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Nursing Program Acceptance Criteria

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by

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Abstract

This study examined the relationship of admission criteria and mobility nursing student success as measured by retention and NCLEX-RN passing on first attempt at five colleges in a Midwest state community college system. Admission criteria, demographic and retention survey data was collected and analyzed related to student program retention and NCLEX-RN passing results. The education level of mother was positively correlated to student retention. The results suggest there is a positive relationship between PN GPA and prerequisite GPA and nursing student retention. A positive correlation was found between four student retention items and perceived faculty support, one student retention item of self-efficacy, and two student retention items of outcome expectations. There was a positive relationships found between the admission criterion of prerequisite GPA and passing of NCLEX-RN on first attempt.

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Chapter I: Introduction

The United States is experiencing a nursing shortage (Allen, 2008; Allan, Crowley, Ports, & Aldebron, 2010; Aiken, 2007; Buerhaus, Staiger, & Auerbach, 2003; Cohen, 2011; Davis & Napier, 2008; Dolan, 2011; Fox & Abrahamson, 2009; Goodin, 2003; Herrera & Blair, 2015; Siela, Twibell, & Keller, 2009; Snavely, 2016; Williams, 2010; Yates & Sandiford, 2013). Nursing shortages began as early as the 1930s and continue to present day (Dolan, 2011; Fox & Abrahamson, 2009). A nursing shortage is a reason for concern since Americans are living longer and with more chronic conditions (Snavely, 2016), leading to a need for more nurses now and in the future. Causes of the nursing shortage include an aging nursing population with large numbers of retiring nurses (Pelayo, 2013), costs for programs related to high faculty turnover (Kowalski & Kelley, 2013), and clinical site shortages limiting spots for admission (Allen, 2008; Clark & Allison-Jones, 2015; Horkey, 2015; Kowalski & Kelley, 2013; Pelayo, 2013).

To complicate matters, the United States is also experiencing a shortage of nursing educators, making it difficult to increase capacity to meet the supply and demand (Allen, 2008; Allen et al., 2010; Andrews & Dziegielewski, 2005; Bosch, Doshier, & Gess-Newsome, 2012; Dolan, 2011; Evans, 2009; Jeffreys, 2015; Nardi & Gyurko, 2013; Siela et al., 2009; Snavely, 2016; Walrath & Belcher, 2006). There are many prospective nursing students who are turned away from academic programs because capacity for supporting all those interested is severely challenged by the limits of an aging and retiring faculty (Aiken, 2007; Allan et al., 2010; Buerhaus et al., 2003; Clark & Allison-Jones, 2015; Dolan, 2011; Goodin, 2003; Horkey, 2015).

To assist in determining which prospective students should be accepted to a nursing program, administrators develop acceptance criteria and selective admission policies (Bissett, 1995; Herrera & Blair, 2015; Horkey, 2015; Lengacher & Keller, 1990; Newton, Smith, &

Moore, 2007; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). Typically, a ranking system is developed and applied to determine who is accepted when there are more prospective students who meet criteria than spaces available. The criteria are designed to select students most likely to succeed the academic rigor of nursing school required for passing the National Counsel Licensure Examination for Registered Nurse (NCLEX-RN) (Horkey, 2015; Tipton, Pulliam, Beckworth, Illich, Griffin, & Tibbitt, 2008). First time NCLEX-RN pass rates are used as a program measure of success and are publicly reported (Davenport, 2007; Horkey, 2015).

It is expected that students meeting admission criteria demonstrate they can be successful in the program by persisting to completion, graduating from the program, and passing the NCLEX-RN on their first attempt. However, there have been contradictory results concerning which admission criteria or student characteristics are most predictive of students' success (Daley, Kirkpatrick, Frazier, Chung, & Moser, 2003; Herrera & Blair, 2015; Horkey, 2015; Uyehara, Magnusses, Itano, & Zhang, 2007; Wolkowitz & Kelley, 2010).

According to Newton et al. (2007), "admission policies with the potential to maximize student success within the nursing major are needed" (p. 439). It is, therefore, important to begin planning for nursing student success as they enter college and are applying to nursing programs. As the nursing shortage continues, it is imperative to develop strategies to recruit, retain, and graduate students who are successful on passing the NCLEX-RN examination on the first attempt (Sayles et al., 2003).

Many researchers conducting studies to examine the variables associated with students' success on the NCLEX-RN have sampled baccalaureate level nursing graduates (Ashley & O'Neil, 1991; Daley et al., 2003; Eddy & Epeneter, 2002; Mills, Sampel, Pohlman, & Becker, 1992; Pabst, Strom, & Reiss, 2010). Some scholars have included mixed samples including both

baccalaureate and associate degree nursing graduates (Griffiths, Papastrat, & Czekanski, 2004; Poorman & Webb, 2000) or do not identify the level of education of the nursing graduate (Carrick, 2011). Furthermore, few scholars have focused solely on associate degree (AD) nursing graduates (Higgins, 2005; Lengacher & Keller, 1990; Lyons, 2008; Tipton et al., 2008; Yates & Sandiford, 2013). No studies were found on NCLEX-RN studies for Associate Degree (AD) nursing mobility programs, which are a type of accelerated program designed for nursing students who already hold a licensed practical (or vocational) nurse (LPN/LVN) license and are generally two semesters in length once all prerequisites are completed.

All nursing graduates (whether baccalaureate or associate degree level) take the same NCLEX-RN examination test for licensure; however, the baccalaureate nursing program generally involves four years of educational preparation and the associate degree nursing program generally involves two years of educational preparation, while the AD mobility program generally requires prerequisites and then an additional two semesters beyond the practical nursing licensure. Due to this difference in preparation, it is important to differentiate between groups of nursing students to learn if they experience the same or different retention and first-time passing rates on NCLEX-RN results.

Statement of the Problem

Nursing programs are assessed by state boards of nursing; and national nursing accrediting organizations on several outcomes, including first-time passing rates of program graduates on the NCLEX-RN, (Davenport, 2007; Giddens & Gloeckner, 2005; Griffiths et al., 2004; Horkey, 2015; Koestler, 2015; Schwarz, 2005; Spurlock & Hunt, 2008; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). Therefore, NCLEX scores are important not only to

individual students, but also to nursing education programs (Blozen, 2017; Davenport, 2007; Horkey, 2015).

Additional national nursing accreditation measurements include student completion (retention) rates, placement rates, and student and employer satisfaction rates (Accreditation Commission for Education in Nursing [ACEN], 2013). More prospective students apply than are accepted to nursing programs, (American Association of Colleges of Nursing, n.d.; Horkey, 2015, Yates & Sandiford, 2013), therefore, it is critical for program administrators to identify criteria predictive of students' success in the admissions process (Horkey, 2015). Nursing programs use a variety of factors to determine admission (Herrera & Blair, 2015) such as grade point average (GPA), prerequisite course grades, and standardized admission tests (Horkey, 2015). Each program designs its own acceptance criteria expected to be predictive of success in program retention and first-time passing of the NCLEX-RN licensure examination (Blozen, 2017; Horkey, 2015). There is a lack of consistent, clear admission criteria predictive of student success, therefore it is important to research the variables associated with nursing students' retention and NCLEX passing rates so that administrators can use those variables in admissions decisions. Admission criteria is minimally researched for associate degree programs and even less for AD mobility nursing education. AD mobility nursing programs lack evidence for designing effective admission criteria for nursing program acceptance based on the outcomes of retention and NCLEX-RN pass rates.

Description and Scope of the Research

In this study, I seek to determine which acceptance criteria for nursing programs are most predictive of retention and success on first-time NCLEX-RN licensure examination in AD mobility programs. The results of this study will assist nursing program administrators in

admitting nursing students most likely to complete their program successfully, pass their NCLEX-RN licensure examination on first attempt, and enter the field of nursing prepared to serve patients.

Higher education is generally thought to be good for economies because it is useful in developing human resources needed to support society (Kowalski & Kelley, 2013; Olaniyan & Okemakinde, 2008). According to Olaniyan and Okemakinde (2008), “The focus on education as a capital good relates to the concept of human capital, which emphasizes that the development of skills is an important factor in production activities” (p. 479). By applying human capital theory to the prospective student admission and selectin process, a nursing program’s admission policy would utilize efforts through judicious application of selective admission criteria to intentionally increase retention rates and student NCLEX-RN first-time passing rates.

Research Questions

There is a lack of consistent, clear admission criteria predictive of student success in associate degree (AD) nursing programs. AD mobility nursing student success will be investigated through four specific research questions.

1. Are students’ demographic variable associated with their retention in an AD mobility nursing program?
2. Are there relationships among the admissions criteria (variables) used in AD mobility nursing programs and nursing students’ success in completing the program?
3. Are the student retention factors of perceived faculty support, self-efficacy, and outcome expectations related to students’ retention in an AD mobility nursing program?

4. Are there relationships among the admission criteria (variables) used in AD mobility nursing programs and nursing students' success in passing the NCLEX-RN examination on first attempt?

Research Hypotheses

Hypothesis 1 will answer Research Question 1.

Hypothesis 1: There will be a positive correlation between one or more student demographic indicators related to retention in an AD mobility nursing program.

Hypothesis 2 will answer Research Question 2.

Hypothesis 2: There will be a positive correlation between one or more variables (admission criteria) and retention rates of students graduating from AD mobility nursing programs.

Hypothesis 3 will answer Research Question 3.

Hypothesis 3: There will be a positive correlation between one or more of the student retention factors of perceived faculty support, self-efficacy, and outcome expectations related to students' retention in AD mobility nursing programs.

Hypothesis 4 will answer Research Question 4.

Hypothesis 4. There will be a positive correlation between one or more variables (admission criteria) and first-time passing of NCLEX-RN licensing examination for graduates from AD mobility nursing programs.

Purpose and Significance of the Study

Herrera and Blair (2015) reported that, "It is important that nursing schools be able to forecast, with confidence, the probability that a student will successfully complete a nursing program and ultimately pass the National Council Licensure Examination-Registered Nurse

(NCLEX-RN)" (p. 1). The NCLEX first attempt passing rates are assessed by state boards of nursing and national nursing accrediting organization. A nursing program's passing rate on NCLEX-RN represents a mark of success (Davenport, 2007). The Accreditation Commission for Education in Nursing Accreditation [ACEN] (2015) reported that program evaluation is tied to a graduate's ability to pass the NCLEX examination on the first attempt. State boards of nursing are tasked with protecting the public and monitoring NCLEX passing rates is one measurement reviewed related to nursing programs. The Minnesota Board of Nursing rules indicate that a trend of low first-time passing rates for program graduates can lead to approval with conditions and if conditions are not met, the possibility of nursing program closure (Office of the Revisor of Statutes, n.d.). Therefore, the purpose of this study is to determine which admission criteria are associated with students' retention rate and first-time passing of NCLEX-RN in AD mobility nursing programs.

Assumptions of the Study

Nursing program directors and nursing faculty members are required to meet required state board of nursing and national nursing accreditation standards. Nursing program directors and faculty members want nursing students to be successful without lowering admission criteria or other standards. Nursing programs are not graduating enough students to meet the needs required by society. Acceptance criteria are intentionally selected to predict students most likely to be successful by completing their nursing program and passing NCLEX-RN on their first attempt.

Delimitations

As director of an AD mobility nursing program, I have an obligation to accept students to the program who have the potential to complete the rigor of the curriculum, complete the

program, graduate, and successfully pass the NCLEX-RN examination on their first attempt. Identification of nursing program admission criteria which are predictive of student success as measured by retention and NCLEX-RN passing on first attempt would assist in increasing the number of RNs in the work force and help to meet the demands of the prolonged nursing shortage.

Because AD mobility nursing programs admit students who are already LPNs, these students have a base nursing knowledge that students accepted into other types of nursing programs are not required to have. Past research has not been clear regarding which admission criteria are associated with identifying students who would be successful in nursing programs. AD mobility nursing students have completed all the required prerequisite courses before being accepted to the program when they begin taking nursing courses. Studying AD mobility nursing students will assist in identifying admission criteria which are predictive of success as measured by retention and first time passing of NLCEX-RN licensing examination.

Summary

In Chapter I, I introduced the problem of the continuing nursing shortage and the need for nursing program admission criteria that helps predict student success in nursing program retention and first-time passing of the NCLEX-RN examination. In Chapter II, I will review the literature supporting the nursing shortage and explain how the nursing faculty shortage contributes to the challenge of supply and demand in the nursing profession. I will review literature concerning retention rates and strategies generally for nursing students and examine nursing program admission criteria and nursing program academic success as predictors of first-time passing of the NCLEX-RN examination. In Chapter III, I will describe the study methods,

in Chapter IV I will describe the study research findings and results, and in Chapter V, I will discuss the limitations, implications, and conclusions of the study.

Chapter II: Literature Review

There are more prospective nursing students than positions available in nursing programs while at the same time the United States is experiencing a shortage of registered nurses (RNs) and nurse educators. Nursing programs are measured for success by state boards of nursing, and national nursing accrediting organizations on several outcomes, including first-time passing rates of program graduates on the NCLEX-RN. Many researchers have focused on examining admission criteria at two- or four-year nursing programs with little information available about mobility programs (also known as bridge, ladder or step-in) which require nursing students to already be licensed practical (or vocational) nurses (LPN/LVN). It is not known whether there are relationships between admission criteria, students' retention rates, graduation rates, and NCLEX-RN first attempt passing rates. In the following sections, I review retention research literature and a model of nursing student retention to provide background information on the topic.

Review of the Literature

Nursing programs' success is measured by state boards of nursing and national nursing accrediting organizations (Accreditation Commission for Nursing Education, [ACEN], 2015). A common concern for nursing programs is the outcome related to first-time passing rates of program graduates on the NCLEX-RN (Blozen, 2017; Davenport, 2007; Giddens & Gloeckner, 2005; Griffiths et al., 2004; Koestler, 2015; Schwarz, 2005; Spurlock & Hunt, 2008; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). Davenport (2007) stated that a "student's ability to achieve success on the licensure exam the first-time they take it is considered a visible measure of program quality, one that has implications for both the student and the program" (p. 30). Additional national nursing accreditation measurements include student program completion

(retention), and job placement rates, as well as graduate, and employer program satisfaction rates (ACEN, 2015). These criteria are a first level of screening with board passing as a first level outcome. Even less is known about admission criteria and professional outcomes success.

Nursing programs develop processes for determining which applicants should be accepted into their programs (Bissett, 1995; Herrera & Blair, 2015; Horkey, 2015; Wolkowitz & Kelley, 2010). Typically, nursing programs require certain criteria be met to be considered for acceptance. Often, admission acceptance criteria also involve a ranking system to determine who secures a place in the program. Wolkowitz and Kelley (2010) stated that "a daunting task facing nursing programs around the country is determining which students to admit into their programs" (p. 498). Yates and Sandiford (2013) added that predicting performance on passing the NCLEX-RN has "implications for program admission, selection, and curriculum development" (p. 320). Additionally, Horkey (2015) stated "United States nursing programs must determine more effective criteria for screening applicants so that the students, most likely to success, are admitted to programs" (p. 29). These criteria need to be objective, fair, and predictive of success regardless of demographic variables. A general review of retention and retention strategies followed by nursing retention and retention strategies is next.

