needs of this diverse population. Recruiting, retaining, and graduating diverse nursing students are major components of this process. The National League for Nursing (2008), the Institute of Medicine (2004), the American Association of Colleges of Nursing (2003), and other professional groups and organizations have repeatedly called on nurse educators to increase the racial and ethnic diversity of their students. By increasing recruitment and improving retention and graduation rates of minority nursing students, nursing programs can facilitate increased minority representation within the nursing workforce. However, due to the high rate of attrition among this student population, the number of URM nursing students graduating and entering the workforce is relatively small, hindering efforts to increase nursing workforce diversity despite the increased number of URM nursing student enrollments (Childs et al., 2004; Wells, 2003).

Researchers have measured rates of attrition with findings demonstrating higher rates of attrition among minority students when compared to Caucasian students in all levels of pre-licensure nursing education (Braxton, 2004; Childs et al., 2004; Deary et al., 2003). C. Loftin, S. D. Newman, M. L. Bond, Dumas, and Gliden (2012) examined the relationship between nursing programs' support of diversity and graduation rates of Hispanic and other URM students. A cross-sectional survey design was used to assess Texas undergraduate nursing programs. Fifty-nine programs' supportive characteristics scores were calculated using the Healthcare Professions Education Program Self-Assessment survey. The survey is a 25-item instrument consisting of six subscales representing the six constructs of the adapted model of institutional support. The six

subscales include financial support, emotional and moral support, mentoring, technical support, advising, and professional socialization. Two of the survey's six constructs were found to have a statistically significant positive correlation with the graduation rate of URM students; these were the financial support construct and graduation rates of Hispanic students ( $r[38] = .279, p = .041$ ) and the emotional and moral support construct and the graduation rates of URM students ( $r[47] = .326, p = .011$ ). Variations in graduation rates were identified with rates for Hispanic and other URM students being significantly lower than for White students. The overall graduation rate for students admitted to nursing programs during 2006 was 70.58%. The percentage of all graduates ranged from a low of 23.8% to a high of 97.8%. When identifying graduation rates by racial and ethnic categories, graduation rates for URM students fall significantly. Graduation rates for URM students ranged from 12.5% to 100% (C. Loftin, S. D. Newman, M. L. Bond, et al., 2012).

The researchers also found wide variation among programs in the percentage of URM students who graduate, which demonstrate that for this specific group of nursing programs, ADN programs have lower graduation rates than BSN programs for all racial and ethnic groups included in the study. The mean graduation rate of both Caucasian and URM students was significantly lower for ADN programs than for BSN programs (C. Loftin, S. D. Newman, M. L. Bond, et al., 2012). It is notable that the ADN path to licensure is the most common. In 2008, 47.2% of all U.S. RNs were initially prepared at the ADN level (HRSA, 2010).

## **Academic Factors**

Numerous minority students are not adequately prepared academically as many graduate from high schools who have few academic and physical resources. They are less prepared for the academic rigor of a nursing program and have difficulty completing the course of study (Amaro, Abriam-Yago, & Yoder, 2006; Billings & Halstead, 2012; Wong, Seago, Keane & Grumbach, 2008). A number of researchers have correlated academic preparedness of minority and non-minority students with their persistence and college completion rates (Swail et al., 2003; Tinto, 1993; & Wong et al., 2008). However, research about the role of academic factors in the retention of minority nursing students is lacking.

Academic factors are most often studied in terms of their effect on the admission, not retention, of minority nursing student applicants. By the same token, research conducted on the retention of minority nursing students has focused more on recruitment than retention (Childs et al., 2004). Acceptance into a program of nursing is a highly competitive process due in part to the fact that there are more applicants than available slots. The AACN (2012a) reported that U.S. nursing schools turned away 79,659 qualified applicants from baccalaureate and graduate nursing programs in 2012. With so many applicants, the question for nursing programs becomes how to determine which students will be successful. To avoid increasing attrition rates, schools of nursing try to identify factors that can predict student success and apply this information to the admission process.

Nursing programs have historically relied on overall GPA as the primary

predictor of student success (Fleming 2002; Pascarella & Terenzini, 2005). However, using GPA as the sole measure for admission places minority students at a distinct disadvantage (Torres & Solberg, 2001) and ultimately limits the number of minority students who qualify for admission. According to the Sullivan Commission (2004b), admission criteria that rely primarily on GPA and standardized test scores create barriers for minority students seeking admission to health care professions.

Boyle (1986) conducted a study ( $N=145$ ) to evaluate the effectiveness of admission criteria in selecting successful minority students as measured by program completion, final GPA, and State Board Examination scores. At the time the study was conducted, the researcher reported that despite the large number of studies on student success, little was known about minority students. Boyle compared two minority subgroups, Blacks and non-Blacks using multiple regression and discriminant analysis procedures. Scores on the American College Assessment Test (ACT) were found to be the strongest and most consistent predictor for State Board Examination performance and final GPA for all minorities. Boyle reported that sample size hampered analyses; however, findings supported the idea that predictors of success may vary in explanatory power by minority group. Boyle concluded that overall, the predictive power of cognitive variables was less for Blacks than for other minorities, which was congruent with earlier studies (Haney et al., 1976, 1977). The researcher also concluded the cognitive indicators in the study (entering GPA, ACT scores, high school rank, high school GPA, and number of college credit hours prior to admission to a nursing program) could not adequately predict attrition. Schwirian (1976) maintained that less than 50% of attrition is related to academic difficulty. Jefferies (1998) agreed that the role of non-

cognitive variables in student retention has been found to influence nontraditional students' academic achievement and retention more than academic variables.

In a secondary quantitative analysis of 76 academic records of students seeking an associate nursing degree, Benn and Pacquiao (2010) found statistically significant differences in the graduation rate of White and non-White nursing students ( $p = .013$ ). Likewise, Whites graduated with a significantly higher GPA than other ethnic groups ( $p = .008$ ).

### **Non-Academic Factors**

Numerous researchers studied the success of minority nursing students by identifying factors that were labeled as facilitators or barriers to success. Barriers were factors that students identified as reasons for attrition and included cultural barriers, financial needs, family responsibilities, and lack of support from faculty members (Amaro et al., 2006; Clark & Springer, 2010; Dapremont, 2011; Deary et al., 2003; Olson, 2012; Wong et al., 2008;). Facilitators were identified as factors leading to the successful retention of URM students. Identification of barriers and facilitators are important for the role it can play in identifying at-risk students and for use in developing programing built on research that has already shown to increase success.

Nora, Cabrera, Hagedron, and Pascarella (1996) reported that institutional experiences, academic achievement, and environmental pull factors, such as family responsibilities and working off campus, contributed the most to attrition for minority students. Other researchers reported attrition due to barriers, such as a lack of awareness of cultural needs by nursing programs, feelings of isolation, lack of faculty support, academic disadvantages, and language barriers (Brown & Marshall, 2008; Gardner, 2005;

Gilchrist & Rector, 2007; Wong et. al, 2008). Financial needs, perceived discrimination, English proficiency, and cultural tensions have also been documented as barriers (Duerksen, 2013). Noone (2008) found that students reported the perceived barriers of financial and academic need; feelings of isolation; and experiences with discrimination from faculty, peers and patients.

Loftus and Duty (2010) conducted a study to determine the facilitators and barriers for successfully completing a BSN program, passing NCLEX-RN, and entering the workforce. A retrospective record review of 723 students over 6 years found that 50% of African-American students had experienced at least one nursing course failure compared with 14.1% of Caucasians; approximately 78% of African-American students had passed the NCLEX-RN on the first attempt compared to approximately 94% of Caucasian students. The researchers used data from the study to survey current and alumni students ( $n = 793$ ) regarding facilitators and barriers to nursing school success. Of those surveyed, 314 (39.59%) responded. Barriers were identified as number of hours worked and family care, lack of access to technology, and lack of technology competence.

Jeffreys (1998) looked at predicting retention and academic achievement of nontraditional nursing. A non-traditional student was defined as a student who met at least one of the following criteria: age 25 or older, male, English as a second language, ethnic or racial minority, had dependent children, and/or held a general equivalency diploma. Using the Bean and Metzner model, the study examined three groups of variables. The first set included the background and defining variables of age, number of hours enrolled, educational goals, high school performance, ethnicity, and gender. The



second set included academic variables, and the third set was made up of environmental variables. In addition, self-efficacy, the belief that one is able to perform or learn, was measured. In this descriptive study of nontraditional, first semester nursing students, the students were asked to rate their personal perceptions of academic and environmental variables. Students were particularly inaccurate in perceptions related to academic factors, causing the researcher to postulate that the students in the sample did not have accurate perceptions about the academic skills necessary for success in professional nursing education. The students in this study perceived environmental factors were more influential for academic achievement than were academic factors. Jeffreys (1998) concluded that students at greatest risk for attrition were those with very high self-efficacy who overestimated academic support and underestimated their need for academic preparation.

### **Minority Student Nurse Retention and Success**

When reviewing nursing education literature, it is evident that student attrition in the minority population is a very real problem. However, as demonstrated in the previous studies, factors other than race affect minority retention. Many minority students cite financial difficulties, family problems, and lack of time as reasons for leaving programs of nursing (Abriam-Yago, Yoder, & Kataoka-Yahiro, 1999). Nonetheless, despite these obstacles, successful minority students demonstrate determination and self-motivation that results in attaining success within a nursing program (Abriam-Yago et al., 1999). It is imperative to understand these and other factors leading to success for URM nursing students.

Research findings about attrition can be found in all levels of nursing education. There is, nevertheless, a lack of research identifying factors that lead to success in minority students. When searching for published research using the terms “success” and “minority nursing student,” very few articles were identified. Wood, Saylor, and Cohen (2009) examined the relationship between locus of control and success in minority baccalaureate nursing students. The students in this study identified three major factors that they believed led to their academic success: study strategies, persistence, and supportive social connections. These students also believed personal attributes, such as intelligence and the calling to be a nurse, contributed to their academic success.

Interestingly, Alecia-Planas (2009) described factors that led to success for some Hispanic nursing students were barriers to success for other students of the same culture. These dichotomies were described as either facilitators or barriers. For example, financial aid significantly influenced academic success as it allowed students to work fewer hours. But for students who were not familiar with the processes of financial aid, it became cumbersome and discouraging. Students who persisted and found success in their nursing programs described themselves as being self-motivated and self-determined. Many of the students had been told by others that they possessed a quality that would bring them success (Alecia-Planas, 2009).

Smith, Williams-Jones, Lewis-Trabeaux, and Mitchell (2013), using a retrospective-descriptive design, conducted a study consisting of a sample of all minority students enrolled in clinical coursework at a BSN nursing program between 2005 and the fall of 2010. The Survey of Factors Influencing Student Retention and Academic Success (Lofus & Duty, 2010) was adapted to identify the participants’ perceptions of

facilitator and barriers to academic success. Findings of the study were similar to those of Loftus and Duty (2010) and Noone (2008). Bandura's self-efficacy theory served as the conceptual framework for the study. Self-efficacy, the belief in one's ability to succeed, is derived from positive role models and mentors who provide feedback and encouragement as well as individual accomplishments, environment, cognitive processes, and behaviors (Bandura, 1994). The researchers held the belief that it would be possible to enhance the role the environment plays on a person's perceptions of being able to be successful in the environment. The researchers concluded that nursing education programs should incorporate retention activities for racial and ethnic minority nursing students based on the facilitators and barriers to academic success as identified in their study in an effort to increase the number of degrees awarded to minority nursing students.