Program Retention Rate

Efforts to support retention among college students and strategies to increase retention have been in the literature for decades, including Tinto's (1987, 1993) theory of student departure and student integration. Although Tinto (1987, 1993) focused on reasons for student departure; (e.g., isolation, withdrawal, financial reasons, etc.), Tinto (1987, 1993) also identified student retention strategies including putting student needs ahead of institutional goals, meeting educational goals for all students, and developing supportive educational and social communities

which integrate all students into campus membership. More specifically, Tinto (1987, 1993) identified principles for implementation to effectively support student retention including providing student resources, instituting long-term institutional commitment to retention program development that is campus-wide, and ensuring all faculty and staff are skilled/trained in assisting students in their education. The timing of implementation of retention strategies should be early in student's educational journey. Tinto (1993) wrote that "given choices of where and when to invest scarce resources, institutions should frontload their actions on behalf of student retention, specifically to the first year of college" (p. 152). Lastly, retention strategies should be assessed regularly and improved, based on the assessment findings (Tinto, 1987, 1993).

More recent research includes a focus on retention among college students (Barra, 2013; Everett, 2015; Fike & Fike, 2008; Kurantowicz & Nizinska, 2013; Pruett & Absher, 2015; Seago, Wong, Keane, & Grumbach, 2008; Tuckman & Kennedy, 2011), and specific student groups such as millennials (Turner & Thompson, 2014), and nontraditional students (Shelton, 2012). Tinto (1997) continued to contribute comments on student retention in articles concerning learning communities. Tinto (1997) described learning communities as "as kind of co-registration or block scheduling" (p. 2), which provide students the benefits of learning more through learning together and from each other, meeting both educational and social needs, two concepts foundational to the theory.

AD mobility nursing programs are generally set up in a cohort fashion, meaning that students sign up and progress through nursing courses together. AD mobility programs are designed as learning communities through cohort program progression. According to Tinto (1997), learning communities provide four benefits for students including active involvement,

spending more time together, forming social groups outside the classroom, and bridging the divide between academic and social needs.

Other impacts of learning communities for students, according to Tinto (2000) include students' active involvement, enhanced quality of learning, higher rates of persistence, and "an increased sense of responsibility for participating in the learning experience and an awareness of their responsibility for both their own learning and the learning of others" (Tinto, 2000, p. 12). Such a program design has potential to reinforce positive success factors in students.

Retention Strategies

Strategies for increasing college students' retention have been developed and studied, including reviewing the role of academic advising (Drake, 2011), intrusive advising across cultures (Escobedo, 2007), and strategies for increasing enrollment, retention, and graduation rates (Talbert, 2012). More recent authors have reviewed retention specific to community college students (Everett, 2015; Fike & Fike, 2008) or retention among specific college student groups such as millennial freshman (Turner & Thompson, 2014).

Drake (2011) emphasized the role of academic advising, defined as "a series of intentional interactions with a curriculum, a pedagogy, and a set of student learning outcomes" (p. 10), in supporting students' retention and persistence. Drake wrote that advising is a powerful tool which promotes retention and persistence, because advisors listen to students and assist them in developing an individual plan for meeting their educational needs. Based on Tinto's theoretical framework, Drake supported advising to help students learn "decision-making strategies, set priorities, develop thinking and learning skills, make and evaluate choices, and value the learning process" (p. 10).

Escobedo (2007) also studied advising using an intervention model to support retention and persistence across cultures among community college students. Using Tinto's (1993) theoretical framework, Escobedo stated that Tinto's "model of institutional departure (1993) asserts that academic and social integration of the individual into the culture of the institution derives continued enrollment and program completion" (p. 12). Escobedo also studied retention and persistence in Hispanic serving institutions, finding that students in contact with retention specialists persisted at a "substantially higher rates" (Escobedo, 2007, p. 14) than the general population. Some challenges identified during the study included communication barriers, and an identification of the need to consider mandatory advisement, mandatory orientation, and mandatory assessment. Overall, Escobedo supported the idea that student integration is key to retention.

Student retention and graduation rates are declining across the nation (Talbert, 2012). Talbert (2012) researched strategies to improve enrollment, retention, and graduation in higher education as submitted by academic leaders. Talbert found Minnesota had the fourth highest percentage of its population with an associate degree or higher in the nation; however, the state also had one of the highest rates for graduation gaps among minority students.

Talbert (2012) discovered the importance of developing a student success tracking system, a marketing system, a need for improved alignment of English as a second language (ESL), program development, and careful attention to planning, designing, delivering, and assessing learning with minority students. Additional specific sub-categories of needs identified included developing self-study action plans, developing implementation of student services evaluation protocols of student learner outcomes, more frequent data review, development of quick response codes to monitor student needs, and resource availability to meet needs.

Additional strategies from qualitative comments identified the need for diversity workshops for faculty and staff to learn about diverse cultures, how to identify of at-risk students, and the development of plans to support success among minority students.

Fike and Fike (2008) studied first-time college students at a community college to analyze predictors for retention. The authors found student recruitment costs more than student retention, yet many institutions focus more on recruitment rather than retention. Tinto (1999) related that most colleges do not take student retention seriously. Retention is important for many reasons including financial stability of institutions, viability of programs, adequate preparation for the supply and demand of the world of work and meeting the institution mission and vision to provide quality education for students (Fike & Fike, 2008). Fike and Fike wrote "As educators, we need to be concerned about students leaving college. For every student lost, an educational dream goes unfulfilled" (p. 8).

In their research on millennial student's retention, Turner and Thompson (2014) examined the characteristics and traits of millennials, and suggested retention strategies for meeting the needs of millennial students. The authors identified seven main characteristics and traits of the millennial generation (as described by Monaco and Marti in 2007 and Rickes in 2009) including describing millennials as "sheltered, team-players, conventional behavior, confident attitude, achievers, special, and pressured" (Turner & Thompson, 2014, p. 94). They also described millennials as lacking in critical-thinking skills, having difficulty with inductive and deductive reasoning, being impractically confident, and as having unrealistic expectations (Turner & Thompson, 2014). Another attribution of millennials is having over-active parental involvement and the expectation that faculty and administrators be openly accessible and available anytime (Turner & Thompson, 2014).

In their qualitative interview design study, Turner and Thompson (2014) asked questions to discern phenomenology meaning for millennials regarding freshman college experiences. They discovered four core themes that can serve as barriers, including "Sixty-seven percent of student cited engaging freshman activities, 65% mentioned the development of effective study skills, 57% reported no interactive instructor-student relationship, and 53% cited inadequate academic services-support" (Turner & Thompson, 2014, p. 100.).

To deal with the identified core theme barriers, Turner and Thompson (2014) recommended freshman activities and events that support development of study skills. The authors wrote "student who develop an interactive relationship with the instructor increase the changes of academic persistence" (Turner & Thompson, 2014, p. 101.) and suggested instructor relationships can help students feel safe and supported or, conversely, have a negative impact. Lastly, the authors recommended improving academic advising and support through mandating several meetings during the first year of college. Turner and Thompson did not indicate specifically how freshmen events might support student development of study skills, nor how best to improve instructor-student relationships. Regarding instructor relationship building, Tinto (1987, 1993) contributed "faculty must be available and interested in such interactions for them to occur, and conditions must be such as to encourage those interactions" (p. 57.).

Retention and nursing students. Retention among nursing students is also a concern. Nursing programs must maintain expected completion (retention) rates which other programs generally do not need to address. Program completion rates in nursing education are generally described as retention rates. Retention in nursing programs is defined by the Accreditation Commission for Education in Nursing (ACEN) (2015) as the "number of students who complete the program in no more than 150% of the stated program length beginning with enrollment in the

first nursing course" (p. 8). Retention is one of the outcomes measured by national nursing accreditation organizations relating to nursing program success and obtaining or maintaining national nursing accreditation. The measurement of retention rates as an outcome of nursing program success has generated interest in research from beginning students (Williams, 2010) to doctoral students (Cohen, 2011). Jeffreys (2015) wrote that "nursing student retention is a priority concern of nurse educators worldwide" (p. 427).

A great deal of nursing student retention research has focused on minority nursing students (Baker, 2010; Barra, 2013; Charbonneau-Dahlen, 2015; Veal, Bull, & Miller, 2012). While the United States is growing in diversity, the number of minority nurses is not keeping up proportionately (Charbonneau-Dahlen, 2015; Crooks, 2013; Gardner, 2005; Junious, Malecha, Tart, & Young, 2010; Melillo, Dowling, Abdallah, Findeisen, & Knight, 2013; Rendon, 1994; Veal et al., 2012; White & Fulton, 2015). Of studies concerning nursing students' retention rates, most authors focused on baccalaureate nursing program preparation. Only two studies involved retention specific to the associate degree (AD) nursing student population (Fontaine, 2014; Shelton, 2012) and none specifically focused upon AD mobility (also called pathway, bridge or laddering) programs. One set of authors (Yates & Sandiford, 2013) included bridge students in their sample as part of all the AD nursing students.

Diversity in higher education is thought to be beneficial by playing a part in learning and development for all students (Winkle-Wagner & Locks, 2014). Recruitment and enrollment of diverse nursing students has increased (Melillo et al., 2013; Sedgwick, Oosterbroek, & Ponomar, 2014); however, the number of minority nurses has improved little due to high attrition rates in this group of students (Veal et al., 2012). Cantwell, Napierkowski, Gundersen, and Naqvi, (2015) stated in their study to enhance retention by minimizing barriers "ethnically and culturally

diverse students experience an academic attrition rate of 22.4% in contrast to 2.2% for Caucasian students" (p. 121). On a related note, Gardener stated (2005) "the retention and graduation of foreign-born nursing students is essential in the development of a diverse nursing workforce that is able to deliver ethnically, culturally, and linguistically appropriate, and sensitive health care" (p. 12).

Given the interest in increasing diversity in the nursing profession, it is not unusual to find studies on nursing students' retention involving diverse nursing student populations. Recent retention studies among nursing students have involved diverse graduate nursing students (Veal et al., 2012), those from disadvantaged backgrounds (Igbo, Straker, Landson, Symes, Bernard, Hughes, & Carroll, 2007), nontraditional students (Shelton, 2012), and minority nursing students (Baker, 2010; Barra, 2013; Bond & Carson, 2014; Charbonneau-Dahlen, 2014; Murray, Pole, Ciarlo, & Holmes, 2016). The trend in interest in researching retention among diverse groups of nursing students demonstrated an interest among these diverse groups to enter the nursing profession. Increasing diversity of those seeking to be accepted to nursing programs supports the need to clarify which entrance criteria is predictive of success in retention and other nursing program success measures including passing the NCLEX-RN examination on first attempt.

Another way to view nursing program retention rates is to examine attrition rates as Horkey (2015) wrote, "There are an abundance of qualified nursing applicants and high demand for admission into United States nursing schools, however, student attrition is an ongoing problem" (p. 29). Horkey studied attrition in nursing programs and supports use of both qualitative and quantitative measures in discerning student admission for evaluating potential nurses through scientific and artistic means. Horkey suggested identifying those "who can both thrive academically and embrace nursing as an art" (p. 30).

Once accepted to a nursing program, it is essential to support students during their program progression. Shelton (2003) stated, “nurse educators must identify types of faculty support that facilitate student persistence and academic performance” (p. 69). Completion (retention) rates are among the outcomes measured by nursing programs, and reported to state boards of nursing, and national nursing accrediting organizations. Several researchers outlined more specific strategies for improving retention rates in nursing students, and these are reviewed in closer detail next. Among these is a framework for academic persistence and success (Veal et al., 2012); a mentoring program (Crooks, 2013); a model of nursing student retention (Shelton, 2012); and several strategies for increasing retention among nursing students (Baker, 2010; Fontaine, 2014; Igbo et al., 2007; Murray et al., 2016).

Retention strategies for nursing students. In their focus group qualitative study, Veal et al. (2012) examined persistence and success among ethnically diverse graduate nursing students. The study sample included 16 ethnically diverse nursing students at a Midwestern university. Students were divided into five focus groups over a year-long period with three to five students involved during each session.

Veal et al. (2012) identified that in their sample, stressors and moderators emerged, and stated, “the process of learning to balance stressors with moderators was key to academic persistence and retention” (p. 322). Categories of stressors were identified in their study including not feeling connected within the college of nursing and difficulty utilizing technology (p. 324). Moderators were factors that alleviated stress and, in their sample included receiving supportive services, and development of a personal support network. The authors identified two crucial elements related to graduate nursing student success and persistence, which were achievement of social integration, and academic progress.

Recommendations from Veal et al. (2012) for retention and success of graduate nursing students were three-fold. The first involved faculty development and suggests ways faculty can demonstrate a welcoming attitude through greater cultural awareness, avoidance of generalizations, being available, and involved in student interactions and transformational co-learning. The second recommendation is administrative action and support which included development of in-person orientation to campus resources and technology. Additional administrative supports included considering a diversity recruiter-advisor, hiring of diverse staff and faculty, assigning faculty mentors on admission to the program, and assisting students in forming networks that link them with resources early in the program. The last recommendation involved student resources and suggests having one-on-one time with advisors and others for academic support.

In response to the barriers often facing minority students in nursing education, Crooks (2013) outlined the MENTOR plan. MENTOR stands for "Mentoring Ethnically diverse Nursing students to increase Overall Retention" (Crooks, 2013, p. 47). The MENTOR plan was a response to the recognition that although the number of minority nurses is increasing, it has not grown in proportion to the number of minority people in the United States. Crooks (2013) stated "The researcher's motivation also came from the mountain of evidence for the increased need for a culturally representative nursing workforce in the United States considering the population is becoming more diverse" (p. 47).

The MENTOR plan involved a 16-week mentoring program which could be added to any nursing curriculum. To set up the program, all new students were invited to participate. Mentors were selected from upper class nursing students who volunteered to participate in the program. The 16 weeks involved four scheduled meeting times for mentor and mentee. Meeting 1 took

place one week prior to the start of school as a form of introduction to the program and could be completed by distance. For Meeting 2 (Week 4) the mentees initiated the meeting and the topic was breaking the ice, getting to know one another, and basic relationship building. The third meeting (Week 8) involved an assignment for the mentee to track their daily activities for a five-day period and then review the details with their mentor. The final mentor-mentee meeting, Week 12, was a review of how courses were going, preparation for final examinations, suggestions for success, and review/revision of all goals.

Within the 16 weeks, three scheduled forums were planned, each forum related to barriers to student success. The forum topics included information on specific topics targeted to new students who self-identified as a minority. The first forum was on financial aid (Week 6), the financial aid staff helped mentees create a personal budget related to financial aid and monthly costs. Time management and priorities was the topic of the second forum (Week 10) which involved preventing procrastination by studying, and planning consistently, and assisting students to optimize their time. The final forum (Week 14) involved a presentation from successful diverse nurses telling their own stories of academics and professionalism.

When the MENTOR plan was implemented, Crooks (2013) noted “almost all the students felt that the program was very helpful; the [NCLEX-RN] pass rates for students participating in the program were higher [than those not participating] and all students who participated enrolled the following semester” (p. 48). The MENTOR plan (Crooks, 2013), as related to retention among nursing students, relies on the relationship between the entering student (mentee) and the upper-class student (mentor) rather than relying on faculty involvement more commonly emphasized by others (Baker, 2010; Shelton, 2012; Veal et al., 2012).

Shelton (2012) utilized a model of nursing student retention based on the synthesis of self-efficacy theory (Bandura, 1990) and student retention theory (Tinto, 1993) among non-traditional, associate degree (AD) nursing students. Regarding retention, Shelton (2012) stated "Once admitted, the decision to persist until graduation is influenced by the student's beliefs of whether success is possible and whether the benefits of continuing outweigh the costs involved along the way" (p. 1). The model of nursing student retention identified student retention as "based on two outcomes, persistence, or choosing to remain in an academic program, and successful academic performance, or achieving the academic standards that are required to continue in a program and ultimately to graduate" (Shelton, 2012, p. 2).

Shelton's (2012) study examined student background variables influencing academic performance and factors within a student's environment. The internal psychological processes included self-efficacy, career and academic goals, and goal commitment as well as institutional climate. Shelton (2012) stated "Students who feel a part of the academic system of the institution are more likely to persist and be successful academically . . . [those] with high academic ability and high goal commitment are the most likely to persist" (p. 4). Two types of external support were also studied including psychological support (encouragement, caring, sense of competence, and self-control) and functional support (those activities that help a student perform tasks and achieve goals). Specifically, Shelton (2012) explored (a) the relationship of background variables to persistence and academic performance, and (b) the relationship of "self-efficacy, perceived faculty support and persistence and academic performance" (p. 5) among non-traditional associate degree nursing students.

The only statistically significant findings of the study regarding persistence for this sample was that "difference between students who withdrew voluntarily and those who failed

academically was in college grade point average. There was no significant difference among persistence groups in age, dependent family members, hours of employment per week, and parental education" (Shelton, 2012, p. 11). In perceived faculty support, there was a "significant difference in perceived faculty support between students who persisted and those who either withdrew voluntarily or failed academically . . . the greatest difference was between students who persisted and those who failed academically" (p. 11).

Shelton (2012) also found that "students who persisted and were successful academically had greater financial resources, and higher high school and college grade point averages than those who failed academically" (p. 11). No significance differences were found in retention in her sample regarding prior education, age, family responsibilities, and hours of work or parental education.

The findings in Shelton's (2012) study demonstrated a positive correlation between academic outcome expectations and student perception of faculty support. The findings suggest that students who persist and are successful perceived the faculty to be supportive. These findings are consistent with Tinto's (1987, 1993) model and findings in the literature that suggests faculty support influences both persistence and academic performance among groups other than nursing students (Drake, 2011; Escobedo, 2007; Kurantowicz & Nizinska, 2013; Pruett & Absher, 2015; Turner & Thompson, 2014), and with nursing students (Baker, 2010; Cohen, 2011; Charbonneau-Dahlen, 2015; Veal et al., 2012; Williams, 2010).

Baker (2010) investigated types of nursing program retention strategies designed to improve retention rates of minority students, the effectiveness of retention strategies from the faculty perspective, and if there was a relationship between strategy effectiveness and nursing program type (baccalaureate or associate). In this study, retention was defined as "remaining

enrolled in a baccalaureate (BSN) or associate degree (AD) nursing program and graduating from the program" (Baker, 2010, p. 216).

Baker (2010) identified 14 retention strategies in the literature and rated the strategies based on faculty reporting. Of the 14 strategies, three were rated as most effective in improving retention of minority nursing students by the faculty surveyed. The identified effective strategies, in order of perceived effectiveness were (a) [nursing] faculty being easily available to students, (b) timely faculty feedback on tests, and (c) timely faculty feedback on performance for clinical course experiences and assignments. The study supports involving nursing faculty in retention strategies because "When retention programs are simply superimposed onto nursing programs without enlisting faculty input, an essential part of the picture is missing" (Baker, 2010, p. 219). In conclusion, the highest strategies for nursing students' retention were the ones involving direct interaction of nursing faculty with their students.

Fontaine (2014), studied the introduction of a retention intervention program and the effects on retention among AD nursing students. The theoretical framework for the study was based on Jeffreys's (2004) nursing undergraduate retention and success model which suggests that "environmental and professional integration factors have a profound impact on retention" (Fontaine, 2014, p. 95). AD nursing program admission criteria included an over-all GPA of 2.75 and a GPA of 3.0 for required science prerequisite courses, and a minimum cut score on a standardized admission test which measured knowledge in sciences, math, English, and language skills and reading comprehension.

Seven retention interventions were utilized in the retention intervention program including a welcoming, comprehensive two-day orientation, learning communities for building peer support, academic planning, which was individualized to each participant, mentoring by a

nurse in the community, counseling, career counseling, and peer tutoring. The goal of the study was to improve retention rates which were at 61% as compared to the national average of 73.2%, "without impacting the program's consistently high licensure exam pass rates" (Fontaine, 2014, p. 95).

Study participants were required to participate in all seven retention program interventions, received a stipend of $4000 for use in buying textbooks, and assistance with tuition costs. The use of a monetary stipend for student participation in the study may have had a direct impact on student's participation in the study that is unrelated to retention interventions. At the end of the study, retention rates improved from 61% to 71%. Students ranked the seven retention interventions with peer tutoring receiving the highest ranking, followed in order by comprehensive orientation, learning communities, counseling, career counseling, individualized academic plan, and community nurse mentoring. Though the results demonstrated a significant improvement in retention, "no specific interventions or mixture of interventions was significantly correlated with retention" (Fontaine, 2014, p. 94).

Though the study interventions included counseling, tutoring, and community nurse mentoring, all which can be considered a part of a faculty role, student interaction with faculty members was not a part of this study. Finally, the students reported an overall program satisfaction level at 3.02 – satisfied but without measuring faculty affects, there is no way of knowing how they may have contributed to this level of program satisfaction.

In 2004, three Texas baccalaureate nursing programs received funding to implement a three-year project called the "Consortium to Advance Nursing Diversity and Opportunity (CANDO)" (Igbo et al., 2007, p. 375). The plan was focused on increasing retention of

disadvantaged nursing students. CANDO involved three levels of support including recruitment, pre-entry (after acceptance to the nursing program but prior to courses starting), and retention.

The retention portion of the funding featured a nine-month program of support during the first year. The retention plan involved two-hours per week (one afternoon) and focused on topics such as study skills, improving writing skills, effective communication techniques, how to think critically, career coaching, and socialization strategies. The classes were in person; in addition, a CANDO web site was developed for online information and support.

Students were surveyed at the beginning and end of the study skills topics, and again five months after completion of this part of the program, to determine which skills were being utilized, and how students felt it may or may not have affected their academic success. Students reported an increase in GPA and level of confidence after completing the nine-month retention plan. The authors stated, “The retention program enrolled 27, 39, and 39 students in the three years of the project, respectively” (Igbo et al., 2007, p. 376). Though the goal of 85% graduation rate among disadvantaged nursing students in the three participating programs was not attained, the overall graduation rate improved from 69% to 76.8% following the CANDO plan. The CANDO retention program for disadvantaged nursing students did not measure faculty involvement. First-year nursing faculty facilitated critical thinking skills development throughout the CANDO program; simulation nursing faculty modeled the role of the emergency nurse in a human-patient capstone project and participated in student small group work.

Murray et al. (2016) developed a workforce diversity project designed to increase recruitment, retention, and support for students entering nursing programs. Their sample of prospective students were from underrepresented minority students recruited while complete

high school. The project included pre-professional education programs to assist and support in nursing program entry through graduation.

The retention strategies involved in the project included mentoring, peer counseling, and referral to support services to improve academic performance, and was designed to foster increased connectedness in the university setting. A full-time retention specialist worked exclusively with students in the sample population meeting weekly with student who had low GPAs. The grant also provided for development of a tracking system to monitory overall student retention in the sample population. Other student support included tutoring, study group opportunities, writing skills development, and assignment of an academic advisor.

At the end of the project, 185 students graduated over three years Murray et al. (2016). The first year reported 94% graduated with 76% passed the licensure exam on first attempt, second year had 89% graduated with 81% passing licensure exam on first attempt, and year three 76% graduated with 80% passing licensure exam on first attempt. Murray et al. (2016) concluded "early recruitment and multiprong retention programs can be successful in diversifying the registered nurse workforce." (p.138.).

Retention section summary. A review of Tinto's (1987, 1993) theory of retention provides a framework of retention for both students in general and nursing students. AD mobility nursing programs are set up as cohorts in which students register for the same nursing courses as they progress through the program. Sequencing of nursing courses aligns well with Tinto's theory of retention as it relates to student and faculty involvement, and how learning communities benefit student persistence and success.

Interest in increasing diversity in the nursing profession is reflected in studies on nursing students' retention involving diverse nursing student populations (Baker, 2010; Charbonneau-

Dahlen, 2015; Crooks, 2013; Igbo et al., 2007; Murray et al., 2016, Shelton, 2012; Veal & Miller, 2012). The retention strategies reviewed indicate a continued interest in learning more about nursing students' retention. Being able to progress in the program successfully is the desired outcome in-common in the studies.

What does student retention have to do with admission criteria? It is important to review information related to student retention since nursing programs are measured for success through several outcomes including student retention. Nursing programs have established admission criteria for student acceptance. It is expected that students meeting admission criteria can be successful which includes completing the nursing program (retention), passing their licensure examination and joining the work force.

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Throughout review of nursing retention strategy findings, faculty support was noted among several studies, in one form or another, as a repeating supportive component of nursing student retention (Baker, 2010; Cohen, 2011; Charbonneau-Dahlen, 2015; Jeffreys, 2015; Shelton, 2012; Veal et al., 2012; Williams, 2010), which aligns with Tinto's (1987, 1993) theory of retention.

In the reviewed studies concerning nursing students' retention, nursing faculty involvement is often measured (Baker, 2010; Shelton, 2012; Veal et al., 2012). In the Baker (2010) study, "the highest rated strategies were those that involved direct interaction of nursing

faculty and students" (p. 216) and included faculty availability, faculty feedback on written tests and clinical experiences, and to a lesser extent, faculty tutoring in math, and nursing theory. Shelton's (2012) findings included that "perceived faculty support was related to both persistence and academic performance, such that students with higher perceived faculty support were more likely to continue in a nursing program until graduation" (p. 1). Faculty assigned as mentors was a feature in the Veal et al. (2012) study which also emphasized faculty development, receiving validation from faculty and faculty availability. The authors suggest "faculty have the potential to become instrumental in promoting student success" (Veal et al., 2012, p. 326).

Few other retention improvement findings were identified in these studies. Igbo et al. (2007) identified collaboration of faculty and students at the three schools to have helped increase retention for disadvantaged nursing students while Veal et al. (2012) found that a key to persistence and retention was for students to learn to balance life stressors with moderators.

Nursing students' retention is one part off the concern related to the nursing shortage. Another key component towards meeting the nursing shortage needs is student academic progression and program completion (Shelton, 2012; Murray et al., 2016; Spurlock, 2006; Veal et al., 2012) with the final piece being graduates successfully passing the NCLEX-RN examination on first attempt. Jeffreys (2015) noted, "attention must include retention but focus more comprehensively on success" (p. 426). Nursing program success includes the measures of state boards of nursing and national nursing accreditation organizations. Central to these measurements is percentage of students passing the NCLEX-RN examination on their first attempt. When nursing students are successful "outcomes ultimately benefits nursing, healthcare,

and society at large" (Jeffreys, 2015, p. 426). Next let us move our focus of attention from nursing students' retention to NCLEX-RN first time passing rates.

NCLEX-RN Examination First-Time Passing Rate

Ashley and O'Neil (1994) stated, "Nursing educators have always been concerned about nursing graduates' pass-fail rates on the NCLEX-RN" (p. 357) which is related to expected program outcomes from state boards of nursing and national nursing accreditation standards. Nursing educator concerns regarding the NCLEX-RN examination first-time passing rate is evident throughout the literature (Blozen, 2017; Carr, 2008; Daley et al., 2003; Davenport, 2007; Harding, 2010; Koestler, 2015; Lengacher & Keller, 1990; Mills et al., 1992; Pabst et al., 2010; Pennington & Spurlock, 2010; Tipton et al., 2008). If nursing program NCLEX-RN examination pass rates fall, they often draw the attention of their state boards of nursing, the regional association of colleges and schools, national nursing accrediting organizations, and possibly attention more locally. In the article about improving NCLEX-RN examination pass rates, Koestler (2015) stated, "The program came under scrutiny by the Mississippi Institutions of Higher Learning (IHL) and the president of the university after the NCLEX-RN pass rate fell to 72%" (p. 55).

The National Council of State Boards of Nursing (NCSBN) is responsible for developing the NCLEX-RN examination; each State Board of Nursing reports its results (Schwarz, 2005). NCSBN share the NCLEX-RN test blueprint on their web site. The NCLEX-RN test plan passing standard is reviewed every three years and was increased in 2004 (Davenport, 2007). The NCSBN most recent update for the test blueprint occurred in 2014 (National Council of State Boards of Nursing, n.d.). Yates and Sandiford (2013) reported, "In order to protect the public from unsafe practitioners, graduates from nursing programs are required to take and pass

the NCLEX-RN, thereby ensuring that they possess the minimum knowledge and skills required to function in the nursing profession" (p. 320). Carrick, (2011) explained that the nursing program's curriculum "is developed to follow the format and content blueprint of the NCLEX-RN exam and to meet the standards of the profession and accrediting agencies" (p. 78).

Daley et al. (2003) found "Recent NCLEX-RN data demonstrate a steady downward trend in successful completion of first-time candidates" (p. 390). In 1997, the first- time NCLEX-RN passing rate was 87.7%, in 1998 it was 85.0%, in 1999 and 2000 it was 85% while in 2001 it was 82% (National Council of State Boards of Nursing, n.d.). Lavandera et al. (2011), reported, "The first-time pass rate for the NCLEX-RN licensure examination has been decreasing nationally" (p. 1). Davenport (2007) reminded readers "graduates who initially fail the NCLEX-RN are more likely to fail again" (p, 31) which is supported in the literature (Griffiths et al., 2004). More recent NCLEX-RN first-time passing rates include an improvement to 90.34% in 2012, followed by a rate of 83.04% in 2013; 81.78% in 2014 and 84.53% in 2015 (National Council of State Boards of Nursing, n.d.).

There have been many studies concerning student preparation for taking the NCLEX-RN examination, including remediation (Carrick, 2011; Daley et al., 2003; McQueen et al., 2004; Pennington & Spurlock, 2010; Sifford & McDaniel, 2007), nursing program progression policies utilizing standardize exit examinations (Alameida et al., 2011; Carr, 2008; Harding, 2010; Lavandera et al., 2011; Sayles et al., 2003; Spurlock, 2006; Spurlock & Hunt, 2008), critical thinking (Giddens & Gloeckner, 2005; Romeo, 2010), focus study groups (Ashley & O'Neil, 1994; Pabst et al., 2010), and other strategies to promote NCLEX-RN success (Davenport, 2007; Koestler, 2015; Schwarz, 2005). In addition, several studies have reviewed the relationship between admission requirements, nursing program or course grade point average

(GPA), and performance on NCLEX-RN examination (Davenport, 2007; Lengacher & Keller, 1990; Mills et al., 1992; Newton et al., 2007; Uyehara et al., 2007; Waterhouse & Beeman, 2003; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013).

Some nursing student success studies review admission criteria or a combination of admission criteria and other variable throughout the program as predictors of success. Other studies research nursing student success measurements during the program. The next sections will review admission criteria as predictor studies, then academic predictor studies.

Admission Criteria as Predictors of Nursing Student Success

Lengacher and Keller (1990) examined predictors for first-time success on NCLEX-RN for AD nursing students among selected admission variables (Grade Point Average [GPA] and American College Test [ACT] subtest scores), age, role strain perception, GPA at program exit, GPA on nursing program courses, and National League of Nursing (NLN) examination. Nursing program admission criteria included a required GPA of 2.25 and maintenance of a minimum of a C grade in all nursing program courses. Their study found the best predictors of NCLEX-RN examination success included nursing theory courses and clinical grades (Lengacher & Keller, 1990). The authors concluded "These findings indicate that nurse educators could identify students early in the student's nursing program who would be successful on the NCLEX-RN or those who would be at risk of failure" (p. 163). They did not find the two admission criteria (GPA and ACT subtest scores) to be predictive of passing the NCLEX-RN on first attempt.