Continuing to focus on Bandura's definition of self-efficacy, it may also be possible to enhance the role that personal accomplishments and behaviors play on a person's perceptions of success within the environment. These perceptions of success are influenced by one's personal strengths. Various researchers have determined that among ethnically diverse nursing student populations, personal strengths are crucial in the overall success of the student (Amaro et al., 2006; Donnelly, McKiel, & Hwang, 2009a, 2009b; Gardner, 2005; Sanner, Wilson, & Samson, 2002; Veal, Bull, & Miller, 2012; Villarruel, Canales, & Torres, 2001). Students who had high aspirations and goals, a sense of determination, perseverance and resiliency, a willingness to learn and change, and the ability to balance multiple stressors at one time were the most successful throughout the duration of a nursing program. These attributes can be acknowledged and

built on through a variety of interventions, such as classroom instruction/learning activities and mentoring.

### **Self-Efficacy and General Academic Success**

Bandura (1977, 1986) reported that individuals who had a high sense of self-efficacy with regard to a specific task or goal think, feel and act differently from those who view themselves as inefficacious. Those with a robust sense of efficacy are inclined to view difficult tasks as challenges to be surmounted rather than problems to be avoided. Individuals with a high sense of self-efficacy are also more likely to view success and failure differently from those with a lower sense of self-efficacy. Individuals who are highly efficacious tend to attribute failure to a lack of effort and as a result will work harder to overcome failure in order to achieve their goals. In comparison, individuals with a low sense of self-efficacy are inclined to focus on their failures, which in turn, hampers their drive, commitment, and determination to achieve. This view is supported by a longitudinal study of first year university student adjustment. Chemers et al. (2001) examined the effects of academic self-efficacy and optimism on student's academic performance, stress, health, and commitment to remain in school. The researchers reported significant and substantial direct effects of self-efficacy on challenge-threat evaluations (standardized coefficient = .27,  $p < .001$ ), academic expectations (standardized coefficient = .28,  $p < .001$ ), and academic performance (standardized coefficient = .34,  $p < .001$ ). The highly efficacious students had higher challenge-threat evaluations (i.e., they perceived academic work demand to be more of a challenge than a threat), greater academic expectations, and better academic performance than less efficacious students (Chemers et al., 2001).

Although Bandura's theory of self-efficacy was initially established to aid in the understanding of phobias, it has been applied more broadly. In the area of general academic research, Multon, Brown, and Lent (1991) conducted a meta-analysis of the relationships of self-efficacy beliefs to academic performance and persistence. Results showed positive and significant relationships between self-efficacy beliefs and academic performance and persistence outcomes. Lent, Brown and Larkin (1987) found that self-efficacy contributed significant variance to predict academic grades, persistence, and perceived career options among 105 undergraduate students considering science and engineering majors.

Self-efficacy has also been shown to influence college student academic achievement, making it relevant to postsecondary academic success. Majer (2009) conducted a longitudinal analysis of self-efficacy for education and socio-demographic characteristics among an ethnically diverse sample of first generation college students attending a community college. Baseline rates of self-efficacy for education and first generation immigrant status significantly predicted increased cumulative GPA averages at one-year follow-up, which suggests that self-efficacy for education is an important cognitive resource among ethnically diverse first generation college students attending community colleges.

As stated previously, self-efficacy influences the amount of effort put into performing a task, persevering on the task, and as a result, affect one's level of achievement (Choi, 2005, Pajares & Schunk, 2001). Ultimately, the confidence that college students have in their academic capability becomes a critical piece of their academic success. Researchers have indicated that academic self-efficacy is positively

related with GPA and persistence rates in college (Bong, 2001; Pajares & Schunk, 2001; Zimmerman, 2000). Therefore, one can postulate that developing and fostering a sense of high self-efficacy may influence student's GPAs, thereby increasing the retention of students (Vuong et al., 2010).

Vuong et al. (2010) studied first generation sophomore college students to determine among other questions (a) whether academic success (operationalized as GPA) and persistence rates were a function of self-efficacy, (b) whether differences exist in mean academic success and persistence rates between first-generation and second-and-beyond-generation students, and (c) whether there are differences in self-efficacy between gender and ethnic groups. The sample ( $n = 1,291$ ) consisted of second-year college students. Vuong et al. showed that self-efficacy beliefs affect both GPA and persistence rates of sophomore students with second generation students outperforming first-generation students. Although researchers suggest that minority students, many who are first-generation college students, have lower perceptions of competence than do nonminority students, findings did not support that conclusion (Vuong et al., 2010).

Becker (2009) examined the extent and manner in which self-efficacy explains variation in first semester GPA and reported general self-efficacy was positively correlated with first semester GPA ( $r = .18$ ) while multiple regression analysis demonstrated that general self-efficacy incremented the explanation of variance 5% in GPA ( $p < .01$ ). Becker (2009) concluded to some extent that general self-efficacy was related to first term academic success in this population of 194 first term college students. In addition, Gore (2006) found that academic self-efficacy was a significant predictor of both GPA and retention among a large sample of Midwestern University students.

### **Self-Efficacy and Academic Success in Nursing Education**

In nursing, there is a paucity of research related to the effects of self-efficacy on academic performance and retention; however, significant findings have been demonstrated (Ford-Gilboe, Laschinger, Laforet-Fliesser, Ward-Griffin, & Foran, 1997; Goldenberg, Iwasiw, & MacMaster, 1997; Havery & McMurray, 1994; Madorin & Iwasiw, 1999).

Positive correlations have been reported between self-efficacy expectations and achievement (Chako & Huba, 1991; Lent et al., 1987). Laschinger (1996) argued that this relationship indicated that when nursing students come across difficulties in their program, those with higher self-efficacy beliefs will make more effort to overcome these obstacles and persist longer than those who doubt their capabilities.

Likewise, Harvey and McMurray (1994) developed a self-efficacy scale for nursing students and piloted it with 48 first-year nursing students. A third and final phase of testing used a sample of 306 first-year nursing students from four institutions. Subjects' ages ranged from 17 to 45 years with the majority being 18 to 20 years. The sample was predominantly female (88%). In this study, students who left the program showed lower academic self-efficacy, self-efficacy, and general self-efficacy than those who completed the program. Each of the cited studies support the premise that nursing students with high academic self-efficacy will have higher persistence rates and better academic performances than nursing students who are less efficacious.

In contrast, Jeffreys (1993), using a researcher developed instrument, conducted a descriptive study to examine the relationship of self-efficacy and select academic and environmental variables on academic achievement and retention among non-traditional

students. The sample consisted of 97 associate degree nursing students enrolled in their first nursing course. Students were considered non-traditional if they met one or more of the following criteria: age 25 or older, male, English as a second language, ethnic/racial minority, had dependent children, or held a general equivalency diploma (GED). Jeffreys (1993) indicated that self-efficacy had a moderate but not significant effect on nursing program achievement. Self-efficacy was also not a significant predictor of academic achievement or retention in this study as measured by Self-Efficacy Strength (SEST) scores on both subscales of the Self-Efficacy Tool (SET). Jeffreys (1999) showed significantly significant intercorrelations ( $r = .32(87), p < .01$ ;  $r = .29(96), p < .01$ ) between the SEST scores on the Nursing Skills Subscale (NSS) and the Educational Requirements Subscale (ERS). Although the subscales were designed to measure different dimensions within the nursing domain, students with high self-efficacy for nursing skill performance possessed high self-efficacy for meeting educational course requirements (Jeffreys, 1993).

Jeffreys (2004) later developed the model of nursing undergraduate retention and success for examining the multidimensional factors that affect undergraduate nursing student retention and success. In this model, despite Jeffreys (1993) earlier findings, self-efficacy is proposed as an important factor influencing retention.

Finally, the construct of academic self-efficacy has proven useful as a predictor of persistence and academic performance and is also useful to identify at-risk students to allow interventions to increase that student's opportunity for academic success. Bandura contends that self-efficacy is influenced by four main sources: performance accomplishments (i.e., small achievable goals or successes), vicarious experiences (i.e.,



observing positive role models, mentoring), verbal persuasion (i.e., positive feedback, lectures), and emotional or physiological arousal (i.e., managing anxiety; Bandura, 1986, 1995, 1997).

When self-efficacy is enhanced students have better outcomes. Zimmerman (2000) believed that self-efficacy is a highly effective predictor of students' motivation and learning. Vancouver, Thompson, and Williams (2001) have demonstrated that a high level of self-efficacy leads to accepting challenging goals (and a stronger commitment to achieving them (Bandura 1989). However, the traditional model used to educate nurses and hierarchical nature of the nursing program does not lend itself to increasing self-efficacy and may, in some cases, act against increasing self-confidence in nursing students.

It is not to say that nursing education cannot provide positive experiences in all areas in which self-efficacy can be influenced and increased. For example, the role of evaluation in nursing education provides valuable opportunities to give positive, affirming feedback. Mentoring is another effective method to improve and build self-efficacy (McLaughlin et al., 2007). Peer teaching and interactions between students in different semesters allows students to see that they, too, can make it through the experience, semester, or nursing program. It is believed that students who have successfully completed a skill or clinical experience would provide the most appropriate model of performance, given that they are similar in age and experience (Margolis, 2005). It would serve nurse educators and the profession well to pay closer attention to student characteristics that can be easily enhanced, thereby increasing student self-efficacy. It is essential for educators to build on the strengths that we know successful

URM nursing students tap into.

Various researchers have determined that among ethnically diverse nursing student populations, personal strengths are crucial in the overall success of the student (Amaro et al., 2006; Donnelly et al., 2009a, 2009b; Gardner, 2005; Sanner et al., 2002; Veal et al., 2012; Villarruel et al., 2001). Students who had high aspirations and goals, a sense of determination, perseverance and resiliency, a willingness to learn and change, and the ability to balance multiple stressors at one time were the most successful throughout the duration of a nursing program. These attributes can be acknowledged and built on through a variety of interventions.

### **Chapter Summary**

Attrition is alarmingly high among URM nursing students, directly affecting the number of minority students who graduate and enter the nursing workforce. As demonstrated by this review of literature, multiple factors, both cognitive and demographic, influence the academic success of all students and URM nursing students specifically. To improve the retention rate and ultimately the success of URM nursing students, factors other than the traditional use of GPA and the many demographic variables of interest must be investigated to determine their usefulness in identifying, even predicting students that are at high risk for attrition. One factor of interest related to retaining students is academic self-efficacy

As reported in this review of literature, researchers have demonstrated the benefits of high academic self-efficacy on academic performance. Likewise, identifying students with low academic self-efficacy will allow nurse educators to intervene with successful

interventions to increase self-efficacy and ultimately the number of retained, successful URM students.

The literature was reviewed using results from data base searches in PubMed and ProQuest, journal articles, and dissertation research related to the major concepts/variables proposed for this study. Concepts explored in this review of literature included demographic and cognitive variables related to attrition and retention among general undergraduate and nursing student populations and self-efficacy, specifically academic self-efficacy, in regard to its effect on general undergraduate and nursing student academic success. This literature review explored current and germane historical evidence on the academic success of nursing students, URM students explicitly, to determine if literature existed, indicating a relationship and/or the predictive value of academic self-efficacy to academic success. This review also sought to discover evidence related to a relationship between academic self-efficacy and traditional measures used to determine or predict nursing program success, particularly during students' first semester in a nursing program. Likewise, the literature review included a search for evidence linking a variety of demographic variables to academic success among undergraduate nursing students and more specifically to URM students.

The review, although not exhaustive, was thorough in examining the existing, relevant literature. Other strengths of the literature review include the analysis of numerous valid studies for general undergraduate attrition and retention. Although the seminal research is several decades old, the key findings remain intact. These studies form a sound foundation for retention research in nursing. Also, the literature is rich in

evidence supporting Bandura's social cognitive learning theory and the concept of self-efficacy, including its application to education.

Limitations of this review of literature include gaps in research related to first-semester success of all nursing students and specifically URM nursing student success. Of note is the lack of research utilizing URM participants who were unsuccessful in a nursing program. Also, the literature is heavily weighted with more studies related to recruitment rather than retention of URM students.