Several standardized tests are often used by nursing schools as part of program admission criteria. Standardized tests include the Scholastic Aptitude Test (SAT), ACT, Nursing Entrance Test (NET), Health Education Systems, Inc. (HESI) and the Test of Essential Academic Skills (TEAS) test by Assessment Technologies Institute (ATI). Wolkowitz and Kelley (2010), in their

study, took a closer look at the four subgroups measured in the TEAS test. A multiple regression model was applied to determine the strength of each content area (science, mathematics, reading, and English) in predicting success in nursing programs. Nursing programs which use TEAS test assessment as part of their admission criteria were invited to participate in the study. Results included that the strongest predictor of early nursing program success is science, next reading, then written/verbal and lastly mathematics. The authors concluded "From a practical standpoint, more emphasis should be placed on students' ability in science and reading versus mathematics and English during the admission process" (Wolkowitz & Kelley, 2010, p. 502). This study had a large sample, so although the *p* values in their study were found to be significant for AD nursing students (0.00001in reading, science and English) it is important to review the related corresponding *r* values, (0.10, 0.03, and 0.11 respectively) when determining significance. The *r* value varies between 0 and 1 any may be positive or negative (indicating direction of correlation). The closer the number is to 1 (either negatively or positively), the greater the correlation (Punch, 2009), so the significance in this study was not great.

ATI has recently added a new offering for nursing programs to consider which supports its pre-nursing TEAS test throughout the program and linking to the predictor test at nursing program completion. The additional support program is called the ATI pulse predictive model overview and is called the "pulse". It is too soon to determine how well this product may help predict student success at admission or to identify student success in retention/completion and NLCEX-RN passing on first attempt.

Yates and Sandiford (2013) looked at AD nursing student success on NLCEX-RN from admission to licensure. The purposes of the study involved investigating variables of school learning theory and success on NCLEX-RN, validation of ATI achievement exit exam and

providing a model to predict NCLEX-RN success with implications for admission criteria and curriculum development.

The study sample included nursing students who graduated from 2003 through 2005. Of the participants, 78% of graduates passed the NCLEX-RN on first attempt and 22% failed. Yates and Sandiford's (2013) findings included that the pre-admission NET (aptitude) score and medical-surgical course grade were predictive of performance on NCLEX-RN. The authors reported "students who received a grade of B in this course were in the 90% NCLEX-RN passing group, and those who received an A grade fell into the 100% passing group" (Yates & Sandiford, 2013, p. 330).

In this study, the ATI predictor test, which students take near the end of the program to 'predict' readiness for passing NCLEX-RN was not found to be predictive. Entrance criteria as predictors of performance included the Nurse Entrance Test score (NET), and the Bridge Full Time (BFT) program of 12 months. The term "bridge" student, when referring to AD nursing is a synonym for the AD "mobility" student; other terms for the student moving from LPN to AD nursing in this manner include "pathway," or "step-in" nursing programs.

Students with high NET (aptitude) scores at the beginning of the program are more likely to do better throughout the program and receive higher grades on the medical-surgical nursing course. Yates and Sandiford (2013) suggested that nursing programs consider entrance exams such as the NET as part of admission criteria. Full time bridge (or mobility) students who are Licensed Practical Nurses (LPN's) at the time of admission were more likely to be successful on the NLCEX-RN in their study sample. This finding was not noted in any other studies but may be related to the small number of research studies found for bridge (or mobility) programs.

Predicting NCLEX-RN first-time passing success in entry-level Associate Degree (AD) nursing programs was the basis for the study by Tipton et al. (2008). The study utilized admission data related to nursing entrance test scores (NET), stress, and three test taking characteristics (frustrated, instructional, or independent). The study also examined academic performance on nursing courses.

The sample in this study involved 85% of nursing students successfully passing the NLCEX-RN, and 15% failing the NCLEX-RN on first attempt. When reviewing the pre-admission NET scores and test taking characteristics, there was very little difference found between the two groups and whether they passed the NCLEX-RN on first attempt. There was also little difference between the groups on reviewing the test-taking characteristics.

Tipton et al. (2008) found examining academic performance on nursing courses and NCLEX-RN was significant. The authors reported “An independent samples t-test revealed that there was a significant difference in average nurse course grade between the two groups” and that “even small differences in average nursing course grades could be predictive of later difficulty on the NCLEX-RN” (p. 3).

Newton et al. (2007) investigated nursing program admission policies through questioning if these policies promote success or facilitate failure. They reviewed two traditional methods of admission policies including ranking and rolling admission. Ranking admissions has been the tradition when supply outpaced demand (which has been the norm throughout the history of nursing) and includes identification of criteria and a rubric for ranking prospective students, to admit those most likely to be successful. Rolling admission is typically used when demand outpaces supply and there are empty and available openings in nursing programs. Rolling admission is more closely aligned with open-enrollment, and while prospective students

generally need to meet basic criteria for admission, more students admitted may not be as prepared as those admitted by being higher on a ranking rubric.

Admitting nursing students who are not prepared academically for the rigors of nursing education can lead to poor outcomes including decreased retention rates (California Postsecondary Education Commission, 2003). Newton et al. (2007) reported that ranking admission supported nursing student preparedness, attrition rates were minimized, and students demonstrated success in greater numbers through the first semester of the nursing program than students admitted under a rolling admission policy.

Since nursing programs are measured for success by several standard outcomes including retention, graduation and NCLEX-RN first-time passing on examination data, these poor outcomes would affect not just the students involved, but also the nursing program, college or university and community. Newton et al. (2007) in comparing ranking vs. rolling admission policies for nursing students concluded "nursing program admission policies that recognize pre-admission indicators of student success as important admission criteria ensure that student attrition rates are minimized and that applicants admitted to the program will likely achieve academic success" (p. 443-444).

Academic Predictors of Nursing Student Success

An evaluation of a proactive, coordinated, comprehensive curriculum revision was the goal of a study by Davenport (2007). The author stated, "By identifying predictors and interventions best suited for specific student populations, this program-long initiative assists in building the knowledge and skills needed to demonstrate program and licensure success" (p. 30). The Davenport study outlined the development of a student NCLEX-RN success plan for AD

nursing students which relied heavily on both faculty support and an integrated software testing package as part of preparation.

Assessment Technology Institute (ATI) offers a test which helps predict students who will pass the NCLEX-RN examination on the first attempt. Preliminary data shared in the article suggests the test helps to distinguish nursing students who pass and those who fail on first attempt at taking the NCLEX-RN examination. This test, however, is utilized at the end of the program as an examination predictor, rather as an indicator of nursing program success on admission to the program. ATI does offer the test of essential academic skills (TEAS) test for use with nursing program admission criteria, suggesting readiness for the rigors of a nursing program.

The Davenport (2007) study surveyed nine AD nursing schools in Indiana with the purpose of seeking best practices for strategies and intervention which prepare students for NCLEX-RN success. Davenport reported the need to identify at-risk students as early as possible, an actively involved faculty team approach to manage integrated testing, and nurse faculty advisors for individual coaching, and support. NCLEX-RN passing on first attempt were found to be significantly correlated with nursing student GPA, and program progression standards, “students passing the licensure exam the first time were significantly more likely to have slightly higher cumulative GPA and have always met the nursing progression criteria” (Davenport, 2007, p. 33).

Predicting performance on nursing student first-time success rate for NCLEX-RN examination “has been a topic of interest among educator for a number of years” (Mills et al., 1992, p. 403). In their study concerning success on NCLEX-RN in a four-year nursing program, Mills et al. tested five logistic regression models to measure which specific variables increased

the graduate student nurse's chances for success or failure. The subjects in their sample graduated from a private, four-year, baccalaureate nursing program in the Midwest. Independent variables included age, gender, GPA from high school, ACT sub-scores (social science, natural science, mathematics, and English), if they transferred to the university and cumulative nursing course GPA. A logistic regression statistical analysis was used in analyzing the data. Data was tested to determine the odds for passing or failing the NCLEX-RN examination. The findings for the Mills et al. (1992) study showed "the cumulative nursing GPA gave nurse candidates a five-times-better chance of passing the NCLEX-RN with each full letter grade increase, i.e. from 2.0 (C) to 3.0 (B), or 3.0 (B) to 4.0 (A)" (p. 406). Further, the authors reported "the use of admission criteria was the poorest model in predicting [NCLEX-RN] performance" (p. 403).

Waterhouse and Beeman (2003) asked the question as to whether predicting NCLEX-RN success can be simplified. They proposed a simple, easy to calculate method for predicting student NCLEX-RN examination success. The authors reported "Using the Risk Appraisal Instrument (RAI) designed by Barkley, Rhodes, and Dufour . . . does not require sophisticated statistical methods . . . it may be adapted for use in other nursing programs" (p. 35). Using student records, data were collected anonymously on graduates from a baccalaureate nursing program in Eastern United States over three years from 1995 to 1998. The authors adapted the RAI for their sample by substituting equivalent courses and grades for their program. Findings included "Our modification of the Barkley instrument showed a much lower correlation . . . than did the original" (Waterhouse & Beeman, 2003, p. 38). They recommended monitoring the grades from senior class level work and the cumulative number of C grades. They indicated more study is needed regarding this instrument and NCLEX-RN examination results. For the time being, the authors suggested predicting NCLEX-RN success cannot be easily simplified.

In a study with data collection over five years, Uyehara et al. (2007) researched NCLEX-RN examination success in a four-year baccalaureate (BSN) program in Hawaii to identify predictors of success on first-time NCLEX-RN examination. Their methodology reviewed four-year BSN nursing students' records and included the dependent variable of program success, program withdrawal and NCLEX-RN examination first-time passing; independent variables included pre-admission criteria, within program data and end of program data. The pre-admission criteria included a required GPA, cumulative GPA, National League for Nursing (NLN) pre-nursing math, verbal, science, and composite scores and ethnicity; within the program data included grades from pathophysiology, all nursing courses and the Watson Glaser Critical Thinking Appraisal; end of program data included nursing GPA and Mosby Assess Test scores. Of their sample, 80% completed the program and 95% passed the NCLEX-RN examination on first attempt. Their findings indicated for their sample, grades in certain courses have predictability for NCLEX-RN examination success. Of the independent variable in this sample "only the grades from the pathophysiology course is significant" (Uyehara et al., 2007, p. 35).

Daley et al. (2003) studied students' demographic information, standardized testing scores, and nursing course variables to discern whether there were significant differences between students who were successful in passing the NCLEX-RN examination the first-time and those who were not. The study was an *ex post facto* design; independent *t* tests or chi-square tests were used depending on the variable. The authors found that two program variables were consistently associated with first-time NCLEX-RN examination success, including the final course grade for a senior level didactic course (medical-surgical nursing) and the cumulative GPA for the nursing program.

In response to an NCLEX-RN first-time passing rate of 72%, Koestler (2015) looked to review the entire nursing curriculum to improve the school of nursing passing rates. On review of the academic admission policies it was determined that "entrance requirements would need to be more stringent" (p. 55). Changes in admission policy included increasing the cut score for the Health Education Systems (HESI) score to 80%, the American College Testing (ACT) score to 21 or higher and adjust the GPA higher to be more "competitive,"—however they do not indicate what the GPA expectation would be, or which courses would be figured into the GPA as part of admission.

Koestler (2015) went on to review assessment of the nursing student learning outcomes to rigor, aligning curriculum to the NCLEX-RN test blueprint and involving the college innovation center to assist with nursing student writing courses, and other fundamental student learning assistance. In addition, the school of nursing incorporated simulation in the lab courses and offered counseling and remediation for students after low test scores. Faculty development was also started to support faculty in several areas including test-writing, online instruction, use of simulation, and how to teach critical thinking.

Within four years, the NCLEX-RN first-time passing rates had increased to 96.4%. However, the author did not do a statistical analysis of the data and thus did not identify if admission criteria, nursing course work, faculty support or any combination of these contributed to the increase in NCLEX-RN first-time passing rate in the sample.

Admission criteria as predictor or academic performance as predictor of nursing student success summary. I have reviewed studies concerning admission criteria as predictors of nursing student success (Lengacher & Keller, 1990; Newton et al., 2007; Tipton et al., 2008; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). Findings have been inconclusive

regarding whether any admission criteria are predictive of nursing student success. However, in studies concerning academic performance while in nursing school (Daley et al., 2003; Davenport, 2007; Koestler, 2015; Mills et al., 1992; Uyehara et al., 2007; Waterhouse & Beeman, 2003) correlations between academic success in nursing courses, (particularly medical-surgical nursing) and academic success in required science courses (biology, anatomy and physiology) have often been found to be predictive of success on NCLEX-RN.

The studies reviewed involved samples from AD programs (Davenport, 2007; Lengacher & Keller, 1990; Tipton et al., 2008; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013), baccalaureate (four-year) programs (Daley et al., 2003; Mills et al., 1992; Newton et al., 2007; Uyehara et al., 2007; Waterhouse & Beeman, 2003). None of the studies involved an AD mobility program. Mobility programs require students to hold an LPN license already, so AD Mobility nursing students have already completed science and nursing courses. Given the information about a correlation between academic success and nursing success, it would be logical to suspect that since mobility nursing students have completed a nursing course of study already, their admission GPA (for prerequisite sciences and for the nursing courses) are much more likely to be predictive of success as measured by retention rates and first-time passing on NCLEX-RN. For this reason, this study will focus on AD mobility nursing students and determine if in this group, admission criteria may be predictive of success.

NCLEX-RN examination first-time passing summary. The NCLEX-RN first-time passing rate is very important to nurse educators as nursing programs are measured for success using this data. Since the late 1990's, there has been a downward trend in first-time passing rates of the NCLEX-RN licensure exam. Several studies have explored the relationship between

admission requirements, nursing GPA and NCLEX-RN passing on first attempt, however, there is little consensus among the findings to clarify predictive criteria.

Research results report the best predictor of success on NCLEX-RN first attempt include an assortment of findings. Reported finding for best predictor of NCLEX-RN first-time passing success include nursing theory courses and clinical grades (Lengacher & Keller, 1990), cumulative nursing GPA (Daley et al., 2003; Mills et al., 1992), success in science courses including pathophysiology (Herrera & Blair, 2015; Seago et al., 2008; Uyehara et al., 2007; Wolkowitz & Kelly, 2010), or final course grade for a senior level didactic course (Daley et al., 2003).

Regarding admission criteria as it relates to predicting NCLEX-RN first-time success, Mills at al. (1992) reported "the use of admission criteria was the poorest model in predicting [NCLEX-RN] performance" (p. 403). When Waterhouse and Beeman (2003) proposed a simple, easy method for predicting student NCLEX-RN examination success through adapting an instrument they stated, "Our modification of the Barkley instrument showed a much lower correlation . . . than did the original" (p. 38). The literature, while demonstrating a strong desire to find accuracy in predicting student success on NCLEX-RN first attempt, is inconsistent. Most seemingly accurate NCLEX-RN prediction data involves information gained during the nursing program, rather than prior to program acceptance.

Very little research has been done on AD mobility nursing students, who are already licensed nurses (LPNs) and have typically taken all their non-nursing prerequisites prior to admission to the mobility nursing program. Since there has been some consistency noted in the literature regarding nursing student success in science courses, and retention, and first-time passing of NCLEX-RN (Herrera & Blair, 2015; Uyehara et al., 2007; Wolkowitz & Kelly, 2010),

predictive criteria may be clearer among AD mobility nursing students than among other groups of nursing students.

Theoretical Framework

Two areas of theoretical framework were used as a foundation to the current study and included Tinto's (1987, 1993) theory of retention, and Shelton's model (2003, 2012) of nursing student retention.

Tinto's Theory of Retention

Tinto (1987, 1993) has made major contributions to the literature concerning student departure, attrition, and retention. Pascarella and Terenzini (2005) suggested Tinto's model "offers guidance in variable selection to researchers who wish to study the college student change process and to administrators who seek to design academic and social programs and experiences intended to promote students' educational growth" (p. 56). Tinto's model theorizes that students arrive at institutions of higher education with a variety of established social patterns (personal, family and academic), and characteristics, skills, dispositions and personal goals (Pascarella & Terenzini, 2005).

Tinto's (1987, 1993) model emphasizes that rewarding encounters experienced at college result in integration, and the greater the integration, the more likely a student is to meet his or her goals. However, negative interactions and experiences at college contribute to the formation of barriers for the student, decrease the chances of social, academic connections which leads to a greater chance of failure, and withdrawal from college.

Tinto (1993) wrote, "effective retention calls for sustained effort on the part of all institutional members to give to each and every student serious and honest attention" (p. 201). In addition to institutional commitment to support student retention, Tinto identified educational

commitment and social community as principles of student retention and outlines implementation for the principles identified. A common theme throughout the identified principles is the importance of faculty interaction with students. Tinto (1993) stated, "the greater the students' involvement in the life of the college, especially its academic life, the greater their acquisition of knowledge and development of skill. This is particularly true regarding student contact with faculty (pp. 130-131)."

When studying retention, authors researching college student retention frequently make use of Tinto's (1993) theory dealing with the reasons students leave college (Drake, 2011; Escobedo, 2007; Talbert, 2012; Turner & Thompson, 2014) including those dealing with nursing students' retention (Charbonneau-Dahlen, 2015; Cohen, 2011; Fontaine, 2014; Jeffreys, 2004, 2015; Seago et al., 2008; Shelton, 2012). When applying Tinto's (1993) framework to nursing students' retention, a common theme noted in all the studies reviewed concerning student success is faculty support (Charbonneau-Dahlen, 2015; Cohen, 2011; Drake, 2011; Seago et al., 2008; Shelton, 2012), faculty and staff interaction (Escobedo, 2007), or cohesive relationships with faculty and staff (Talbert, 2012).

Shelton's Model of Nursing Student Retention

Shelton's (2003, 2012) model of nursing student retention synthesizes Tinto's (1993) theory of student retention with Bandura's (1990) two components of self-efficacy including self-efficacy expectations and outcomes to develop her conceptual framework for a model of nursing retention. Shelton (2003) found "Tinto's (1993) theory of student retention proposed that student persistence is related to the degree of integration student attain within an institution" (p. 69). The author carries this theme further writing ,"students must have adequate interactions and feel that their abilities, goals, and values are similar to others within the institution" (p. 69).

However, while Tinto's (1993) theory includes academic and social integration, Shelton's model does not emphasize these concepts.

Shelton's (2012) model of nursing students' retention aligns with Tinto's sociological perspectives in considering the prior coursework/schoolwork, family, goals, goal commitment, abilities, and external supports. Tinto's model does not include self-efficacy while Shelton's does, which was derives from Bandura's (1990) theory and work on self-efficacy. Bandura, Barbaranelli, Caprara, and Pastorelli (2006) stated, "The various psychological processes through which self-efficacy beliefs exert their influence are intimately involved in the development of cognitive competencies" (p. 1206). The Bandura et al. (2006) research has to do with applying self-efficacy in a variety of studies including academic functioning, motivational effects of goal systems (Bandura & Cervone, 1983), personal goal setting (Zimmerman, Bandura, & Martinez-Pons, 1992) and cultivating competence (Bandura & Schunk, 1981).

Shelton (2012) brings these theories together in her model because "Bandura's (1990) theory offers a psychological perspective but is not specific for student retention" and "Tinto's (1993) theory is limited to a sociological perspective of what happens within a system to affect the student" (p. 2). In the model of nursing student retention, Shelton's study (2012) combined the outcomes of nursing students' retention while considering both sociologic and psychological aspects of student background, internal psychological processes, and external supports. The model is depicted in Appendix A.

Shelton (2012) stated that her model of nursing students' retention is "based on two outcomes, persistence, or choosing to remain in an academic program, and successful academic performance, or achieving the academic standards that are required to continue in a program and ultimately to graduate" (p. 2). Shelton's (2012) model demonstrates that a student must choose to

stay in the program and progress by meeting the academic goals required for success, or either voluntarily withdraw from the program or fail academically.

Summary

Nursing programs are measured for success by state boards of nursing and national nursing accrediting organizations. Outcomes measured to determine success of nursing programs include completion (retention) and NCLEX-RN examination first-time passing rates.

Efforts to support retention rates among college students have been researched over the past several decades. Recent retention studies among nursing students commonly involve diverse groups of nursing students including disadvantaged, minority and non-traditional students. The educational level of nursing student programs most often studied are baccalaureate and/or associate degree. No study on retention specific to AD mobility program nursing students was identified in the literature.

Over the past 20 years, NCLEX-RN examination first-time passing rates have been decreasing nationally with rates currently in the low 80s. To improve NCLEX-RN examination first-time passing rates, studies have included preparation for taking the examination through remediation, program progression standardization exit examinations, and focus study groups.

Though there is a nursing shortage, there has generally been no shortage of prospective nursing students. However, there is a shortage of availability of spots for students related to nursing faculty shortages. Supply and demand needs have led to development of admission criteria and ranking systems for determining who is admitted to nursing programs. Another effort to improve NCLEX-RN first-time pass rates while also helping increase the number of nurses is to determine which admission criteria is predictive of student retention and success on first-time

NCLEX-RN examination. However, there is little consensus regarding which criteria is predictive of student success.

Though several studies have reviewed admission criteria, most have been with samples including baccalaureate nursing programs rather than AD nursing programs and none were found that studied AD mobility nursing programs. In the studies which have been conducted, there appears to be little agreement and sometimes contradictory findings about which criteria predict student success. Little is found concerning AD mobility nursing students (who are already licensed practical nurses) regarding admission criteria and prediction of success.

Clearly more research is needed in determining admission criteria which are predictive of AD mobility nursing student success as measured by retention rates and passing the NCLEX-RN examination the first-time. Since AD mobility nursing students complete required pre-nursing courses prior to program acceptance, there may be predictive admission criteria among this group of nursing students which has not been identified previously among other nursing student groups.

Improved retention and passing rates on first attempt NCLEX-RN board examination allows nursing students to become licensed and enter the world of work. Any reasonable supports which colleges can provide will help improve student outcomes and success. Student success is also reflected in school and program retention, and placement rates, which makes for positive outcomes for students, colleges and universities, and communities. Theoretical Frameworks to be utilized in this study include student retention theory (Tinto, 1993), and Shelton's (2012) model of nursing students' retention.

Chapter III: Method

In this chapter, I will describe the methods I used to conduct a study of admission criteria used in determining student acceptance to nursing programs. Specifically, I examined which admission criteria are associated with nursing students' success as measured by program retention and successful passing of the NCLEX-RN examination on first attempt through examination of the following research questions:

1. Are students' demographic variable associated with their retention in an AD mobility nursing program?
2. Are there relationships among the admissions criteria (independent variables) used in AD mobility nursing programs and nursing students' success in completing the program (dependent variable)?
3. Are the student retention factors of perceived faculty support, self-efficacy, and outcome expectations, related to students' retention in an AD mobility nursing program?
4. Are there relationships among the admission criteria (independent variables) used in AD mobility nursing programs and nursing students' success in passing the NCLEX-RN examination on first attempt (dependent variable)?

There were five admission criteria (independent variables) in this research study. The first was prerequisite grade point average (GPA) which included prerequisite courses required for nursing program acceptance (rather than a total of all previous courses GPA for example); all five colleges involved in the study utilized this criterion. Although not all colleges had the same prerequisites, all included several science courses, an English composition course, an ethics course, and one-two psychology courses. The second admission criterion was Practical Nursing

GPA which included the GPA for all nursing courses taken by students in their Practical Nursing Program. This criterion was used by three of the colleges. Third, a standardized admission nursing test was used by four of the colleges with three colleges using the ATI TEAS test, and one using the National League for Nursing (NLN) NACE test. In place of these standardized admission tests, the fifth college used a math test as an admission criterion and was the fifth admission criterion in the study.

I used a quantitative research design in this study and analyzed the data using a variety of statistical analysis techniques. A quantitative research design was appropriate since the study involved solving simultaneous equations with more than one independent variable and more than one dependent variable. I used a multiple correlation and regression design to see how well the independent variables were able to predict the dependent variable (Punch, 2009). I expected to see a linear relationship in the data, (e.g., the higher students' GPA, the more likely they will be in passing the NCLEX-RN examination on the first attempt). The purpose of this quantitative study was to determine which criteria are predictive of student success in two-year associate degree (AD) mobility nursing program retention and licensure examination passing.

Research Design

I used an ordinary least squares regression, which is a linear model with one variable (or outcome) predicted from independent variables (Field, 2013) (also known as a correlation) which is "concerned with measuring the strength of the relationship between variables" (Daniel, 2009, p. 410). Because I used multiple variables (admission criteria) and two categorical dependent variables (retention and NCLEX-RN passing on first attempt), I also conducted two different binary logistic regression analyses. Logistic regression is multiple regression but with an outcome variable that is categorical with predictor variables that are continuous or categorical;

"In its simplest form, this means that we can predict which of two categories a person is likely to belong to given certain other information" (Field, 2013, p. 761). The logistic regression analyses provided a comparison of program acceptance criteria among two-year AD mobility nursing students to determine which criteria were most predictive of success in program retention and first-time passing of the NCLEX-RN examination. I used IBM's Statistical Package for the Social Sciences (SPSS) Statistics computer program software (Field, 2013) for data analysis.

Importance of the Study

In the United States, there are persistent shortages in nurses and in nursing faculty. The nursing faculty shortage increases the importance of programs in admitting students and producing graduates ready to practice in the nursing profession. More students apply to nursing programs than there are spaces available. State boards of nursing and national nursing accrediting bodies measure nursing program success by several outcomes including completion (retention) and first-time passing of the NCLEX-RN examination. It is not known which admission criteria are most predictive of AD mobility nursing student success. If we can identify which admission criteria are most predictive of completion (retention) and first-time passing of NCLEX-RN, nursing programs can use these criteria for program admission and assist in responding to the nursing shortage through intentional efforts to increase nursing students' retention and NCLEX-RN passing on first attempt.

Instruments for Data Collection

I used an initial contact document of agreement to participate to determine which AD mobility nursing programs would participate in the study. I asked Directors of Nursing (DONs) to provide the name of the institution, criteria used for admission to the AD mobility nursing program and agreement to participate in the study. I also administered in-person surveys

regarding demographic information and student retention to nursing students from participating programs during the first semester of the program and again six to eight weeks before the end of the final semester. A copy of the demographic questions and three survey instruments are in Appendix B.

The first instruments I used for data collection involved a survey concerning demographic variables. I collected data including age, gender, ethnicity, marital status, English as a second language, prior college degree or level of education, full- or part-time work status during school, family responsibilities, prior education, parental education, and self-reported high school and college grade point average. The second instrument I used was the Self-Efficacy for Self-Regulated Learning Scale, a 7-point Likert scale (Bandura, 1990) which measured academic self-efficacy. The Likert scale consisted of 11 items in which students circled the number most closely aligning to how well they thought they would do on items such as ability to complete assignments, motivation to study, course concentration, note-taking, coursework planning and organization, library resource use, and class participation. Scores range from 11-77; and a higher score indicated higher academic efficacy expectations. This instrument has demonstrated high reliability (Shelton, 2012).

The third instrument I used was an Outcomes Expectations Questionnaire – Associate Degree Nursing modified by Shelton (2012) from the "Outcomes Expectations Questionnaire – Nursing (George, 1992)" (cited in Shelton, 2012, p. 7). This questionnaire included 14 items on a 5-point Likert scale in which the nursing student indicated how much they agreed or disagreed with each statement related to outcomes "resulting from earing an associate degree in nursing" (Shelton, 2012, p. 7). Scores range from 14-70; and higher scores indicated higher academic

outcome expectations. Shelton (2012) found content validity of the modified instrument was established through review by three experienced nurse educators.

The final scale I used, developed by Shelton (2003) was a 7-point Likert scale (which has been modified from a 5-point Likert scale utilized by the researcher in the 2003 and 2012 studies) consisting of "24 items measuring the extent to which the subject agrees or disagrees with statements related to whether 'most faculty members' exhibit supportive behaviors" (p. 8). Scores range from 24-120 with higher scores indicating higher perceived support from faculty. Validity for this instrument was also established through review by three experienced nurse educators (Shelton, 2012). Shelton (2012) found the instrument had excellent reliability. I obtained permission to use the four instruments from Dr. Elisabeth Shelton (E. Shelton, personal communication, February 22, 2016). I collected the data to measure admission criteria variables related to retention for participants from the AD mobility nursing programs.

I measured NCLEX-RN passing on first attempt results from the DONs which are available quarterly rom the Minnesota Board of Nursing (MBON). Results were mailed to all DONs on or around April 15, July 15, and October 15 of 2017, and January 15 of 2018.

Population

The population included AD nursing students in a Midwestern state community college system. There were 21 AD programs within the system. Most (16) of the 21 programs were traditional two-year AD nursing program, while five AD programs were mobility nursing programs. A mobility nursing program requires all nursing students to hold a Licensed Practical Nurse (LPN) license. The specific sub population of this group of AD nursing students was the total number of spots available for student enrollment in all five-mobility nursing program (two semesters); is approximately 320 students each fall semester. The sample population was from

this sub-group of AD mobility nursing students since this group was identified as a gap in the literature regarding retention and NCLEX-RN first-time passing. Participants ranged in age from 20 to 53. Ninety-two percent of participants identified as female and 8.5% as male, which is consistent with the current 9.6% of male nurses in the United States according to the United States Census Bureau (Landivar, 2013). Data collection began in fall semester 2016.

Sample. I identified participants by asking permission of all DONs of AD mobility nursing programs in community colleges in Minnesota. I then followed up by asking individual nursing students to participate in the study. AD mobility nursing programs admit only nursing students who have already attained their licensed practical nursing (LPN) license. Each AD mobility nursing program is designed to be completed in less time than a traditional AD nursing program; usually in two semesters once admitted (with program acceptance after all or most general education prerequisites are completed). I obtained permission from all five DONs of the AD mobility nursing programs through a formal written agreement to participate in the study including sharing of student participant admission criteria and data, retention rate data, and first-time NCLEX-RN passing data. I asked each DON to participate in the study via a letter agreeing to be a part of the study. The letter included documentation of the respondent's institution, identification of criteria used for admission to the AD mobility nursing program and agreement to participate in the study.

I asked DONs willing to participate in the study to identify their nursing program admission criteria study variables. I gathered admission criteria data for each participant from the DONs. Working with the DONs, I identified dates and times to meet with 2016 fall start AD mobility nursing students. I invited AD mobility nursing students to participate in-person at the scheduled meetings. As an added incentive, I entered names of students who agreed to

participate in a drawing for a gift basket which was available to view at the meeting and included an assortment of sticky notes, highlighters, colorful pens and pencils, a jump drive, assorted candies, packages of flavored coffee, gourmet chocolates, and a gas gift card. I obtained signed consent from each student who agreed to participate in the study which included permission for the program DON to share their program admission criteria data and if they passed the NCLEX-RN on first attempt once they graduated from the program.

The five AD mobility nursing programs may admit up to a total of approximately 320 students per year if each program is full. Of the 320 available spots, 265 were filled. The Raosoft website includes a free calculator which features a sample size calculator for confidence levels (www.raosoft.com/samplesize.html). The recommended sample size for a confidence level of 95% for a population of 265 is 158. The sample size number of participants goal for the study was at least 158 (n = 185), with a goal to achieve as close to 265 participants as possible. According to Field (2013), the researcher should "collect data from a small subset of the population known as a sample . . . and use these data to infer things about the population as a whole. The bigger the sample, the more likely it is to reflect the whole population" (p. 44).