Another obvious limitation is that variables of interest in this study can be operationalized in a variety of ways, making it difficult to compare the research. Race, ethnicity, and English as a second language are frequently combined into one variable. Likewise, academic success is measured by a variety of means, retention, progression, graduation, and NCLEX-RN first-time pass rate. Additionally, the majority of studies are small, often one-site studies, which limits the ability to generalize findings to larger populations. Also, it is not uncommon to find conflicting results related to all variables considered in this study.

Finally, the lack of self-efficacy research in nursing is limited. Although this is a limitation of the literature review, it makes the topic of academic self-efficacy's influence on academic success suitable for further research, which in turn, makes this study both timely and relevant.

This study will contribute to the expansion of academic self-efficacy research. It also has the potential to demonstrate the usefulness of academic self-efficacy in predicting first-semester success among baccalaureate nursing students and URM students, specifically as a method to reduce student attrition. Data will be useful in

developing effective intervention programming for retention, admission criteria leading to a decrease in attrition, an increase in student success, and ultimately an increase in the number of nursing school graduates. The study may also prove useful for community stakeholders and the population at large by increasing the number of successful URM students that graduate, thereby increasing the number of available nurses and adding to the diversity of the current workforce. This in turn, will lead to greater access to care for underserved and minority populations as well as improving interactions between patients and health professionals.

## **Chapter Three**

### **Methods**

This study explored the relationship between academic self-efficacy and successful progression for first-semester baccalaureate nursing students in general and URM students specifically. The study assessed the extent academic self-efficacy was a predictor of successful progression for this same population of students. Other established predictors of success, such as overall GPA, pre-nursing GPA and pre-requisite science course grades (anatomy, physiology, and microbiology) were analyzed in combination with academic self-efficacy to determine if these variables improved the predictive ability of academic self-efficacy. Ethnicity was also examined as a predictor variable. Demographic variables, including race/ethnicity, gender, age, and transfer or native university status, were analyzed regarding their relationship, if any, to academic self-efficacy.

### **Research Design**

A cross-sectional, descriptive research design was employed for this study to examine the relationships among the variables of interest. According to Polit and Beck (2008), the intention of descriptive correlational research is to explain relationships among variables rather than imply cause and effect. Correlational research is appropriate for the proposed study because problems, such as attrition cannot be subjected to experimentation.

Survey methodology was utilized to collect data. Strengths of survey methodology that were considered in selection of this approach include economy, the use of standardized questions allowing for measurement that is more precise by forcing uniform answers upon the participants, rapid turnaround time for data collection, convenience, and finally, reliability is more easily obtained since observer subjectivity is eliminated. Any limitations of the design are related to the use of survey methodology, which requires consistency of both the instrument and its administration throughout the process of data collection and interpretation of results.

### **Research Assumptions**

This study was conducted based on the following assumptions:

- The population of first-semester BSN students that were recruited to participate in this study were representative of the participating school of nursing BSN program students as a whole in regard to ethnicity, gender, and age.
- Participants in this study would have a similar understanding of the demographic survey questions and the College Academic Self-Efficacy assessment tool and the directions for completing each. As a group, all participants received verbal and written directions for completing each instrument and were allowed to ask questions prior to beginning the demographic survey and College Academic Self-Efficacy assessment tool.
- Participants in the study answered demographic questions and responded to College Academic Self-Efficacy assessment statements truthfully based on the knowledge that information obtained in the course of the study was

confidential. Participants have knowledge specifically related to how confidentiality will be preserved and were aware their participation was voluntary and that they could choose to withdraw from the study at any time and without consequences.

- The College Academic Self-Efficacy assessment tool was valid and measured the construct of academic self-efficacy as evidenced by acceptable measures of validity and reliability from previous use, which allowed the researcher to answer the research questions.
- Levels of academic self-efficacy as measured on the College Academic Self-Efficacy Scale were equal to the true measure of a participant's academic self-efficacy plus some error. The error may have been due to the assessment tool, the participant, the assessment facilitator, or the environment.

### **Setting**

The sample population for this study was recruited from a school of nursing, which is part of a large interdisciplinary research university and academic health science center located in the southeastern US. The school of nursing offers baccalaureate, masters, doctoral programs, and an accelerated master's in nursing pathway (AMNP) program for non-nursing degree majors.

This study focused on students attending the first semester of the baccalaureate of science in nursing program. Approximately 120 students are admitted to the program each fall and spring semester. The program consists of 66 credit hours over a course of five semesters.



### **Sampling Plan**

A non-probability sampling technique was employed for this study. The target population consisted of all students enrolled in the first semester of the bachelor's nursing program in this particular institution. Utilizing the convenience sampling technique, all students in this population were offered the opportunity to participate in the study. Convenience sampling is simple to use as the participants are readily accessible; however, this type of sampling is not necessarily representative of the larger population of all students in baccalaureate nursing programs.

### **Eligibility Criteria**

**Inclusion criteria.** Inclusion criteria included admission to and full-time enrollment in the first semester of the BSN program of the representative school of nursing. Students eligible to participate in the study were those enrolled in the first semester of the BSN program of the representative school of nursing.

**Exclusion criterion.** School of Nursing students not enrolled in the first semester of the BSN program were excluded from participation.

### **Determination of Sample Size**

**Power analysis.** Using G power version 3.1.2, a priori power analyses was performed to calculate the required sample size given an odds ratio effect size of 1.7 with a baseline probability of 0.7, 0.05 level of significance of (error of probability), a power of 0.8 (probability of correctly rejecting the null hypothesis when it is false,  $1-\beta$ ), and a  $R^2$  of 0.3 contributed from other predictors. The researcher proposed the primary research hypothesis to test the effect of college academic self-efficacy for academic success with a logistic regression model. College academic self-efficacy is a continuous

research variable that is assumed to have a normal distribution. Other predictors and covariates included overall GPA, prerequisite GPA, prerequisite science course grades (anatomy, physiology, and microbiology), age, gender, ethnicity, and transfer or native institution status. The computed a priori total sample size was 160 participants, given the above specified input parameters.

### **Protection of Human Subjects**

The researcher submitted applications for approval to the Institutional Review Board (IRB) at Nova Southeastern University (NSU) and the study institution. The researcher followed protocol for protecting the rights and privacy of participants as delineated by the IRB for NSU as well as the protocols outlined by IRB of the study institution

To protect the identity of the participants, each participant was assigned an identification number by a research technician. The identification number was not derived from or related to information that was otherwise capable of being used to identify the individual. A random number table was used to assign this identification number. A research technician matched the identification number with the participant's name on a master list following administration of the survey. Prior to scoring the survey instrument, the research technician eradicated (blacked out) the student name on each completed survey and replaced it with the student's assigned identification number from the master list. The master list of participant names and identification numbers was maintained as a printed copy and on a computer storage device that was securely stored in a metal lock box in a lockable file cabinet in the file room of the Student Affairs Office of the School of Nursing. The file cabinet is locked at the end of each working day as is

the room where it is located. Once all participant surveys were scored, the surveys will be stored with the master list in the locked and secured box. Only the research technician had keys to the lock box and access to its contents.

**Informed consent.** Protection of study participants included the informed consent process. Students meeting the inclusion criteria were asked to attend an information session in which they received an explanation of the general nature of the study, including the participant's role and the amount of time involved. Students were informed of the risks and benefits of participation. They were instructed that they were free to withdraw consent and discontinue their participation in the study at any time. A statement was included in the informed consent document and in the directions for completing the assessment informing students that completing or failing to complete the inventory combined with the demographic questionnaire would not affect course grades or progression in the participating school of nursing. Students were also instructed that neither the principle investigator nor any of the BSN program faculty would have knowledge of their identities or their participation statuses. Likewise, students were told the principle investigator would not receive any data until all participants' names had been replaced with an identification number. The principle investigator left the information session prior to the students' decision to participate in the study and was not present during data collection.

As part of the informed consent document, participants were asked to allow access to information contained in their academic records in the School of Nursing Student Affairs Office. The information obtained was limited to pass or fail status of first-semester nursing course attempts, overall GPA, pre-nursing GPA, and prerequisite

science course grades. After being given a reasonable amount of time to ask questions and consider their participation, students were asked to sign a document affirming that they had been informed of the nature of the study and have consented to participate. IRB requirements, outlined by NSU and the study institution, related to the design of informed consent documents were followed. At the end of the session, students choosing to participate signed consent forms.

**Risks and benefits of participation.** Participants were assured no information would be reported individually or with the participant's name or uniquely identifying characteristics. Risks related to participating in this study were minimal. However, as with any study, there was a slight chance for breach of confidentiality. Participants may have benefited from participation in the study related to the student's socialization into the profession by reinforcing the nurse's role regarding responsibility and altruism. Altruistic benefit may be derived from participation in knowing the findings have potential to benefit future students within the participating institution. There were no costs to the participant and no payments were made for participation in the study.

**Data storage.** Following data collection and re-identification by the research technician, all data were entered into Statistical Package for Social Sciences (SPSS). When seeking statistical consultation, the investigator electronically transferred the SPSS file with no identifiers. Data were stored in a locked file cabinet in the researcher's office and on the researcher's password-protected home computer. The researcher will retain all research records for a minimum of 3 years from the end-date/closing of the research study as required by Nova Southeastern University. At the end of this time, all

instruments will be destroyed, computer files erased, and computer storage devices, such as compact discs (CD) and/or flash drive devices, will be destroyed.

### **Procedures**

As outlined above, once IRB approval was obtained from both the NSU and study institution, students meeting the inclusion criteria were contacted by the principle investigator and invited via e-mail to attend a session in which the proposed study and informed consent form were explained. Once the informed consent document was signed, participants completed an investigator-designed demographic questionnaire along with the College Academic Self-Efficacy Inventory (Owen & Froman, 1988). The estimated total time for completion of the CASE inventory was 7 to 10 minutes. Following completion of the inventory and demographic questionnaire, the research technician collected the signed consent form, questionnaire, and inventory from each participant and created a master list of participants assigning each a unique identification number.

The research technician eradicated (blacked out) the student name on each completed survey and replaced it with the student's assigned identification number prior to releasing the CASES inventory to the principle investigator for scoring. The scored surveys, including the demographic questionnaires, were returned to the research technician following scoring. The signed consent forms, scored instruments, and the master list of participant names and identification numbers were stored in a lock box in a lockable file cabinet in the file room of the Student Affairs Office of the School of Nursing. The master list was only available to the research technician.

At the end of the first semester following final grade submission, the research technician obtained a list of participants' semester pass or fail status from the School of Nursing Student Affairs Office. This status determined progression from first to second semester and ultimately was used to determine the participants' first-semester academic success. Overall GPA, pre-nursing GPA, and prerequisite science course grades were also collected from the School of Nursing Student Affairs Office. The participants' semester pass/fail status was paired with their overall GPA, pre-nursing GPA, and prerequisite science course grades as well as their CASES scores and demographic data. Once data collection was completed, the research technician provided the de-identified data to the principle investigator for entry into SPSS.

### **Instrumentation**

In academic settings, Bandura suggested using instruments specifically designed for academic areas (Bandura, 1977). In deference to assessing academic achievement, survey tools measuring students' self-reported ability to complete certain academic tasks has received support in research literature (Choi, 2005; Multon et al., 1991). Therefore, this study employed Owen and Froman's (1988) College Academic Self-Efficacy Scale to assess academic self-efficacy among first semester nursing students. CASES has been found to be a quantitatively reliable and valid measure of academic self-efficacy (Choi, 2005), in particular, a measure of domain-general academic self-efficacy.

Each participant was asked to complete a researcher-developed questionnaire designed to elicit the demographic data of the population of interest. This information was used to describe the sample and to support generalization.

### **College Academic Self-Efficacy Scale**

CASES was developed by three university faculty who formulated a questionnaire from a collection of their considered routine academic behaviors participated in by college students. Following a revision, the questionnaire was piloted by testing 93 undergraduate educational psychology students. Following the pilot test, the instrument was revised once more to the current 33-item questionnaire. This self-report instrument is designed to measure academic self-efficacy by asking students to rate how confident they feel regarding their ability to perform certain academic and classroom related behaviors in college. The questionnaire utilizes a five-point Likert-like scale that ranges from *quite a lot* of confidence to *very little* confidence. An example item is taking well-organized notes during a lecture (Owen & Froman, 1988).

**Validity.** Validity for the CASES was assessed in a variety of ways. Enjoyment of task and frequency of tasks, both suggested by self-efficacy theory (Owen & Froman, 1988), were used to establish concurrent validity. In two separate studies, students were asked to rate frequency and enjoyment for the 33 items listed in the CASES instrument.

To establish factorial validity, a new sample ( $N = 122$ ) of participants was asked to rate the difficulty of performing certain tasks outlined in the 33-item CASES instrument. In analyzing responses, researchers determined that items students found easy to accomplish were those in which the students had more experience; those items students found difficult to accomplish were most likely the result of having less experience or success with the task. Owen and Froman (1988) contended that the analysis was in keeping with Bandura's self-efficacy theory (Bandura, Barbarnelli, Caprara, & Pastorelli, 1996).

**Reliability.** Owen and Froman (1988) established reliability for the instrument using the test-retest method. The questionnaire was administered twice over an eight-week period to 88 undergraduate students. Internal consistency reliability was measured using Cronbach's alpha, yielding alpha coefficients of .90 and .92, respectively. Test-retest reliability following the 8 weeks between administrations was reported at .85 (Owen & Froman 1988).

Additional support for internal consistency of the instrument was reported. In a study by Lampert (2007), data was collected from 81 undergraduate psychology students using CASES with a reported alpha coefficient of .87. Likewise, Choi (2005) collected data from 230 college student in general education courses using CASES with a reported alpha coefficient of .92

**Scoring.** CASES was scored by tallying the scores for each question and dividing by the number of questions in the instrument to obtain the mean or summated score producing ordinal level data. The instrument measured self-efficacy in 33 academic behaviors. Therefore, participants had the ability to score between a range of 33 points (the *highest* amount of confidence) and 165 points (the *lowest* amount of confidence).

### **Demographic Variables**

Participants completed an investigator-developed questionnaire seeking to identify ethnicity/race (e.g., White, Black/African American, Latino/Hispanic, Native Hawaiian or Pacific Islander, Asian, Native American, Alaska Native, Biracial and other), gender (e.g., male/female), age in years, and transfer into (e.g., community college/other four-year institution) or native status with the participating institution.



### **General Statistical Strategy**

CASES scores and students' pass or fail status for the first semester in nursing school along with the antecedent variables, overall GPA, pre-nursing GPA, prerequisite science course grades as well as ethnicity/race, gender, age, and transfer into or native status with the participating institution, were entered into SPSS in which all analyses was carried out. The data was thoroughly explored to screen for errors. The CASES scale was tested for reliability and appropriate modification was applied as needed. Because the dependent variable, academic success, was defined as the pass or fail status of the students' first semester in nursing school, binary logistic regression was employed to test the hypotheses.

### **Data Cleaning**

Once data entry was completed and prior to statistical analysis, the investigator reviewed the data for anomalies, such as entry data or coding errors, and missing data using SPSS. The frequency for each variable was checked noting any frequencies that had particularly low responses, which might be indicative of an outlier. Crosstabs were tabulated if outliers were found. Running Crosstabs in SPSS resulted in a table showing records for the low responses that could point to a transcription error. The error was corrected if possible and frequencies were run again. The missing data were random and few and the investigator managed the missing data using listwise deletion.

### **Reliability Testing**

Cronbach's alpha was calculated as a measure of internal consistency. The measure demonstrated how closely related a set of items were as a group. The closer Cronbach's alpha coefficient was to 1.0 the greater the internal consistency of the items

in the scale. If a low reliability was achieved ( $<0.6$ ), scale items were examined individually. According to Gliem and Gliem (2003), the correlation between a single item and the summated score should be at least .40. For the purposes of this study the researcher followed the standard advice given by Polit and Beck (2008), and any items whose correlation with the total scale were less than .30 were eliminated.

### **Hypothesis Testing and Inferential Statistics**

Logistic regression was utilized to test all three hypotheses. Hypothesis 1 sought to determine there was a significant bivariate relationship between college academic self-efficacy scores and academic success while adjusting for demographic variables. The researcher expected a positive correlation existed between the dependent variable, academic success, and the independent variable, college academic self-efficacy, such that college academic self-efficacy increased the probability of student academic success.

Once the initial analysis was completed the relationship between academic self-efficacy and academic success was examined while adjusting for other traditional predictors of academic success, including overall GPA, pre-nursing GPA, prerequisite science course grades as well as ethnicity/race, gender, age, and transfer into or native status with the participating institution (Hypothesis 2), which allowed the researcher to understand the predictive utility of academic self-efficacy on top of those traditional predictors and to assess the degree to which the covariates improved the ability to predict academic success.

To test Hypothesis 3, an interaction term between academic self-efficacy and ethnicity was added to the Hypothesis 2 model. Ethnicity was recoded into a binary variable, indicating if students were URM or not. This interaction model generated two

separate regression coefficients of academic self-efficacy for the URM group and for the non-URM group. A significant difference between the two regression coefficients was expected.

Logistic regression analysis is the most statistically appropriate procedure to analyze the relationship between multiple independent variables and a single dichotomous dependent variable and produces a predictive equation yielding the probability of an event. In this study, the event was academic success as indicated by progression from the first to second semester. The performance of the overall logistic model was assessed using the likelihood index or the goodness-of-fit statistic. Both statistics were reported as a chi-square value. The  $R^2$  statistic, the squared multiple correlation coefficient, indicated the proportion of variance in the dependent variable that was explained by the independent variables collectively. In other words, how much of the variability in academic success was explained by academic self-efficacy and the other predictor variables.

Classification tables, an output of logistic regression analysis, provided an indication of the how well each model was able to predict the correct category (progression) for each case. Using the classification table, the sensitivity of the model was the percentage of the group who had the characteristic of interest (progression) that had been accurately identified by the model. The specificity of the model was the percentage of the group without the characteristic of interest who were correctly identified. The positive predictive value of the model was the percentage of cases that the model classified as having the characteristic actually observed in the sample population.

### **Chapter Summary**

This study explored the relationship between academic self-efficacy and successful progression for first semester baccalaureate nursing students in general and URM students specifically using logistic regression analysis. Demographic variables including race/ethnicity, gender, age, and transfer or native institution status were included as covariates. Overall GPA, pre-nursing GPA, and pre-requisite science course grades were analyzed in combination with academic self-efficacy to determine if these factors improved the predictive ability of academic self-efficacy. Finally, the interaction between academic self-efficacy and ethnicity was examined to determine if the predictive effect of academic self-efficacy differed for general nursing students and for URM students. Determining the predictive value of college academic self-efficacy on academic success has the potential to influence the admission process and may prove beneficial in selecting currently enrolled students who would benefit from programming to increase academic self-efficacy as an intervention to prevent attrition.

## **Chapter Four**

### **Results**

The first purpose of this study was to determine if a significant relationship existed between academic self-efficacy and successful progression for first semester baccalaureate nursing students (H<sub>1</sub>). The second purpose was to determine the extent academic self-efficacy was a predictor of successful progression when controlling for traditional predictors of success, such as overall GPA, pre-nursing GPA and prerequisite science course grades (H<sub>2</sub>). The third purpose was to determine whether the association between academic self-efficacy and successful progression is moderated by ethnicity (H<sub>3</sub>).

### **Data Cleaning**

Frequencies for each variable were checked and no outliers were identified. One hundred and thirty individuals were invited to participate in the study. Of this number, 105 participants completed the combined demographics and College Academic Self Efficacy Scale survey instrument. Three of the participants failed to complete the full CASES survey and one case was missing the participants' age. The missing data was managed using listwise deletion resulting in a total of 102 usable CASES surveys.

### **Descriptives**

The majority of the participants who completed the survey were female (85.7%) as compared to male (14.3%). As to ethnicity, the majority of participants were Caucasian (78.1%). The remaining participants were African American (12.4%),

Latino/Hispanic (3.8%), Asian (3.8%), and biracial (1.9%). As a group, the underrepresented minority participants composed 21.9% of the total sample population. When reporting institution of academic origin, students who were native to the study institution composed 75.2% of the total sample population. Transfer students from four-year institutions comprised 12.4% of the total sample as did students transferring from community colleges. Participants' age ranged from 19 to 33 years with an average age of 21 years ( $M = 20.7$ ,  $SD = 2.604$ ). Using a grading scale of 1 = A, 2 = B, and 3 = C, participants' grades in anatomy ( $M = 1.55$ ,  $SD = .604$ ), physiology ( $M = 1.73$ ,  $SD = 0.624$ ) and microbiology ( $M = 1.92$ ,  $SD = 0.661$ ) were an average of B for all three courses. Foundational GPA ranged from a low of 2.91 and a high of 4.00 on a four-point rating scale ( $M = 3.4995$ ,  $SD = 0.26316$ ). Table 1 presents a summary of the demographic characteristics of the sample population.

Table 1

*Characteristics of Participants*

Characteristic	<i>n</i>	%
<b>Gender</b>		
Female	90	87.5
Male	15	14.3
<b>Ethnicity</b>		
Caucasian	82	78.1
African American	13	12.4
Latino/Hispanic	4	3.8
Asian	4	3.8
Biracial	2	1.9
Characteristic	<i>n</i>	%
<b>Academic Origin</b>		
Native	79	75.2%
Transfer from Community College	13	12.4
Transfer from 4-year Institution	13	12.4

*Note:* Frequencies not equaling 105 and percentages not equaling 100% reflect missing data. ( $N = 105$ )

The means and standard deviation of the continuous variables (anatomy grade, physiology grade, microbiology grade, and pre-nursing foundational grade point average), the demographic variable of age, and the independent variable (CASES score) are displayed in Table 2. Total raw scores for the CASES instrument ranged from 38 to 103 ( $M = 71.03$ ,  $SD = 14.546$ ) with the computed summated score ranging from 1.15 to 3.12 with 1 being *quite a lot of confidence* and 5 being *very little confidence* ( $M = 2.1392$ ,  $SD = 0.49995$ ). The raw score was used in all statistical analysis.

Table 2

*Mean Values and Standard Deviations of Continuous Variables*

	<i>n</i>	Minimum	Maximum	Mean	Standard Deviation
Anatomy Grade					
A = 1	105	1	3	1.55	0.604
B = 2					
C = 3					
Physiology Grade					
A = 1	105	1	3	1.73	0.624
B = 2					
C = 3					
Microbiology Grade	105	1	3	1.92	0.661
A = 1					
B = 2					
C = 3					
Pre-Nursing GPA	105	2.91	4.00	3.4995	0.26316
Age	104	19	33	20.73	2.604
CASES Score	102	38	103	71.03	14.546
CASES Summated Scores	102	.00	3.12	2.1392	0.49995

*Note:* Frequencies not equaling 105 reflect missing data

Table 3 presents a summary of the dependent variable of progression from first to second semester. Of the 105 participants, 96 individuals or 91.4% of the study population progressed to the second semester of the program.

Table 3

*Frequency and Percentage of Subject Progression and Failure to Progress*

	<i>n</i>	%
Progression		
Yes	96	91.4
No	9	8.6

*Note:* Frequencies not equaling 105 and percentages not equaling 100% reflect missing data



### **Reliability Testing**

Reliability analysis was completed calculating the coefficient alpha. Cronbach's alpha for the CASES scale was calculated at .90. Lampert (2007) reported additional support for internal consistency of the instrument. Data was collected from 81 undergraduate psychology students using CASES with a reported alpha coefficient of .87.