Of the 265 students in the population, 225 agreed to participants (85%) and completed all four surveys in the fall with 191 (85.3%) retained through the second collection of survey data and graduated from the nursing program. Of the 191 graduating, 190 took the NCLEX-RN examination during the four quarters of 2017; 163 (85.7%) passed the NCLEX-RN on first attempt and became licensed as registered nurses (RNs).

Data Sources and Collection Methods

I obtained specific admission criteria information for each student participant from each program DON including, prerequisite requirement GPA, practical nursing GPA, standardized

admission testing (TEAS or NACE), and one college had a math admission test. I collected retention information and demographic data during face-to-face meetings through surveys at the end of fall semester 2016. I collected program retention information at the end of the program in spring 2017. The total number of participants (224 of 265) met the sample size goal. I obtained NCLEX-RN first-time passing information for each participating from their DON when quarterly results were released by the state board of nursing.

I redacted sample participant names from the research data and identified participants by number only, to connect data from different data collection activities to the corresponding participant. I stored data in a separate hard drive which was not kept on any university or college servers. My advisor and I and the statistics expert committee member were the only people with access to the stored data. On completion of the study, I shared the program level results with all five participating DONs of mobility nursing programs whose students participated in the study.

Analysis

I conducted a logistic regression to examine whether program acceptance criteria among two-year AD mobility nursing programs were predictive of students' success in program retention rates (retained or withdrew) and first-time passing rates of the NCLEX-RN examination (pass or fail). A logistic regression is a version of multiple regression in which the outcome is a categorical variable (for this study retained or not; passed NCLEX-RN on first attempt or not). In a logistic regression, the emphasis in not on interpreting the *B* value, but the *Exp(B)* value. The *B* value is involved in part of the equation in obtaining the *Exp(B)* and in this type of regression the emphasis is on predicting the odds of something occurring; the *Exp(B)* is the odds ratio. In logistic regression, instead of predicting the value of a variable (Y) from a predictor variable (X), or several predictor variable (Xs), we predict the odds of Y occurring

given the known values of the variables (Field, 2013). I used IBM's Statistical Package for the Social Sciences (SPSS) Statistics computer program software (Field, 2013) for data analysis. I ran a logistic regression with the admission criteria variables (GPAs, TEAS, NACE and math test scores) to determine if there was a relationship with whether the student went on to (a) successfully complete the nursing program (versus withdraw) and to (b) pass the NCLEX-RN examination on the first attempt (versus fail the examination). I included the specific survey data in a linear regression analysis to examine whether these admission variables are associated with students' success.

I also conducted a Spearman's rho correlation analysis to examine the relationships between the admission criteria (GPAs, TEAS, NACE, and Math test scores) and retention, and NCLEX-RN passing on first attempt. With both the logistic regressions and bivariate correlational analysis, I employed a criterion significance value of $p < 0.10$ given the smaller sample size. This is a confidence level, or probability level of being wrong up to ten times in 100, or conversely of being right up to 90 times out of 100 (Punch, 2009).

Human Subject Approval: Institutional Review Board (IRB)

I obtained Institutional Review Board (IRB) approval for the research study through the university IRB board (see Appendix C). I obtained written documentation from each DON at the community colleges for recruiting participants. I provided information about the study in the participation consent form using plain language including the purpose of the study, data to be collected, data handling, time involvement, confidentiality, and an explanation of risks and benefits related to participating in the study. I asked participating AD mobility nursing students to complete surveys at the end of the first semester and again near the end of the second (final) semester of nursing courses.

I shared aggregated study finding results with all participating DONs upon the study conclusion. The IRB level was expedited since records were kept through a numeric system for each participating AD mobility nursing program; student names were not included or identified in the data.

Procedures and Timeline

I wrote the proposal in September 2016 and obtained approval in November 2016. I obtained IRB approval for the research study in November 2016. I collected demographic and retention survey data in December 2016 and retention data again in May 2017. I asked DONs to provide a letter indicating agreement to participate in the study. As I identified each additional participating AD mobility nursing program, nursing student admission criteria, demographic data and retention survey data was collected and entered on the SPSS software (January 2017 through January 2018).

Nursing students generally take the NLCEX-RN within the first two quarters of a year following graduation from a nursing program. The regression analysis of the finding was completed once all retention data was collected and entered related to Hypothesis 2 (there will be a positive correlation between one or more variables (admission criteria) and retention rates of students graduating from AD mobility nursing programs). I completed logistic regression analysis of the finding once participants had taken the NCLEX-RN at the end of the fourth quarter (January 2018) related to Hypothesis 4 (there will be a positive correlation between one or more variables (admission criteria) and first-time passing rates of NCLEX-RN licensing examination rates for graduates from AD mobility nursing programs).

I entered all NCLEX-RN data beginning mid-January 2018 and completed analysis of data. I wrote Chapters IV (Results) and V (Discussion) and defended the dissertation in May

2019. I presented research study progress throughout the study to directors of nursing (DONs) in the system. I presented research study findings at the spring 2019 director of nurses meeting.

Summary

In Chapter III I explained the methods for the study by covering information regarding the study research design and why the design was appropriate for the hypotheses being studied. Included in this chapter were details about the surveys that were used to measure retention data with their reliability and validity, the population and sample, how the data were collected, and how it was stored and analyzed. I reviewed the IRB process, and outlined the timeline. In Chapter IV, I will discuss the data analysis and study results and in Chapter V, I will provide a discussion including study limitations, recommendations for future research, implications for theory and practice, and final conclusions.

Chapter IV: Results

I conducted a quantitative study to examine which admission criteria are associated with nursing students' success in AD mobility nursing programs as measured by program retention and successful passing of the NCLEX-RN examination on first attempt. I used existing admission criteria data and survey data that I collected from participants in AD mobility nursing programs in community colleges in Minnesota. Two theoretical frameworks were used as a foundation to the study: Tinto's (1987, 1993) theory of retention, and Shelton's model (2003, 2012) of nursing students' retention.

In addition to institutional commitment to support student retention, Tinto (1993) identified educational commitment and social community as principles of student retention and outlines implementation for the principles identified. A common theme throughout the identified principles is the importance of faculty interaction with students. Shelton's (2012) model of nursing students' retention aligns with Tinto's sociological perspectives in considering the prior coursework/schoolwork, family, goals, goal commitment, abilities, and external supports. Shelton's (2012) model of nursing student retention combined the outcomes of nursing students' retention while considering both sociologic and psychological aspects of student background, internal psychological processes, and external supports.

I examined student admission criteria including program prerequisite grade point average (GPA), practical nursing GPA, standardized admission testing (TEAS and NACE), and other admission criteria testing (math) to identify whether there were relationships between admission criteria, students' retention rates, and NCLEX-RN first attempt passing rates. I investigated the following research questions:

1. Are students' demographic variables associated with their retention in an AD mobility nursing program?
2. Are there relationships among the admissions criteria (variables) used in AD mobility nursing programs and nursing students' success in completing the program?
3. Are the student retention factors of perceived faculty support, self-efficacy, and outcome expectations related to students' retention in an AD mobility nursing program?
4. Are there relationships among the admission criteria (variables) used in AD mobility nursing programs and nursing students' success in passing the NCLEX-RN examination on first attempt?

In this chapter I discuss the results of the demographic and retention survey data collected and research analysis I conducted to identify relationships among admission criteria and nursing students' success as measured by retention and NCLEX-RN first time passing rates. I analyzed quantitative date using statistical tests including logistic regressions, Chi-square and Spearman rho correlations. I also conducted two separate multiple linear regressions to predict students' success related to dependent variables in the study. I present a synthesis of results and make conclusions from the data related to each research question presented. I conclude the chapter with a summary of my findings.

Demographic Information

The population was AD nursing students in a Midwestern state college system. The specific sub-population of this group of AD nursing students was the total number of students enrolled in five mobility nursing programs (two semesters); there are spots for approximately 320 students each fall semester. For the study, there was a total of 265 students who started in the

fall of 2016. The confidence level sample size was obtained during the initial meetings schedule, with a total of 225 students participates. As expected, there was some attrition in the number of participants. One set of all three surveys by one participant was severely incomplete and this participant was eliminated from the study. Of the 224 remaining participants, I retained 191 (85.3%) through the second collection of survey data and graduation from the nursing program. Of the 191 graduating, 190 took the NCLEX-RN examination during the four quarters of 2017 and 163 (85.7%) passed the NCLEX-RN on first attempt and became licensed as registered nurses (RNs).

I collected demographic information from all participants. The information I collected included age, gender, marital status, whether first language was English, dependent children status (students with dependent children living in the home), other dependents (if primary caregiver or responsible person for anyone other than children), financial resources status, highest level of education of mother and father, and hours employed per week. Since there were only seven students who identified as non-native speakers of English and 26 who did not answer this survey question, I removed this demographic variable from analyses. A description of the demographic variables can be found in Table 1.

Table 1

Description of Demographic Variables Included in Analysis

Demographics		n	%
Age			
	20-29	131	58.8%
	30-39	59	26.6%
	40-49	30	13.6%
	50 or more	3	1.0%
Gender			
	Male	19	8.5%
	Female	205	91.5%
Marital Status			
	Never married	115	51.3%
	Married	88	39.3%
	Separated	2	0.9%
	Divorces	19	8.5%
Dependent Child Status			
	Has dependents	106	47.3%
	No dependents	118	52.7%
Primary Care Status			
	Care of other dependents	25	11.2%
	No other dependents	199	88.8%
Financial Resource Status			
	Much less than adequate	9	4.0%
	Less than adequate	56	25.0%
	Adequate	148	66.1%
	More than adequate	9	4.0%
	Much more than adequate	2	0.9%
Education Level of Mother			
	GED	20	8.9%
	HS Diploma	76	33.9%
	Post HS Certificate	32	14.3%
	Associate Degree	42	18.8%
	Bachelor's degree	15	6.7%
	Master or higher	10	4.5%
Education Level of Father			
	GED	24	10.7%
	HS Diploma	70	31.3%
	Post HS Certificate	21	9.4%
	Associate Degree	44	19.6%
	Bachelor's degree	26	11.6%
	Master's degree or higher	9	4.0%
Hours employed per week			
	Not employed	8	3.6%
	Less than 10	52	23.2%
	19-20	50	22.3%
	20-29	75	33.5%
	30+	37	16.5%

Note: n = 224

Research Findings

I investigated four research questions in this study. Each research question will be discussed with the corresponding hypothesis.

Research Question 1: Are students' demographic variables associated with their retention in an AD mobility nursing program?

Hypothesis 1: I hypothesized there will be a positive correlation between one or more student demographic indicators related to retention in AD mobility nursing programs. I conducted a logistic regression, which according to Field (2013) "means that we can predict which of two categories a person is likely to belong to given certain other information" (p. 761).

In the table below (Table 2), Sig. represents the *p* value and *Exp(B)* (Exponential Beta) represents the odds ratio. When reviewing the *Exp(B)* it is important to note the SPSS applies the *B* data in computing the *Exp(B)* results, which is an indicator of the changes in the odds of the dependent variable prediction resulting from a unit change in the predictor (independent) variables in logistic regression (Field, 2013). If the *B* is a negative value, in a logistic regression, it has less effect on the odds ratio resulting in the odds ratio being less than one. If the odds ratio is greater than 1, it indicates that as the indicator increases, the odds of the outcome occurring also increases. In this correlation I was investigating which demographics relate to students' retention. The results suggested there is one demographic variable significantly positively correlated to retention among the study population. Students who had mothers with a higher level of education had significantly improved odds of retention, a positive correlation *(Exp(B)* = 1.84, $p = 0.05$). The results also suggested there was no significant correlation between students' age, gender, marital status, primary care status, highest level of education of father, or hours employed. Dependent child status (students with dependent children in the home), while not

significant was close to a level of significance (*Exp(B)* = 3.48, *p* = 0.06). Forty-seven percent of students indicated they were involved in the care of dependent children (dependent child status) yet they were more likely to be retained. This may be related to their time management skills or number of hours worked but that intersecting information wasn't able to be determined from this survey.

Table 2

Correlation Between Demographic Variables Related to Retention

Demographic Variables	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Age	-0.01	0.02	0.32	1	0.57	0.99
Gender	-0.40	0.98	0.16	1	0.69	0.67
Marital Status	0.05	0.32	0.02	1	0.89	1.05
Dependent Child Status	1.25	0.66	3.56	1	0.06	3.48
Primary Care Status	0.86	0.69	1.56	1	0.21	2.36
Financial Resource Status	-0.11	0.43	0.07	1	0.80	0.90
Education Level of Mom	0.61	0.31	3.96	1	0.05*	1.84
Education Level of Dad	0.12	0.22	0.32	1	0.57	1.13
Hours Employed	-0.20	0.20	0.96	1	0.33	0.82
Constant	-1.24	2.13	0.34	1	0.56	0.29

*$p < .10$

In answer to Research Question 1, the results of this study suggest that student demographic variables (other than education level of mom) are not significantly related to AD mobility nursing students' retention. One demographic indicator (highest level of education of mother) was found to be positively related to retention, therefore hypothesis 1 was partially supported.

Research Question 2: Are there relationships among the admissions criteria (variables) used in AD mobility nursing programs and nursing students' success in completing the program?

Hypothesis 2. I hypothesized there would be a positive correlation between one or more variables (admission criteria) and retention rates of students graduating from AD mobility nursing programs.

None of the five colleges participating in the study utilized all five admission criteria measurements. Therefore, I conducted a series of bivariate correlations to separately test whether there are significant relationships between the admissions criteria variables and students' retention. The correlations represent all students who reported on these variables across all the institutions without aggregated institutional level analyses. A correlation describes relationships between variables. A Spearman rho correlation coefficient is a standardized measure of the strength of a relationship between two variables and is used to represent relationships for a binary variable (1 retained/0 not retained) and not a continuous variable. It is a Pearson's correlation coefficient used with data converted into rank scores. The *r* measurement is not on a linear scale and does not imply causation (Field, 2013), but can indicate co-variance. For example, an $r = .10$ indicates a small effect (accounting for about 1% of the total variance), an $r = .30$ indicates a medium effect (accounting for about 9% of the total variance), while an $r = .50$ indicates a large effect (accounting for 25% of the variance) according to Field (2013). A negative correlation indicates that as one variable increases the other variable decreases. A positive relationship on the other hand indicates that as one variable increases or decreases the other variable does the same.

Because two colleges had an admission test which none of the other colleges used (NACE and Math test), information is missing so an analysis could not be computed. For this

reason, I ran a logistic regression on prerequisite GPA which was the only admission criteria that all five colleges used (see Table 4). Next, I ran a logistic regression on the three colleges that used Practical Nursing GPA as an admission criterion (see Table 5) since there was a medium positive correlation between prerequisite GPA and Practical Nursing GPA in the Spearman rho analysis ($r = .42$, $p < 0.00$).

The Spearman rho correlation (see Table 3) results suggested a small positive relationship between the variable of practical nursing GPA and retention ($r = .19$, $p < 0.05$), and between the variable of prerequisite GPA and retention ($r = .23$, $p < 0.00$). The logistic regression results suggested a significant relationship between the admission criterion of prerequisite GPA (*Exp (B)* = 2.71, $p = 0.02$) and retention, and practical nursing GPA (*Exp (B)* = 3.40, $p = 0.04$) and retention. To answer Research Question 2, the results suggested that prerequisite GPA and practical nursing GPA were significantly positively correlated to retention. Hypothesis 2 is supported with two admission criteria found to be positively correlated with retention.