### **Hypothesis Testing**

Two assumptions, multicollinearity and independence of errors, were tested for logistic regression. Bivariate correlation was calculated for continuous predictors and demonstrated significant correlation between the participants' anatomy and physiology grades ( $r = 0.471$ ). Likewise, physiology grades were significantly correlated to microbiology grades ( $r = 0.393$ ). As expected, anatomy, physiology, and microbiology grades were significantly correlated to overall grade point average and pre-nursing foundational GPA. The College Academic Self-Efficacy score was significantly correlated to overall GPA ( $r = 0.313$ ). These correlations are summarized in Table 4. Academic origin is not included in this table because it is a nominal variable with more than two categories to which correlation analysis does not apply.

Table 4

*Correlations of Continuous Predictor Variables*

	1	2	3	4	5	6	7	8	9	10
1. Age	1									
2. Gender	.191	1								
3. URM	-.216*	-.179	1							
4. Anatomy grade	-.187	-.194*	-.050	1						
5. Physiology grade	-.043	-.131	-.079	.471**	1					
6. Microbiology grade	-.029	-.035	.044	.179	.393**	1				
7. Overall GPA	-.006	.121	.006	-.351**	-.445**	-.337**	1			
8. Pre-Nursing GPA	.101	.176	-.044	-.500**	-.622**	-.457**	.875**	1		
9. Self-efficacy	-.077	-.229*	.112	-.036	-.068	.098	.313**	.187	1	
10. Progression	-.141	.125	.002	-.115	-.077	-.035	.081	.109	.044	1

\* \*Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

An unusually high correlation was found between overall GPA and pre-nursing foundational GPA ( $r = 0.875$ ), suggesting a potential multicollinearity issue. Following this finding, a linear regression was conducted only for the purpose of obtaining collinearity of diagnostics. Because detection of multicollinearity only concerns independent variables, the continuous versus categorical nature of the dependent variable does not affect the multicollinearity diagnosis. Values of tolerance and variance inflation factor (VIF; see Table 5) as well as variance loadings from the collinearity diagnosis analysis (see Table 6) all suggesting multicollinearity between overall GPA and pre-nursing foundational GPA. A decision was made that overall GPA was less specific to future coursework in the nursing program than pre-nursing GPA and was removed from following analyses.

Table 5

*Coefficients: Values of Tolerance and VIF*

	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	<i>B</i>	<i>S.E.</i>	<i>Beta</i>	<i>t</i>	<i>ρ</i>	<i>Tolerance</i>	<i>VIF</i>
(Constant)	.87	.68		1.28	.21		
Gender recoded	.09	.09	.12	1.09	.28	.839	1.191
Under represented							
Minorities (URM)	.01	.07	.02	.16	.87	.890	1.123
Age in years	-.02	.01	-.16	-1.49	.14	.812	1.232
Academic origin	-.07	.04	-.18	-1.58	.12	.809	1.236
Anatomy grade	-.02	.06	-.04	-.29	.78	.590	1.696
Physiology grade	-.01	.06	-.02	-.17	.87	.508	1.969
Microbiology grade	.02	.05	.05	.39	.70	.702	1.424
Overall GPA	-.11	.28	-.09	-.39	.70	.186	5.364
Pre-nursing GPA	.21	.28	.20	.75	.46	.138	7.269
Self-efficacy score	.002	.002	.096	.85	.40	.773	1.294

a. Dependent Variable: Progression recoded

Table 6

*Collinearity Diagnostics*

Gender	URM	Age	Academic origin	Anatomy grade	Physiology grade	Microbiology grade	Overall GPA	Pre- nursing GPA	Self- efficacy score
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.79	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.59	.00	.04	.05	.02	.01	.00	.00	.00
.01	.00	.00	.73	.00	.05	.02	.00	.00	.00
.08	.29	.01	.02	.10	.05	.01	.00	.00	.02
.01	.00	.00	.05	.30	.00	.49	.00	.00	.00
.00	.00	.01	.09	.35	.58	.27	.00	.00	.02
.11	.00	.07	.00	.00	.07	.05	.00	.00	.78
.00	.05	.75	.03	.04	.03	.01	.01	.01	.12
.01	.05	.14	.02	.13	.07	.11	.08	.06	.02
.00	.01	.03	.03	.03	.13	.02	.91	.93	.03

Scatter plots of residuals against the main predictor, self-efficacy score, were used to check independence of errors. Both normalized residuals and logit residuals were plotted. No violation of the independence assumption was detected. Once assurance was ascertained that the data met the assumptions required for hypothesis testing utilizing logistic regression, each hypothesis was analyzed.

### **Hypothesis 1**

Hypothesis 1 posited that there was a significant bivariate relationship between college academic self-efficacy scores and academic success (progression) while adjusting for demographic variables. A correlation analysis was conducted to obtain the bivariate correlation between college academic self-efficacy and progression rate. As summarized in Table 7, there was not a significant correlation between college academic self-efficacy and progression ( $r = .044$ ).

Table 7

#### *Correlation between Academic Self-Efficacy and Progression*

		Self-efficacy score	Progression
Self-efficacy score	Pearson correlation	1	.044
	sig. (2-tailed)		.663
	<i>N</i>	102	102
Progression	Pearson correlation	.044	1
	sig. (2-tailed)	.663	
	<i>N</i>	102	105

Logistic regression was conducted to assess the impact of college academic self-efficacy scores on successful progression for first semester baccalaureate nursing students while adjusting for demographic variables. The model contained five independent variables (age, gender, academic origin, URM/Caucasian (ethnicity), and college

academic self-efficacy). This model was not statistically significant,  $\chi^2(6, N = 101) = 10.156, p = .118$ , indicating that overall this model was not predictive of progression. The model as a whole explained between 9.6% (Cox and Snell R squared) and 22.5% (Nagelkerke R squared) of the variance in progression. Rather than using a 25% holdout sample to test the predictive accuracy of the model, the classification table, an output from logistic regression, was used as an indication of the how well the model was able to predict the correct category (progression) for each case. Using the classification table, the sensitivity of the model is the percentage of the group that has the characteristic of interest (progression) that has been accurately identified by the model. The specificity of the model is the percentage of the group without the characteristic of interest that is correctly identified. The positive predictive value of the model is the percentage of cases that the model classifies as having the characteristic that is actually observed in sample population. This allowed the researcher to test the model's ability to accurately predict which group the remaining participants would be included in, the group that progressed or the group that failed to progress. Table 8 summarizes the sensitivity (100%) and specificity (.0%) of the model and demonstrates predictive ability of the model. The overall model correctly classified 92% of the cases. College academic self-efficacy explained between 1.7% (Cox and Snell R squared) and 4.0% (Nagelkerke R squared) of the variance in progression.

Table 8

*Sensitivity, Specificity, and Predictability of the Overall Model (Hypothesis 1)*

		Predicted		Percentage correct
		Progression recoded		
		No	Yes	
Progression recoded	No	0	8	.0
	Yes	0	93	100.0
Overall Percentage				92.1

As summarized in Table 9, college academic self-efficacy did not make a significant contribution to the model ( $B = .04$ ,  $p = .18$ , odds ratio = 1.04, 95% CI = 0.98-1.10). Hypothesis 1 was not supported. Only one of the independent variables made a statistically significant contribution to the model, academic origin, transfer from a four-year institution, ( $B = -1.86$ ,  $p = .042$ , odds ratio = .16, 95% CI = 0.03-0.94). The odds ratio of .16 for academic origin, transfer from a four-year institution, was less than 1, indicating that participants who transferred from a four-year institution into the nursing program were only .16 times as likely to progress as participants' whose academic institutions were the home institution.



Table 9

*Summary of Logistic Regression Predicting Progression (First to Second Semester)**While Controlling Demographic Variables*

	<i>B</i>	<i>S.E.</i>	<i>p</i>	<i>OR</i>	<i>95% CI for OR</i>	
					Lower	Upper
Age	-.23	.14	.086	.79	.61	1.03
Gender (male)	19.8	9607.04	.998	402549900.27	.00	Not estimated
URM (Caucasian)	.015	1.11	.989	1.02	.12	8.92
Academic origin Native			.12			
Academic origin Transfer from Community College	-.296	1.33	.82	.74	.06	10.08
Academic origin Transfer from Four-Year Institution	-1.86	.91	.042	.16	.03	.94
Self-Efficacy	.04	.03	.18	1.04	.98	1.10
Constant	4.96	3.683	.18	142.14		

**Hypothesis 2**

Logistic regression was performed to assess the effect of college academic self-efficacy scores on successful progression for first semester baccalaureate nursing students while controlling the demographic variables and the traditional predictive variables (pre-nursing GPA and pre-requisite science course grades). It allowed the researcher to understand the predictive utility of college academic self-efficacy and to assess the degree to which the covariates improved the ability to predict academic success (progression). Model 1 containing the four demographic predictor variables (age, gender, URM/Caucasian [ethnicity], and academic origin) was not statistically significant  $\chi^2$  (5,

$N = 101$ ) = 8.29,  $p = .141$ , indicating that the model was not predictive of progression. The model accounted for between 7.9% (Cox and Snell R squared) and 18.5% (Nagelkerke R squared) of the variance in progression. Model 2, containing the demographic and traditional predictor variables (age, gender, URM, academic origin, anatomy grade, physiology grade, microbiology grade, and pre-nursing GPA), also was not statistically significant  $\chi^2(9, N = 101) = 13.76, p = .131$ , indicating that the model was not predictive of progression. Model 2 explained between 12.7% (Cox and Snell R squared) and 30% (Nagelkerke R squared) of the variance in progression. Finally, the overall model contained eight independent variables (age, gender, underrepresented minority status, academic origin, anatomy grade, physiology grade, microbiology grade, pre-nursing foundational grade point average, and college academic self-efficacy). Like the previous two models, the overall model was not statistically significant,  $\chi^2(101, N = 101) = 14.21, p = .164$ , indicating that the model was not predictive of progression. The overall model explained between 13.1% (Cox and Snell R squared) and 30.9% (Nagelkerke R squared) of the variance in progression. Table 10 summarizes that the sensitivity of the overall model (98.9%) decreased while the specificity (12.5%) increased when controlling the demographic and traditional predictive variables. It also demonstrates that the model correctly classified 92% of the cases. College academic self-efficacy accounted for between .4% (Cox and Snell R squared) and .9% (Nagelkerke R squared) of the variance in progression. Hypothesis 2 was not supported.

Table 10

*Sensitivity, Specificity, and Predictability of the Overall Model (Hypothesis 2)*

		Predicted		Percentage correct
		Progression recoded		
		No	Yes	
Progression recoded	No	1	7	12.5
	Yes	1	92	98.9
Overall percentage				92.1

As summarized in Table 11, age demonstrated significance as a predictor variable in the overall model ( $B = -.35$ ,  $p = .04$ , odds ratio = .70, 95% CI = 0.51-0.98), indicating that with each 1 year increase in age, the likelihood to progress would reduce by 30%. Additionally, academic origin and transfer from a four-year institution, was marginally significant ( $B = -2.15$ ,  $p = .05$ , odds ratio = .12, 95% CI = 0.01-1.01).

Table 11

*Summary of Logistic Regression Predicting Progression (First to Second Semester)**While Controlling Demographic and Traditional Predictor Variables*

	<i>B</i>	<i>S.E.</i>	<i>p</i>	<i>OR</i>	<i>95% CI for OR</i>	
					Lower	Upper
Age	-.350	.17	.04	.70	.51	.98
Gender (male)	19.83	8840.63	.998	408627887.5	.00	Not estimated
URM (Caucasian) Academic origin Native	-.13	1.15	.91	.88	.09	8.26
	<i>B</i>	<i>S.E.</i>	<i>p</i>	<i>OR</i>	<i>95% CI for OR</i>	
					Lower	Upper
Academic origin Transfer from Community College	.22	1.37	.88	1.24	.09	18.13
Academic origin Transfer from four-year institution	-2.15	1.1	.05	.12	.01	1.01
Anatomy grade	-.04	.85	.97	.96	.18	5.12
Physiology grade	-.65	.93	.49	.52	.09	3.23
Microbiology grade	.66	.82	.42	1.93	.39	9.58
Pre-nursing GPA	3.11	2.68	.25	22.46	.12	4321.81
Self-efficacy	.021	.031	.51	1.02	.96	1.09
Constant	1.79	10.77	.87	.17		

**Hypothesis 3**

Hypothesis 3 adds an interaction term to Hypothesis 2. Hypothesis 3 states the predictive effect of academic self-efficacy on successful progression to second semester is moderated by underrepresented minority status, meaning there is an interaction

between academic self-efficacy and URM status. A significant difference between the two regression coefficients was expected; however, it did not hold true.

The first two models of this analysis are identical to the first two models reported for Hypothesis 2. In the overall model for Hypothesis 3, there are two additional independent variables (self-efficacy and self-efficacy X URM interaction). The overall model was not statistically significant,  $\chi^2(11, N=101) = 15.5, p = .159$ , indicating that the model was not predictive of progression. The overall model explained between 14.3% (Cox and Snell R squared) and 33.5% (Nagelkerke R squared) of the variance in progression. Table 12 summarizes the sensitivity (98.9%) and specificity (12.5%) of the model and demonstrates that the model correctly classified 92% of the cases. The addition of the interaction term did not increase the sensitivity or specificity of the overall model or improve its predictive ability.

Table 12

*Sensitivity, Specificity, and Predictability of the Overall Model (Hypothesis 3)*

		Predicted		
		Progression recoded		Percentage correct
		No	Yes	
Progression recoded	No	1	7	12.5
	Yes	1	92	98.9
Overall percentage				92.1

As summarized in Table 13, self-efficacy scores and its interaction with underrepresented minority status participants accounted for between 1.6% (Cox and Snell R squared) and 3.5% (Nagelkerke R squared) of the variance in progression. Neither self-efficacy ( $B = .13, p = .25$ , odds ratio = 1.14, 95% CI = .91-1.41) nor its interaction with URM status ( $B = -.12, p = .30$ , odds ratio = .89, 95% CI = .71-1.11) was statistically

significant in predicting progression. Hypothesis 3 was not supported. Only two of the independent variables demonstrated significance as predictor variables in the overall model, academic origin, transfer from a four-year institution ( $B = -2.34$ ,  $p = .04$ , odds ratio = .10, 95% CI = .01-.88) and age ( $B = -.42$ ,  $p = .03$ , odds ratio = .66, 95% CI = .45-.96). The odds ratio of .10 for academic origin, transfer from a four-year institution, was less than 1, indicating that participants who transferred from a four-year institution into the nursing program were .10 times as likely to progress as participants' whose academic institutions were the home institution. The odds ratio of .66 for age indicates that with each 1 year increase in age, the likelihood to progress would reduce by 34%.

Table 13

*Summary of Logistic Regression Predicting Progression While Controlling Demographic and Traditional Predictor Variables with interaction term Self-Efficacy X URM Self-Efficacy*

	<i>B</i>	<i>S.E.</i>	<i>p</i>	<i>OR</i>	<i>95% CI for OR</i>	
					Lower	Upper
Age	-.415	.192	.03	.66	.45	.96
Gender (male)	21.85	7999.35	.998	3080006427.64	.00	Not Estimatec
URM (Caucasian)	-1.08	1.73	.53	.34	.01	10.00
Academic origin Native			.11			
Academic origin Transfer from Community college	-.36	1.46	.80	.70	.04	12.11
Academic origin Transfer from four-year institution	-2.34	1.13	.04	.10	.01	.88
Anatomy grade	.34	.94	.72	1.40	.22	8.90
Physiology grade	-.86	.998	.39	.42	.06	2.99
Microbiology grade	.72	.82	.38	2.05	.41	10.24
Pre-nursing GPA	2.97	2.61	.26	19.52	.12	3265.62
Self-efficacy 2	.13	.11	.25	1.14	.91	1.41
Self-efficacy2*						
URM interaction	-.121	.115	.30	.88	.71	1.11
Constant	2.198	11.597	.85	9.00		

### Summary

Initially, statistical analysis was conducted to determine if a significant correlation existed between academic self-efficacy and progression. Further analysis was carried out to investigate whether or not bivariate correlations existed between the continuous predictor variables. Analysis did not support a correlation between academic self-

efficacy and progression; however, a statistically significant relationship was demonstrated between academic self-efficacy and overall GPA.

Subsequently multiple logistic regressions were conducted to determine the effect of self-efficacy on predicting progression from first to second semester and to determine if an interaction existed between academic self-efficacy and underrepresented minority participants (ethnicity). The overall models for each hypothesis were not statistically significant and were not predictive of progression. A final logistic regression was conducted to determine if the predictive effect of academic self-efficacy was moderated by underrepresented minority status (ethnicity). The addition of the interaction term, URM, did not increase the sensitivity of the model. URM status accounted for only 1.6 to 3.5% of the variation in progression. Although the logistic regression models were not significant, the individual covariates of age and academic origin, transferring from a four-year institution, were moderately significant predictors of progression from first to second semester.



## Chapter Five

### Discussion and Summary

A cross-sectional, descriptive research design was employed for this study to examine the relationship between academic self-efficacy and successful progression for first-semester baccalaureate nursing students in general and URM students specifically. The study assessed the extent academic self-efficacy was a predictor of successful progression for this same population of students. Other established predictors of success, overall GPA, pre-nursing GPA, and pre-requisite science course grades (anatomy, physiology, and microbiology) were analyzed in combination with academic self-efficacy to determine if these variables improved the predictive ability of academic self-efficacy. At the time of analysis, overall GPA was dropped as a predictor variable due to the issue of multicollinearity with pre-nursing GPA. It was posited that academic self-efficacy might affect general nursing students and URM students in different ways. For example, an increase in academic self-efficacy may promote academic success more significantly for URM students than others. For that reason, underrepresented minority status, ethnicity, was also examined as a predictor variable. Demographic variables, including gender, age, and academic institution of origin, were analyzed regarding their relationship, if any, to academic self-efficacy.

The theoretical framework for this study was guided by principles from social cognitive theory (Bandura, 1977, 1997). Self-efficacy theory formed the framework for research related to identifying a significant and predictive relationship between academic

self-efficacy and successful academic performance leading to progression from first to second semester. The findings of this study did not support a relationship between academic self-efficacy and progression. Utilizing Bandura's (1997) definition of perceived self-efficacy as belief in one's abilities to plan and implement the necessary actions required to produce a given outcome one would posit that self-efficacy would be significant in producing the outcome of progression; however, it did not hold true for this study.

### **Summary of the Findings**

Initially, statistical analysis was conducted to determine if a significant correlation existed between academic self-efficacy and progression. Analysis was also carried out to determine correlations of the continuous predictor variables. The researcher expected a positive correlation existed between the dependent variable, progression, and the independent variable, college academic self-efficacy, as measured by the CASES instrument; however, initial statistical analysis did not support a correlation between academic self-efficacy and academic success as measured by progression from first to second semester. In other words, an increase in academic self-efficacy (CASES score) did not result in an increased probability of academic success (progression). The study's hypotheses were based on the assumption that there was a correlation between academic self-efficacy and progression; when this did not prove true, the three proposed hypothesis were essentially nullified.

Following initial analysis, multiple logistic regressions were conducted to determine the effect of self-efficacy on predicting progression from first to second semester and to determine if an interaction existed between academic self-efficacy and

underrepresented minority participants (ethnicity). The logistic regression analysis of each hypothesis failed to demonstrate the existence of an association between academic self-efficacy scores of first semester baccalaureate nursing students and successful progression to the second semester. It held true when adjusting for the demographic variables of age, gender, ethnicity, and academic institution of origin and again in the second logistic regression when controlling for demographic variables as well as the covariates of pre-nursing foundational GPA and prerequisite science course grades. The covariates did not improve the predictive ability of self-efficacy simply because as demonstrated in the first logistic regression, academic successes (progression) was not predicted by self-efficacy. The final logistic regression, conducted to determine if the predictive effect of academic self-efficacy was moderated by underrepresented minority status (ethnicity), like the others, was not supported. Again, self-efficacy was not predictive. There was not a significant difference in self-efficacy between the URM group and the non-URM group.

These findings led the researcher to conclude for this study, a relationship between academic self-efficacy scores of first semester baccalaureate nursing students and successful progression to the second semester did not exist and that self-efficacy was not a significant predictor of academic success. This researcher questioned if there truly were not a relationship or was the method used to measure self-efficacy at fault. In other words, was there a better measure of academic self-efficacy among nursing students? Bandura posited that self-efficacy measures need to be very specific to the task and the CASES instrument was not specific to nursing.

Additionally, it must be considered that the lack of a relationship between self-efficacy and academic success could be related to the relative homogeneity of the sample. A large majority, greater than 90% of the sample, was successful and progressed to the second semester. This finding led the researcher to consider that the sample population might be more alike than different. The lack of variance in the sample may be a result of the highly selective application review process that is used at the nursing program of interest. This process ultimately resulted in a cohort of those students who have the highest chance of success. Although academic self-efficacy was not predictive in this study, there is still a need for further investigation into the effects of academic self-efficacy on the success of nursing students early in their nursing programs.

It is interesting that the individual covariates of age and academic origin, transferring from a four-year institution, were significant predictors of progression from first to second semester. As discussed later in the chapter, age and academic origin have been determined to be significant to student success in a variety of earlier studies.

In summary, the findings of the study did not demonstrate that academic self-efficacy as measured using the CASES instrument was predictive of progression for nursing students as a whole or for underrepresented minorities.

### **Integration of Findings with Previous Literature**

Academic success has been defined in a variety of ways, such as passing the RN licensure exam on the first attempt, GPA, graduation, attrition, and retention being the most prominent. Despite the knowledge that many first-semester students are at high risk for attrition and/or poor academic outcomes, unlike the study population, the literature is lacking in studies that measure success as progression from first to second semester.

Similarly, there is a paucity of literature related to academic self-efficacy and its effect on nursing student success regardless of how success is defined. These factors limit the ability of the author to compare the results of this study with studies using variables that are similarly defined. An effort was made to integrate the findings of the study to determine how the results can add to the current knowledge of the effects of self-efficacy on nursing student success. In addition to comparing the relationship and predictive ability of self-efficacy to academic success (progression), the relationship between the independent variables and academic success were also compared with the reviewed literature when applicable.

### **Self-Efficacy and Academic Success**

In this study, self-efficacy theory formed the framework for research related to identifying a significant and predictive relationship between academic self-efficacy, successful academic performance, and persistence among underrepresented minority students in a baccalaureate nursing program. The basic construct of the study was that a relationship existed between academic self-efficacy and progression such that academic self-efficacy would prove to be a predictor of progression. This premise was based not only on principles from Bandura's social cognitive theory (1977, 1997) but also in part on the work of researchers, such as Choi (2005), who reported a positive relationship existing between self-efficacy and academic performance among the general undergraduate population. Chermers et al. (2001) demonstrated that students with a strong sense of self-efficacy were more likely to be successful in academic pursuits. Similar to these results, results of the current study determined that self-efficacy demonstrated a significant relationship with overall GPA, which is frequently used in the

literature as a measure of success. However, in the current study, a significant and predictive relationship was not demonstrated between academic self-efficacy and successful academic performance.