Table 3

Correlation of Admission Criteria and Student Retention

	Students Retained	TEAS Test	Practical Nursing GPA	Pre-req. GPA	NACE Test	Math Test
Students Retained	1.00					
N	224					
TEAS Test	-0.04	1.00				
p value	0.75					
N	71					
Practical Nursing GPA	.19*	-0.88	1.00			
p value	0.05	0.62				
N	108	34				
Pre-req. GPA	.23*	.21	.42**	1.00		
p value	0.00	0.08	0.00			
N	144	71	107			
NACE Test	0.15	c	0.11	0.00	1.00	
p value	0.65		0.63	1.00		
N	22	0	22	22		
Math Test	-0.15	c	c	c	c	1.00
p value	0.19					
N	74	0	0	0	0	

p = < .10
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
*c. Cannot be computed because at least one of the variables is constant.

Table 4

Prerequisite GPA Related to Retention

Admission Criteria	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Prerequisite GPA	1.00	0.44	5.06	1	0.02*	2.71
Constant	-2.53	1.89	1.80	1	0.18	0.08

$p = <.10$

Table 5

Practical Nursing GPA Related to Retention

Admission Criteria	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Practical Nursing GPA	1.22	0.60	4.20	1	0.04*	3.40
Constant	-2.52	1.88	1.80	1	0.18	0.08

$p = <.10$

Research Question 3: Are the student retention factors of perceived faculty support, self-efficacy, and outcome expectations related to students' retention in an AD mobility nursing program?

Hypothesis 3: I hypothesized there will be a positive correlation between one or more of the student retention factors of self-efficacy, outcome expectations, and perceived faculty support related to student retention of AD mobility nursing programs.

Validity for the instruments was established through review by three experienced nurse educators (Shelton, 2012). I determined instrument reliability through analysis with a Cronbach's alpha coefficient. The internal consistency for the perceived faculty support instrument was 0.94, for the self-efficacy instrument it was 0.83, and for the outcome expectations instrument it was 0.87. The three instrumental concepts (perceived faculty support,

self-efficacy, and outcome expectations) were each combined for an overall measure of group means by point totals based on their Likert scale scoring. The Likert scale was 1-5 for both the perceived faculty support and expected outcomes instruments; and was 1-7 for the self-efficacy instrument. Students scored relatively high (see Table 6) in perceived faculty support (*M* = 60.41, *SD* = 8.29.63), self -efficacy expectations (*M* = 97.42, *SD* = 15.10), and outcomes expectations (*M* = 53.84, *SD* = 6.02).

Table 6

Retention Concept Likert Score Totals of Nursing Student Retention Surveys

Retention Surveys	n	Minimum	Max-imum	Mean	Std. Deviation
Perceived Faculty Support Survey	190	44	120	97.42	15.10
Self-Efficacy Survey	190	33	77	60.41	8.29
Expected Outcomes Survey	190	37	68	53.84	6.02

Next, I conducted a binary logistic regression for each item within each concept to determine which items, if any, were correlated with retention. A regression analysis was done on data collected twice during the study with the first measurement taken during the first semester nursing students take nursing courses (see Table 7) and the second measure taken during the second (final) semester nursing students are take nursing courses (see Table 8) in an AD mobility program.

Table 7

Perceived Faculty Support Items Related to Retention in First Semester of Nursing Courses

Perceived Faculty Support	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp (B)*
Know if student understands what is being taught	0.01	0.41	0	1	0.99	1.01
Demonstrate respect for students	-0.04	0.53	0.01	1	0.95	0.96
Set challenging but attainable goals for students	-0.19	0.44	0.19	1	0.67	0.83
Acknowledge when students have done well	-0.89	0.42	4.33	1	0.04*	0.41
Are helpful in new situation without taking over	-0.07	0.46	0.02	1	0.88	0.93
Stress important concepts	-0.21	0.39	0.29	1	0.59	0.81
Are approachable	0.14	0.37	0.14	1	0.71	1.15
Correct students without belittling them	0.43	0.44	0.99	1	0.32	1.54
Listen to students	-0.49	0.57	0.76	1	0.39	0.61
Can be trusted	-0.66	0.53	1.56	1	0.21	0.52
Give helpful feedback on student assignments	-0.89	0.45	3.87	1	0.05*	0.41
Are open to different points of view	0.55	0.42	1.75	1	0.19	1.74
Encourage students to ask questions	0.52	0.54	0.93	1	0.34	1.69
Provide assistance outside of class	0.43	0.36	1.38	1	0.24	1.53
Vary teaching methods to meet student needs	0.023	0.31	0.01	1	0.94	1.03
Make expectations clear	0.13	0.41	0.1	1	0.75	1.14
Are patient with students	-0.15	0.52	0.09	1	0.77	0.86

Table 7 Continued

Perceived Faculty Support	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp (B)*
Are good role models for students	0.69	0.67	1.06	1	0.30	2.00
Are realistic in expectations	-0.05	0.42	0.02	1	0.90	0.95
Present information clearly	0.51	0.47	1.15	1	0.28	1.66
Clarify information that is not clear	-0.24	0.47	0.27	1	0.61	0.79
Have a genuine interest in students	-0.15	0.6	0.06	1	0.81	0.87
Provide study guides and written materials	-0.09	0.33	0.07	1	0.79	0.92
Demonstrate confidence in students	0.97	0.49	3.92	1	0.05*	2.64
Constant	1.13	1.86	0.37	1	0.54	3.1

$p = < .10$

The results during the first semester suggested that students who perceive that their faculty acknowledge when students have done well, (*Exp(B)* = 0.41, $p = .04$), and give helpful feedback on student assignments (*Exp(B)* = 0.41, $p = .05$) would be expected to be significant predictors of the outcome; for these two items the *Exp(B)* does not demonstrate a significant increase in odds of being retained since the Exp(B) is less than one. However, when faculty demonstrate confidence in student's abilities (*Exp(B)* = 2.64, $p = .05$), students do have significantly increased odds being retained.

Table 8

Perceived Faculty Support Items Related to Retention in Final Semester of Nursing Courses

Perceived Faculty Support	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Know if student understands what is being taught	-0.85	0.84	1.02	1	0.31	0.43
Demonstrate respect for students	0.08	1.21	0.01	1	0.95	1.09
Set challenging but attainable goals for students	-2.54	1.79	2.03	1	0.15	0.08
Acknowledge when students have done well	-1.33	1.03	1.66	1	0.20	0.27
Are helpful in new situations without taking over	-0.08	0.97	0.01	1	0.93	0.92
Stress important concepts	1.13	0.98	1.33	1	0.25	3.09
Are approachable	1.66	1.09	2.32	1	0.13	5.26
Correct student without belittling them	0.99	0.90	1.20	1	0.27	2.69
Listen to students	2.51	1.21	4.30	1	0.04*	12.25
Can be trusted	-0.68	1.26	0.29	1	0.59	0.51
Give helpful feedback on student assignments	-0.77	0.71	1.19	1	0.28	0.46
Are open to different points of view	-0.21	0.84	0.06	1	0.80	0.81
Encourage students to ask questions	0.18	1.14	0.03	1	0.87	1.20
Provide assistance outside of class	-0.01	0.73	0.00	1	0.99	0.99
Vary teaching methods to meet student needs	0.93	0.73	1.64	1	0.20	2.53
Make expectations clear	0.77	0.82	0.88	1	0.35	2.16
Are patient with students	-1.14	1.21	0.89	1	0.35	0.32
Are good role models for students	0.11	1.25	0.01	1	0.93	1.12

Table 8 Continued

Perceived Faculty Support	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Are realistic in expectations	0.26	1.11	0.05	1	0.82	1.29
Present information clearly	-1.10	1.03	1.15	1	0.28	0.33
Clarify information that is not clear	-0.29	0.92	0.10	1	0.75	0.75
Have a genuine interest in students	-0.07	1.14	0.00	1	0.95	0.94
Provide study guides and written materials	0.24	0.65	0.14	1	0.71	1.27
Demonstrate confidence in students	-0.91	0.72	1.62	1	0.20	0.40
Constant	9.29	4.68	3.93	1	0.05	9.29

$p = <.10$

The results during the final semester suggested that students who perceive that their faculty listen to students (*Exp(B)* = 12.25, $p = .04$), have a significantly increased odds of graduation, and that listening is a significant predictor of the outcome (graduation).

The results also suggested one self-efficacy survey item identified as relating to student retention is significant in the first semester of nursing courses (*Exp(B)* = 1.96, $p = .01$) and in the final semester (*Exp(B)* = 3.87, $p = .01$). When students believe they can finish assignments by deadlines, there is an associated increase in the odds of retention which became stronger over time (see Tables 9 and 10). The odds of retention increased from first semester *(Exp(B)* = 1.96) to second semester *(Exp(B)* = 3.87) when students finished assignments by deadlines.

Table 9

Self-Efficacy Survey Items Related to Retention in First Semester of Nursing Courses

Self-Efficacy Learning Scale	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Finish assignments by deadlines	0.67	0.25	7.45	1	0.01*	1.96
Study when there are other interesting things to do	-0.42	0.27	2.46	1	0.12	0.66
Concentrate on courses	0.55	0.39	1.92	1	0.17	1.73
Take class notes	-0.24	0.21	1.33	1	0.25	0.79
Use the library to get information for assignments	-0.09	0.13	0.49	1	0.49	0.91
Plan your coursework	-0.06	0.34	0.03	1	0.86	0.94
Organize your coursework	-0.06	0.29	0.04	1	0.84	0.94
Remember information presented in class and textbooks	0.03	0.20	0.02	1	0.89	1.03
Arrange a place to study without distractions	0.13	0.18	0.56	1	0.46	1.14
Motivate yourself to do coursework	-0.14	0.28	0.24	1	0.62	0.87
Participate in class	0.04	0.17	0.06	1	0.80	1.04
Constant	-1.15	1.54	0.56	1	0.46	0.32

$p = < .10$

Table 10

Self-Efficacy Survey Items Related to Retention in Final Semester of Nursing Courses

Self-Efficacy Learning Scale	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Finish assignments by deadlines	1.35	0.52	6.68	1	0.01*	3.87
Study when there are other interesting things to do	0.57	0.54	1.12	1	0.29	1.77
Concentrate on courses	-0.62	0.93	0.44	1	0.51	0.54
Take class notes	0.16	0.36	0.19	1	0.66	1.17
Use the library to get information for assignments	-0.26	0.26	1.01	1	0.31	0.77
Plan your coursework	-0.29	0.77	0.14	1	0.71	0.75
Organize your coursework	-0.11	0.73	0.02	1	0.88	0.90
Remember information presented in class and textbooks	0.52	0.51	1.03	1	0.31	1.68
Arrange a place to study without distractions	-0.60	0.54	1.22	1	0.27	0.55
Motivate yourself to do coursework	-0.11	0.44	0.07	1	0.80	0.89
Participate in class	0.31	0.34	0.86	1	0.35	1.37
Constant	-2.32	2.57	0.82	1	0.37	0.10

$p = < .10$

Half of the statements/items in the outcome expectation survey were reverse worded and needed to be reverse coded (identified by “r” after statements). There were no outcome expectation factors significantly associated with students’ retention in the first semester of nursing courses which suggest students are more likely to graduate including when they do not worry that they will be able to deal with death (*Exp(B)* = 3.58, $p = .02$), and that the public generally does not have a low opinion of people in the nursing profession *(Exp(B)* = 3.10, $p =$

.01); (both items were reverse coded). Because no expected outcomes were significant in the first semester but two were in the second semester, the data suggests that as students get closer to graduation, they worry about dealing with death and public opinion regarding the nursing profession (see Table 12).

Table 11

Expected Outcomes Survey Items Related to Retention in First Semester of Nursing

Expected Outcome	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Administrators of hospitals may not be supportive of nurses. (r)	0.09	0.20	0.21	1	0.65	1.10
With an associate degree in nursing, I would be respected by others.	-0.56	0.32	3.10	1	0.08	0.57
I worry that I would not be able to deal with death. (r)	-0.10	0.20	0.22	1	0.64	0.91
A career in nursing would allow me time for a family, friends, and leisure activities.	-0.30	0.25	1.49	1	0.22	0.74
An AD degree in nursing would provide me with strong relationships with other people.	-0.36	0.32	1.21	1	0.27	0.70
The public generally as a low opinion of people in the nursing profession. (r)	-0.04	0.27	0.03	1	0.87	0.96
An AD in nursing would allow me to obtain a well-paying job.	0.51	0.27	3.39	1	0.07	1.66
I worry that I would not be able to pass the licensure exam to become an RN. (r)	-0.08	0.20	0.16	1	0.69	0.92
I worry that employers would doubt my competence. (r)	0.41	0.25	2.67	1	0.10	1.51

Table 11 Continued

Expected Outcome	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
I worry that nursing would be too physically and emotionally draining to handle. (r)	-0.02	0.29	0.00	1	0.95	0.98
I worry that I would not be able to make the correct ethical choices about patients' needs. (r)	-0.03	0.24	0.02	1	0.89	0.97
With an AD degree in nursing I would always be assured of a job.	0.31	0.21	2.28	1	0.13	1.36
I believe that I would practice competently as a registered nurse.	0.07	0.26	0.06	1	0.80	1.07
An AD in nursing would allow me to work with people in a very constructive way.	0.53	0.39	1.83	1	0.18	1.69
Constant	-0.35	1.58	0.05	1	0.83	0.71

p = < .10

Table 12

Expected Outcomes Survey Items Related to Retention in in Final Semester of AD Nursing Courses

Expected Outcome	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Administrators of hospitals may not be supportive of nurses. (r)	-0.71	0.60	1.42	1.00	0.23	0.49
With an associate degree in nursing, I would be respected by others.	1.20	0.72	2.81	1.00	0.09	3.33
I worry that I would not be able to deal with death. (r)	1.28	0.56	5.13	1.00	0.02*	3.58
A career in nursing would allow me time for a family, friends, and leisure activities.	-0.77	0.67	1.31	1.00	0.25	0.47

Table 12 Continued

Expected Outcome	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
An AD degree in nursing would provide me with strong relationships with other people.	0.46	0.70	0.43	1.00	0.51	1.58
The public generally has a low opinion of people in the nursing profession. (r)	1.13	0.45	6.42	1.00	0.01*	3.10
An AD in nursing would allow me to obtain a well-paying job.	-1.16	1.06	1.21	1.00	0.27	0.31
I worry that I would not be able to pass the licensure exam to become an RN. (r)	-0.65	0.56	1.31	1.00	0.25	0.52
I worry that employers would doubt my competence. (r)	0.60	0.73	0.67	1.00	0.41	1.82
I worry that nursing would be too physically and emotionally draining to handle. (r)	-0.78	0.75	1.06	1.00	0.30	0.46
I worry that I would not be able to make the correct ethical choices about patients' needs. (r)	0.48	0.54	0.79	1.00	0.37	1.62
With an AD degree in nursing I would always be assured of a job.	-0.89	0.69	1.67	1.00	0.20	0.41
I believe that I would practice competently as a registered nurse.	-0.82	1.24	0.44	1.00	0.51	0.44
An AD in nursing would allow me to work with people in a very constructive way.	-0.04	0.92	0.00	1.00	0.97	0.96
Constant	6.07	5.34	1.29	1.00	0.26	430.58

$p = < .10$

In answer to Research Question 3, the results suggested that four retention survey items are significantly correlated to retention, including when students perceive their faculty acknowledge that they have done well, give helpful feedback on assignments, demonstrate confidence in them, listen to them, and when students feel they can finish their assignments on time. In the final semester of nursing courses, two outcome expectation retention survey

questions suggested students are more likely to graduate when they do not worry that they will be able to deal with death and that the public generally does not have a low opinion of people in the nursing profession. The results suggested four perceived faculty support factors, one self-efficacy factor, and two outcome expectation factors were found to be positively correlated with retention; Hypothesis 3 is supported.