Likewise, academic self-efficacy was not a significant predictor variable for progression. This finding diverges from that of studies conducted by Gore (2006) and Pajares (1996) who reported that when success was measured as retention, academic self-efficacy was a predictor of college persistence (retention). A comparison to the current study is not exact because failure to progress does not necessarily equal attrition. Students could be unsuccessful in a single course, preventing them from progressing, but still be retained in the program.

The results of this study regarding the predictive ability of self-efficacy may have diverged from those reported in the reviewed literature for several reasons. The instrument used may not have measured academic self-efficacy at a level specific to the skills and knowledge needed by first semester nursing students. The current study population was also narrowed to first semester nursing students in which comparison studies more often used general college undergraduate populations. For example, in Choi's (2005) study of 230 college students in general education, self-efficacy was measured at three varying degrees of specificity: (a) globally, using the Self-Efficacy Scale; (b) academically, using the CASES instrument; and (c) specifically, using a modified scale used in an earlier study by Wood and Locke (1987). Academic self-efficacy and general self-efficacy were not significant in the study (Choi, 2005). Choi suggested that it was possible academic self-efficacy was not measured at its task-specified level. Choi's (2005) study confirmed the importance of matching level

specificity between self-constructs and criterion variable in predication studies.

According to Bandura (1997) and Pajares (1996), a lack of agreement between the level of self-efficacy measured and the performance of the criteria in research studies is one reason that some researchers do not observe a significant effect of the self-efficacy on the dependent variable (Choi, 2005).

Another possible reason for divergence from the studies in the reviewed literature was the way in which self-efficacy and academic success were defined. In the current study, success was defined as progression from first to second semester in the nursing program of interest, whereas in the reviewed literature, success was defined in a variety of ways (e.g., retention, grades in specific nursing courses, term and overall GPA, GPA at the end of a specific semester or year, graduation from a nursing program, and/or initial success on the RN licensure exam).

Another area where the current study diverged from those reviewed in the literature was the sample size. The sample for this study was smaller than many of the sample sizes reported in the literature. The average sample size for Chemer et al. (2001), Choi (2005), and Gore (2006) was 410 participants compared to 105 in the current study.

Finally, there was limited variance in the sample population. The study population was made up of junior nursing students, resulting in a more homogeneous population than many of the sample populations in the reviewed literature that consisted of general undergraduate students. The highly selective application review process that is used at the nursing program of interest limited variance in the sample. For example, in general, individual participants had overall GPAs of 3.0 or greater. Likewise, the majority of participants had science GPAs of B or higher. Each ensuing demographic

variable demonstrated that the participants were more alike than different, which led the researcher to suggest that self-efficacy is not such an accurate a predictor when the sample is more alike. Self-efficacy may be better predictor when the sample population is very heterogeneous (e.g., general college freshman population).

### **Self-Efficacy and Academic Success in Nursing Education**

Findings of the current study are similar to those of Peterson-Graziose et al. (2013), who conducted a study to determine whether self-esteem, self-efficacy, and life stressors were significantly related to student attrition in the first semester of an associate degree nursing program. Like the current study, Peterson-Graziose et al. reported that self-efficacy was not significantly related to attrition (success). Similarly, findings from a study conducted by Jeffreys (1993) demonstrated that self-efficacy had a moderate, although not significant, effect on nursing program achievement. Like the current study, Jeffreys' study (1993) determined self-efficacy was not a significant predictor of academic achievement. Blackman et al. (2007) also demonstrated undergraduate nursing students' self-rated self-efficacy levels predicted academic achievement.

These findings diverge from those of Harvey and McMurray (1994) who reported that students who left the program showed lower academic self-efficacy, self-efficacy, and general self-efficacy than those who completed the program. Despite Jeffreys' earlier findings (1993), results of a later study (2004) demonstrated self-efficacy as an important factor that influenced retention.

Again, the results of this study regarding the relationship between self-efficacy, progression, and the predictive ability of self-efficacy may have deviated from those reported in the reviewed literature due to the instrument used. The instrument used in the



current study was designed to measure college academic self-efficacy. In each of the reviewed studies, the instruments utilized were specific to the type of self-efficacy the researcher was measuring (e.g., general, specific, college academic, or nursing academic self-efficacy). Likewise, academic success was defined differently based on the researchers' area of interest. In the reviewed studies, academic success was measured in terms of attrition amongst differing populations (e.g., associate degree nursing student and nontraditional nursing students), all factors that may have affected the ability to make a direct comparison between the current study and those reported in the literature.

### **Self-Efficacy, Progression, and URM Status**

When investigating the relationship between academic self-efficacy and progression among underrepresented minority students, there was not a significant relationship between self-efficacy and underrepresented minority status. Self-efficacy was not predictive of progression regardless of race or ethnicity. These results diverge from the findings of Palmer and Young (2009) who reported that self-confidence among general college students was one of several factors that were more predictive of college retention for African American students than for Caucasian students. The results of the current study may have differed from Palmer's study due to the way race/ethnicity was coded. The current study did not separate the population by individual races or ethnicities but rather viewed the individuals in the population as part of the underrepresented minorities group (e.g., Black/African American, Latino/Hispanic, Native Hawaiian/Pacific Islander, Asian, Native American/Alaska Native, biracial, or other) or the non-underrepresented minorities group (e.g., White).

### **Self-Efficacy and Academic Factors**

The current study was concerned with the affects a number of academic factors and how they interacted with self-efficacy in predicting progression, which differs from the studies reviewed in the literature in that they were more concerned with how academic factor were correlated to program success. The gap in the literature concerning the effects of self-efficacy in relation to the current study's dependent variable of interest, progression, limits the author's ability to compare and contrast results. A more global view of the academic factors is reviewed here.

**Overall GPA.** Academic self-efficacy is positively related with GPA and persistence rates in college (Bong, 2001; Pajares & Schunk, 2001; Zimmerman, 2000). Results of the current study, like those reported in the earlier studies, determined that self-efficacy demonstrated a significant relationship with overall GPA.

**Science course grades.** Byrd et al. (1999) reported that a higher cumulative science GPA was a predictor of graduation for students prior to enrollment in upper-division courses. Potolsky et al. (2003) suggested that prerequisite science course performance when combined with tutoring was a reliable predictor of academic performance. These findings related to science course grades did not hold true for the current study. In the current study, none of the science grades were significant predictors of progression. Also, a significant relationship did not exist between self-efficacy and the science grades nor was there a significant relationship between the sciences and progression.

**Pre-nursing coursework.** Findings support that higher within coursework GPAs lead to greater success, increased retention and higher NCLEX pass rates (Ali & Naylor,

2010; Bissett, 1995; Campbell & Dickson, 1996; Newton & Moore, 2007; Smith et al., 2009; Wong & Wong, 1999). Findings reported by Shulruf et al. (2011) suggested that previous academic achievements measured by student GPA are the best predictors for achievement in a nursing program, particularly in the first year. The pre-nursing GPA of the population of interest in this study was not a significant predictor of progression from first to second semester in the BSN program. There was not a significant relationship between pre-nursing GPA and progression. The divergent results of the study from those reported in the literature may again be related to how success was defined and measured. It is noteworthy that there was little variance among the participants in overall GPA, science GPA, and pre-nursing coursework, which relates to the homogeneity of the sample population.

### **Demographics**

The current study investigated the predictive ability of self-efficacy when controlling for a number of demographic variables and explored the ability of each demographic variable as a predictor of progression. The findings of the study often diverged from that of the studies reviewed in the literature. It is possible that the differences found between the current study and those in the literature relate to the fact that the current study investigated predictability, whereas the other studies were more interested in the correlation between demographic variables and success.

**Gender.** The findings of the current study do not support a correlation between gender and progression, which is similar to the findings of Swafford (1992), Williams (1994), and Salamonson et al. (2011). The findings diverged from studies in which a significant relationship between gender and retention was supported (Walls, 2010;

Woods, 2010; Prymachuk, 2009). McLaughlin et al. (2010) found a significant relationship between gender and course completion with males more likely to withdraw from courses than their female counterparts. The difference in results may be related to the research question of interest in the study. In the current study, the researcher was interested in the ability of gender to predict progression and not its relationship to success.

**Ethnicity.** The racial/ethnic diversity of the study population closely mirrored the diversity published in the AACN annual report (2012b). AACN reported that of the 624 participating schools of nursing, 10.3% of the total population was African American compared with 12.4% in the current study. Latino/Hispanic students represented 7% of the population in the AACN report, whereas the current study consisted of 3.8% Latino/Hispanic students. The majority of the study population was Caucasian (78.1%), which was similar to the AACN report (72%). The remaining racial/ethnic groups made up another 5.7% of the study population. As a group, the underrepresented minority participants composed 21.9% of the total sample population. This number is high in comparison to the total nursing population of 16.8% reported by HRSA (HRSA, 2010).

Unlike the current study, a number of researchers have found that race was a statistically significant variable related to perceived likelihood of completing a nursing program (Jeffreys, 2007; Lyons, 1999; Tart et al., 2003; Vincent, 1992). For example, Symes et al. (2002) reported that during the first semester of the nursing program, attrition was 4% for Caucasian students and 35% for non-Caucasian students. Similarly, Childs et al. (2004) found the graduation rate for African-American nursing students to be lower than any other ethnic group.

However, much like the current study, Uyehara et al. (2007) found no relationship between ethnicity and program success. As alluded to earlier, it is possible that the differences found between the current study and those that reported race/ethnicity as a significant variable are related to the way ethnicity was measured in this study. In the current study, ethnicity was recoded to include all racial/ethnic groups into the category of underrepresented minorities rather than investigating each race as a separate variable.

**Age.** Age has been found to be a significant predictor of academic achievement in nursing programs (Eccles, 2001; Jeffreys, 2007). However, Salamonson et al. (2011) found age did not demonstrate a relationship to completion of a nursing program. Similarly, in the current study, age did not demonstrate a relationship to self-efficacy or progression; however, it was significant as a predictor variable in the overall model for Hypothesis 2, indicating that with each 1 year increase in age, the likelihood to progress would reduce by 30%. Additionally, in the overall model for Hypothesis 3 in which URM status was added as an interaction term, the odds ratio indicated that with each 1 year increase in age, the likelihood to progress would reduce by 34%. This finding diverges from McCarey et al. (2006) who reported mature students, over the age of 26, earned better grades (success) than their younger peers.

**Academic origin.** Newton (2008) reported that initiation of post-secondary education at a community college rather than a four-year institution may affect the academic preparedness of students who apply to a BSN program and ultimately lead to attrition. Findings in the current study, did not support academic origin, transfer from a community college, as a significant predictor of progression.

Lewis and Lewis (2000) reported that students who were successful at the BSN

level (defined as having a cumulative GPA of 2.5 or greater) were more likely to have transferred from a four-year rather than two-year institution. The current study supports these findings. Findings demonstrated that academic origin, transfer from a four-year institution, was marginally significant ( $B = -2.15$ ,  $p = .05$ , odds ratio = .12, 95% CI = 0.01-1.01) in the overall model for hypothesis 2 when assessing the effect of college academic self-efficacy scores on successful progression for first semester baccalaureate nursing students while controlling the demographic variables and the traditional predictive variables (pre-nursing GPA and prerequisite science course grades). Likewise, in the overall model for Hypothesis 3, the odds ratio indicated that participants who transferred from a four-year institution into the nursing program were .10 times as likely to progress as participants' whose academic institutions were the home institution.

### **Implications of the Findings**

Although the majority of the findings in this study were not significant, there is still much to be learned from results.

### **Implications for Nursing Education**

The current study did not find a significant relationship between self-efficacy and progression; however, self-efficacy did demonstrate a significant relationship to overall GPA. This finding led the researcher to deduct that enhancing self-efficacy may lead to higher overall GPA, which may result in retaining students. Currently the traditional model used to educate nurses and the hierarchical nature of many nursing programs does not lend itself to increasing self-efficacy and may, in some cases, act against increasing self-confidence in nursing students. Armed with the knowledge related to the consequences of academic self-efficacy, nurse educators can provide positive experiences

in all areas in which self-efficacy can be influenced, which can be done through positive, affirming evaluation of student performance and mentoring as well as developing classroom structure and teaching and learning strategies that enhance self-efficacy. Peer interactions between students in different semesters are another method useful in increasing a student self-efficacy.

Although significant findings in the study were few, they may have the potential to affect the study institution. For example, the finding that transferring from a four-year institution demonstrated a marginal significant relationship to progression from first to second semester may have implications for the admission process at the institution of interest if the findings can be replicated with other cohorts. Likewise, the finding that self-efficacy demonstrated a significant relationship with overall GPA, may prove useful for retention if that finding can also be replicated across student cohorts.

### **Implications for Nursing Practice**

The ability to graduate increased numbers of nurses and, specifically URM nurses, is of primary importance to the health of our nation. Although the current study did not have significant findings related to self-efficacy, progression, and URM students specifically, the significant relationship between self-efficacy and overall GPA led the researcher to surmise that if the self-efficacy of all students can be enhanced, then overall GPA may increase, leading to increased retention, resulting in increased graduation rates for all students who will then move into the nursing workforce.

### **Implications for Nursing Research**

Although student success and its relationship to retention has been widely studied, there is a paucity of research related to the cognitive factor of academic self-efficacy and

its relationship to nursing student success and retention. Likewise, there is limited research on the progression of first semester nursing students.

Success has been defined in a variety of ways; however, seldom is it defined as progression from first to second semester. More often, success is measured by end of program outcomes, such as NCLEX first-time pass rate and graduation. This study provides information related to early program success. Additional research related to early program success is warranted so proven interventions can be implemented to increase retention. Measuring success by end of program outcomes does little to rescue and retain at-risk students.

The significant relationship between self-efficacy and overall GPA warrants further research related to academic self-efficacy and its impact on the retention of nursing students. Development and trial of an instrument to measure academic self-efficacy as it relates to the specific academic skills of a successful nursing student is key to significant research in the area of self-efficacy and academic success. This is an area ripe for further research.

### **Limitations**

The current study has limitations related to external validity, which is applied to experimental research designs and focuses on a researcher's ability to generalize the research findings to other populations, environments, outcomes, and times (Christensen et al., 2011). The current study has limitations related to generalization of findings because it was confined to a single institution and one convenience sample, making generalization of the findings limited. However, for the institution whose student population was studied, findings may be useful in developing student enrichment



programs to address college academic self-efficacy. Although generalization of the findings of this study are limited, the methods and results may prove useful for assessing academic self-efficacy in students in other schools of nursing.

Sample size was also a limitation in this study. The number of potential participants for the study was 130. This number included all students admitted to the first semester of the BSN program of interest. Sample size was less than preferred with a total of 105 participants versus the 160 participants needed to reach the desired statistical power. Listwise deletion was used to manage missing data. Because listwise deletion excludes data with missing values, this situation resulted in further reduction of the sample size and consequently affected the statistical power of the tests that were conducted. In using listwise deletion, the sample size was reduced to 102 when self-efficacy scores were computed and 101 in computations in which the variable of age was added. Because statistical power relies in part on high sample size; the power of the analysis in this study was less than desirable.

Sample size was also affected in part by the timing of data collection. The intention was that participants would complete the survey immediately following the last day of orientation to the BSN program. Due to technical difficulties, orientation ran late and many potential participants chose not to participate because of time constraints related to other commitments. If the study were repeated, administering the survey immediately prior to the beginning of the first day of orientation might generate better participation and a larger sample size. Although the small sample size was a limitation, statistical analysis of the association between self-efficacy and academic success

(progression) was so low ( $r = .044$ ) that a larger sample size probably would not alter the findings.

The CASES instrument that was used to measure college academic self-efficacy may not have been the most appropriate instrument to measure the academic self-efficacy of nursing students, making it another limitation of the study. A theoretical assumption linked to self-efficacy is that it is task specific. Measuring attributes that were more closely related to the academic pursuit of nursing may have proved more useful.

Finally, the homogeneity of the sample population was a limitation of the study. Many of the reviewed studies utilized participants who were general undergraduate students, which resulted in sample populations with a high degree of variability. The current study was limited to first-year nursing students, a very specific group with less variability than the comparison studies. The lack of variance was due in part to the selective nature of the admission process of the study institution, which resulted in a sample of those participants who had the highest chance of success. Prospective nursing students who were less likely to succeed had already been “weeded out” either during the pre-nursing phase of the undergraduate program or by the school of nursing admission process. The sample population was more alike than different, which may have had an impact on the predictive ability of academic self-efficacy.

The concept of internal validity was developed in the context of experimental research and is specifically concerned with the issue of causation (Christensen et al., 2011). The non-experimental design of this study does not meet the conditions necessary to make the inference that academic self-efficacy causes academic success. For this reason, the issue of internal validity does not apply to this research study and does not

impose limitations.

### **Summary**

The current study did not find a significant relationship between academic self-efficacy as measured by the CASES instrument and successful progression for first semester baccalaureate nursing students in general and URM students specifically. Academic self-efficacy was not a significant predictor of successful progression for this same population of students. Other variables in the study demonstrated marginally significant to significant bivariate relationships. Transferring from a four-year institution demonstrated a marginal significant relationship to progression from first to second semester and self-efficacy demonstrated a significant relationship with overall GPA. The variable of age was significant as a predictor of progression in the overall model for Hypothesis 2 and 3. No other covariates demonstrated predictive ability.

The lack of significant findings related to academic self-efficacy may be related to the small sample size, the lack of variance in the sample population, and the instrument that was used. The CASES instrument, although very reliable in measuring self-efficacy as it relates to general college academic self-efficacy, does not measure self-efficacy in light of the specific academic skill set and tasks that may be needed by students in a nursing program.

When findings were compared to other studies on academic success, as expected, the results were both similar and dissimilar. This is due in part to the many ways that academic success is defined and measured. Further research is needed for early program success measured as progression from first to second semester.

In conclusion, one area of the current study that was promising is the finding of a significant relationship between self-efficacy and overall GPA, which may have implications for nursing education as it relates to retention. These findings warrant further research on academic self-efficacy and its impact on the retention of nursing students.

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## Appendix A

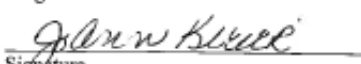
## IRB Documents

NOVA SOUTHEASTERN UNIVERSITY  
Office of Grants and Contracts  
Institutional Review Board



## MEMORANDUM

**To:** Connie Hataway  
Health Professions Division – College of Nursing

**From:** Jo Ann Kleier, PhD, EdD, ARNP  
Institutional Review Board   
Signature

**Date:** July 22, 2015

**Re:** *The Influence of College Academic Self-Efficacy on Early Academic Success of Under Represented Minority Nursing Students Enrolled in the First Semester of a Baccalaureate Nursing Program*

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

- 1) **CONSENT:** If recruitment procedures include consent forms these must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.
- 2) **ADVERSE EVENTS/REACTIONS:** The principal investigator is required to notify the IRB chair and me (954-262-5369 and 954-262-1978 respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.
- 3) **AMENDMENTS:** Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

**Cc:** Protocol File  
Office of Grants and Contracts (if study is funded)



Institutional Review Board for Human Use

Form 4: IRB Approval Form  
 Identification and Certification of Research  
 Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on January 24, 2017. The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56.

Principal Investigator: HATAWAY, CONNIE S

Co-Investigator(s):

Protocol Number: **X150505002**

Protocol Title: *The Influence of College Academic Self-Efficacy on Early Academic Success of Under Represented Minority Nursing Students Enrolled in the First Semester of a Baccalaureate Nursing Program*

The IRB reviewed and approved the above named project on 7-7-15. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to ~~no renewal~~ continuing review as provided in that Assurance.

*annual review - ABH*  
 This project received EXPEDITED review.

IRB Approval Date: 7-7-15

Date IRB Approval Issued: 7-7-15

IRB Approval No Longer Valid On: 7-7-16

*Manjira Das*

Member - Institutional Review Board for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

470 Administration Building  
 701 20th Street South  
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 BIRMINGHAM AL 35294-0104

## Appendix B

## Demographic Questionnaire

**DIRECTIONS.** Your responses will be used to investigate the relationship between selected demographic information, BSN student confidence levels, and progression in a BSN program. Your responses are strictly confidential and will not be shared with others. Please answer each question with the response that best fits you. We hope you will answer each item, but there are no penalties for omitting an item.

**Name:** \_\_\_\_\_

**Age:** \_\_\_\_\_

**Gender:**

Male

Female

**Race/Ethnicity:**

White

Black/African American

Latino/Hispanic

Native Hawaiian or Pacific Islander

Asian

Native American/Alaska Native

Biracial

Other \_\_\_\_\_

**I am beginning the Nursing Program as a [Select One]**

Native UAB student

Transfer student from a community/junior college

Transfer student from a 4-year institution

[Continue to next page]

## College Academic Self-Efficacy Scale

The following questions ask how much confidence you have about doing each of the behaviors listed below. For each statement, circle the letter that best represent your confidence.



**Lots**                      **Little**

- A B C D E    1. Taking well-organized notes during a lecture.
- A B C D E    2. Participating in a class discussion.
- A B C D E    3. Answering a question in a large class.
- A B C D E    4. Answering a question in a small class.
- A B C D E    5. Taking “objective” tests (multiple-choice, T-F, matching)
- A B C D E    6. Taking essay tests.
- A B C D E    7. Writing a high quality term paper.
- A B C D E    8. Listening carefully during a lecture on a difficult topic.
- A B C D E    9. Tutoring another student.
- A B C D E    10. Explaining a concept to another student.
- A B C D E    11. Asking a professor in class to review a concept you don’t understand.
- A B C D E    12. Earning good marks in most courses.
- A B C D E    13. Studying enough to understand content thoroughly.
- A B C D E    14. Running for student government office.
- A B C D E    15. Participating in extracurricular events (sports, clubs).
- A B C D E    16. Making professors respect you.
- A B C D E    17. Attending class regularly.
- A B C D E    18. Attending class consistently in a dull course.
- A B C D E    19. Making a professor think you’re paying attention in class.



## Appendix C

## Letter of Permission to use CASES Instrument

Connie S. Hataway, RN, MSN, CNE  
Instructor and BSN Program Co-Coordinator  
School of Nursing  
University of Alabama Birmingham

19 November 2012

Dear Connie,

Thank you for your inquiry about the College Academic Self-Efficacy Scale (CASES). You are welcome to use CASES. I've attached a copy of the scale. Here are a few summary points about the scale.

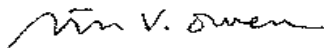
Items are scored as A ("quite a lot") = 5...E ("very little") = 1. On the other hand, because we read from right to left, data entry is faster letting A = 1, and E = 5. If you enter data with A = 1, then let the computer recode the values so that A becomes 5, B becomes 4, etc. In calculating an overall CASES score, we prefer calculating a mean rather than a sum.

You may wish to modify questionnaire instructions to best fit your application. For example, if you need informed consent, you might say something like "Filling out this questionnaire is completely voluntary and confidential. There are no penalties for not participating, and you may quit at any time."

The next page shows the CASES items. Following that is a conversation about scoring CASES, plus some normative data.

Best wishes in your research.

Sincerely,



Steven V. Owen, Professor (retired)  
Department of Epidemiology & Biostatistics  
University of Texas Health Science Center at San Antonio  
7703 Floyd Curl Dr., MC 7802  
San Antonio, TX 78229-3900

Internet: [svo@vbbn.com](mailto:svo@vbbn.com)

OR [steven.owen@uconn.edu](mailto:steven.owen@uconn.edu)