Last, for Research Question 3, I ran a logistic regression with the three retention surveys (Perceived Faculty Support Scale, Self-Efficacy Learning Scale, and Expected Outcomes Survey) including the aggregated data from students at all five colleges to check for significance of over-all survey results related to nursing student retention (see Table 13).

The data suggested that the Perceived Faculty Support Scale was significant related to retention (*Exp(B)* = 2.30, $p = 0.01$). The other two retention scales were not found to be significant in this population.

Table 13

Correlation Between Retention Surveys and Nursing Student Retention

Retention Survey	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Perceived Faculty Support Scale	0.84	0.33	6.48	1.00	0.01*	2.30
Self-Efficacy Learning Scale	0.15	0.25	0.36	1.00	0.55	1.16
Expected Outcomes Survey	-0.53	0.58	0.83	1.00	0.36	0.59
Constant	-0.61	2.60	0.06	1.00	0.81	0.54

$p = < .10$

Research Question 4: Are the relationships among the admission criteria (variables) used in AD mobility nursing programs and nursing students' success in passing the NCLEX-RN examination on first attempt?

Hypothesis 4: I hypothesized there would be a positive correlation between one or more variables (admission criteria) and first-time passing of NCLEX-RN licensing examination for graduates from AD mobility nursing programs.

I conducted a Spearman rho correlation with the admission criteria variables of prerequisite GPA, Practical Nursing GPA, TEAS, NACE, and Math test to determine if there was a positive correlation between one or more admission criteria and NCLEX-RN passing on first attempt. Next, I ran logistic regressions (see Tables 15 and 16) on the admission criterion of prerequisite GPA (which was the only admission criteria all five colleges used), and on Practical Nursing GPA (which three colleges used as an admission criterion).

The Spearman rho analysis suggested a small positive relationship between the variable of prerequisite GPA and passing of NCLEX-RN on first attempt (r = .20, p =.01) and a large positive relationship between the variables of prerequisite GPA and practical nursing GPA (r = .52, $p < 0.00$). The logistic regression results suggest a significant positive relationship between the admission criterion of prerequisite GPA (*Exp (B)* = 4.61, p = 0.02) and passing of NCLEX-RN on first attempt. To answer question 4, the results suggested that prerequisite GPA was significantly positively correlated to passing on NCLEX-RN on first attempt. Hypothesis 4 is supported with one admission criterion found to be positively correlated with NCLEX-RN passing on first attempt.

Table 14

Correlation of Admission Criteria and NCLEX-RN Passing on First Attempt

	NCLEX-RN	TEAS Test	Practical Nursing GPA	Pre-req. GPA	NACE Test	Math Test
NCLEX-RN	1.00					
N	190					
TEAS Test	-0.06	1.00				
p-value	0.66					
N	62	62				
Practical Nursing GPA	0.20	-0.17	1.00			
p-value	0.07	0.42				
N	85	25	85			
Pre-req GPA	0.20**	.22	.52**	1.00		
p-value	0.01	0.09	0.00			
N	190	62	85	190		
NACE Test	0.26	.[b]	0.19	0.02	1.00	
p-value	0.26		0.61	0.95		
N	21	0	21	21	21	
Math Test	0.19	.[b]	.[b]	.[b]	.[b]	1.00
p-value	0.11					
N	68	0	0	0	0	68

p = < .10

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

b. Cannot be computed because at least one of the variables is constant.

Table 15

Prerequisite GPA Related to NCLEX-RN Passing on First Attempt

Admission Criteria	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Prerequisite GPA	1.53	0.64	5.81	1	0.02*	4.61
Constant	-3.32	2.10	2.51	1	0.11	0.04

p = < .10

Table 16

Practical Nursing GPA Related to NCLEX-RN Passing on First Attempt

Admission Criteria	*B*	*S.E.*	*Wald*	*df*	*Sig.*	*Exp(B)*
Practical Nursing GPA	1.28	1.00	1.64	1	0.20	3.59
Constant	-5.01	4.18	1.45	1	0.22	0.01

$p = < .10$

Summary

In Chapter IV, I reviewed the results of the study. I included demographic data information, research hypotheses, and analyzed the data to determine whether each of the hypotheses were supported or not. I found one demographic indicator to be positively related to retention therefore hypothesis 1 was supported. I found two admission criteria to be positively correlated between and nursing students' retention, which supported Hypothesis 2. I found positive correlations between four perceived faculty support items, one self-efficacy item, and two outcome expectation items and nursing students' retention which supported Hypothesis 3. I found one positive relationships between admission criteria and nursing students' passing of NCLEX-RN on first attempt which supported Hypothesis 4. In Chapter V I will discuss study limitations, recommendations for future research, implications for theory and practice and final conclusions.

Chapter V: Conclusion

In the first two chapters of this dissertation, I introduced the research study and reviewed the literature conducted prior to the study. In the literature review I included information concerning the nursing shortage, nursing faculty shortage, NCLEX success and preparation, retention, nursing student retention, student success, nursing student success, nursing education, predicting success, and nursing admission criteria. In the review I also identified AD mobility nursing students as a gap in the literature regarding retention and NCLEX-RN first-time passing. In Chapter III I described the research study including the research design, methodology, population, data collection and instruments used. In Chapter IV I included the research study findings. In the study I examined the relationship of admission criteria and associate degree mobility nursing student success as measured by retention and NCLEX-RN passing on first attempt at five colleges in a Midwest state community college system. In Chapter V, I discuss the results presented in the previous chapter, conclusions, limitations and recommendations for additional research.

Discussion

This study was conducted to determine which admission criteria are associated with students' retention rate and first-time passing of NCLEX-RN in AD mobility nursing programs in a Midwest state community college system. The study includes a confidence level of 95% sample size with 190 participants of a total population of 265.

Although nursing program admission criteria use in predicting student success has demonstrated little consensus in the literature, in this study a small correlation was identified between prerequisite GPA and nursing student retention which is supported in the literature (Herrera & Blair, 2015; Seago et al., 2008; Uyehara et al., 2007; Wolkowitz & Kelly, 2010).

While the review of literature revealed the nursing program admission criteria of GPA was related to success in nursing programs (Lengacher & Keller, 1990), a gap in the literature was identified for the sub-group of AD mobility nursing students. Because AD mobility nursing programs admit students who are already LPNs, these students have a base nursing knowledge which can be computed (Practical Nursing GPA) that students accepted into other types of nursing programs do not have. In this study, I found a small correlation between Practical Nursing GPA and retention, and prerequisite GPA and retention among this population. Though the effect is small, and since there is little data for this population, program directors should consider including prerequisite GPA and Practical Nursing GPA when making decisions about nursing program admission criteria. I also found there was an association between the admission criterion of prerequisite GPA and NCLEX-RN passing rates on first attempt.

In this study, I found that student's perception of faculty support was correlated to retention when students felt faculty acknowledged when students had done well, gave helpful feedback on student assignments, and demonstrated confidence in them during the first semester of nursing courses, and when faculty listened to them during the final semester of nursing courses. I found that students' self-efficacy was correlated to retention when students believed they can finish assignments by deadlines in both the first and final semesters of nursing courses. I found no correlations to retention among students' outcome expectations in the first semester of nursing courses but did find that students were more likely to graduate when they do not worry about their ability to deal with death or that the public has a low opinion of people in the nursing profession (both items were reverse coded).

Limitations

Though I obtained a study sample size, 190 participants from a population of 265 which provided for a confidence level of 95%, each college's AD nursing program's admission criteria was different and none of the five colleges had all the admission criteria variables. One of the admission criteria (Practical Nursing GPA) was used by three colleges, but the other two college Director of Nurses would have been able to figure and provide this information also had I specifically asked permission from participants to collect this data also.

Another limitation I identified involved timing of the survey data collection. The intent was to collect the data at the end of the fall semester and again at the end of the final semester (spring). One college was unable to meet for the data collection in fall as scheduled due to a weather cancellation and data collection had to be rescheduled from December 2016 to February 2017. It is unknown if or how this may have affected the data and the outcomes found. While I was able to schedule surveys on non-testing days with four colleges, one college used distance learning and was only able to schedule the data collection during finals week when all the students were present in person. The students completed the surveys after they finished a final exam. The stress involved in completing a survey after a final exam may have affected how students answered survey questions.

When I analyzed the total student scores for the three retention surveys, students scored relatively high for all three concepts. However, many of the concepts were very similar and overlapped in content and meaning, so when analyzed by each individual item, only eight survey items of the total of 49 individual items were found to be of significance. Similarity in overlap between retention survey factors may have made it difficult to discern significance as

demonstrated by some greater than 1.0 odds ratios without significance of individual retention items.

The demographics measured in the study did not include a question regarding race or ethnicity. Since there is growing diversity in the US, and the number of minority nurses is not keeping up proportionately (Charbonneau-Dahlen, 2015; Crooks, 2013; Gardner, 2005; Junious et al., 2010; Melillo et al., 2013; Rendon, 1994; Veal et al., 2012; White & Fulton, 2015), it would have been helpful to learn the retention rates for students related to race/ethnicity.

This study did not address students who weren't retained or didn't pass their boards and if there was any correlation for this sub-sample as related to demographics such as identifying as single parent, having young children, holding a full-time job. Learning more about the group of student who were not successful as defined by retention and passing of NCLEX-RN on their first attempt would add to the body of knowledge surrounding AD nursing student retention.

Implications for Research

I could have included Practical Nursing GPA for all five nursing programs involved in this study. Even though Practical Nursing GPA was not part of the admission criteria for all participating colleges, Practical Nursing GPA could have been figured from existing student data after program admission to form a more complete data set for analysis. This study should be repeated for mobility nursing program or other types of nursing programs with an accelerated pace using previous nursing level GPA instead of limiting to just AD mobility or only colleges using this measure for admission criteria.

My study examined which admission criteria are associated with nursing students' success in AD mobility nursing programs as measured by program retention and successful passing of the NCLEX-RN examination on first attempt. A great deal of nursing student

retention research has focused on minority nursing students (Baker, 2010; Barra, 2013; Charbonneau-Dahlen, 2015; Veal et al., 2012). While the United States is growing in diversity, the number of minority nurses is not keeping up proportionately (Charbonneau-Dahlen, 2015; Crooks, 2013; Gardner, 2005; Junious et al., 2010; Melillo et al., 2013; Rendon, 1994; Veal et al., 2012; White & Fulton, 2015). Studying whether the variable of English as a second language correlates to nursing student success as measured by retention would help to gain insight into the nursing student experience for minority nursing students.

In this study, I found the results suggests a correlation between both prerequisite GPA and Practical Nursing GPA and retention among AD mobility nursing students. I also found a correlation between the admission criterion variable of prerequisite GPA and NCLEX-RN passing on first attempt. Regarding admission criteria as it relates to predicting NCLEX-RN first-time success, Mills at al. (1992) reported that admission criteria was the poorest model in predicting student success on NCLEX-RN. Future research could investigate the relationship between nursing student retention/graduation and NCLEX-RN success, attempting to learn more about how nurse educators can best be assured that what and how they are teaching, and what their graduates are learning will best prepare the nurse graduates to be most likely to pass their NCLEX-RN examination on first attempt.

Throughout review of nursing retention strategy findings, faculty support was noted among several studies, in one form or another, as a supportive component of nursing student retention (Baker, 2010; Cohen, 2011; Charbonneau-Dahlen, 2015; Jeffreys, 2015; Shelton, 2012; Veal et al., 2012; Williams, 2010), which aligns with Tinto's (1987, 1993). In this study, four perceived faculty support survey items were found to be statistically significant related to retention among the study population including when faculty acknowledged students had done

well, gave helpful feedback on student assignments, and demonstrated confidence in students during the first semester of nursing courses, and when students perceived that faculty listened to them in the final semester of nursing courses. Future research might include the implementation of nursing faculty development in promoting perceived faculty support as it relates to nursing students and retention across the nursing curriculum courses.

The review of literature regarding nursing student admission criteria and nursing success included nearly all quantitative studies (Davenport, 2007; Lengacher & Keller, 1990; Mills et al., 1992; Newton et al., 2007; Uyehara et al., 2007; Waterhouse & Beeman, 2003; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). Horkey (2015) studied attrition in nursing programs and supported use of both qualitative and quantitative measures in discerning nursing student admissions best practices. Future studies could involve research that combines both qualitative measures (such as prospective student interviews or essay writing) with quantitative measures for more complete information towards identifying admission criteria that are more predictive of nursing student success.

Implications for Theory

I used two theoretical frameworks as a foundation to this research study: Tinto's (1987, 1993) theory of retention, and Shelton's model (2003, 2012) of nursing student retention. Tinto's (1987, 1993) theory of retention is supported by this study through GPA correlations to nursing student retention, and the importance of faculty support and faculty involvement as measured by four perceived faculty support scale items found to be significant. AD mobility nursing programs were cohort modeled, which aligns with and supports Tinto's (1997) theory of retention through learning communities.

Shelton's (2012) retention model has components of Tinto's (1987, 1993) retention and Bandura's (1997) self-efficacy but is specifically for AD nursing students. Shelton's AD nursing student retention model was found to be supported in this research study through several survey scale items which correlated to nursing student retention. Items I found which correlated to retention from Shelton's (2012) Model of Nursing Student Retention include one demographic variable, one self-efficacy scale item (both semesters of nursing courses), and four perceived faculty support scale items (across two semesters of nursing courses). The outcome expectancy items were not found to be related to retention in the first semester of nursing courses, but two outcome expectations were found to be correlated during the final semester of nursing courses which had to do with how students thought about their ability to deal with death and the public's opinion of people in the nursing profession. The self-efficacy portion of Shelton's retention model did not add much information to the explanation of retention among nursing students in this study. Of the three surveys in Shelton's retention model, one survey was found to be statistically significant related to nursing student retention (Perceived Faculty Support Scale) in this sample, while the other two were not.

Implications for Practice

Nursing programs use a variety of factors to determine admission (Herrera & Blair, 2015) such as grade point average (GPA), prerequisite course grades, and standardized admission tests (Horkey, 2015). From my study's findings, director of nurses (DONs) of AD mobility nursing programs may want to consider adding Practical Nursing GPA to admission criteria since this was found to be a statistically significant correlation for retention. Since prerequisite GPA was found to be statistically significant in this study for both retention and NCLEX-RN passing on first attempt, DONs should consider this as an admission criterion if they are not already doing

so. If nursing programs use a rubric ranking system, DONs should consider if the number or percentage of points given for prerequisite GPA should be weighted as more important than Practical Nursing GPA. Part of a conversation concerning consideration of weighting the prerequisite GPA should involve discerning if there is a gap between white students and students of diverse backgrounds. According to Supiano (2018), traditional teaching methods may cause the gap to widen; the author suggests inclusive teaching which "seeks to equalize opportunity for students from all backgrounds to participate and succeed in class" (p. 1). The article specifically highlights biology courses and since sciences are heavily represented in the AD nursing program prerequisites, this would be important to investigate before adjusting or weighting of a rubric used with admission criteria.

The standardized admission tests in this study (TEAS and NACE) were not found to be positively correlated to retention or passing NCLEX-RN; nursing program DONs may want to consider eliminating standardized testing as part of their admission criteria. Because the study was only able to include students admitted to the nursing programs, it is unknown what might have happened to students denied admission, based on their performance on admission tests. Further research concerning standardized nursing admission tests commonly used and the information they may provide for nursing program acceptance could be beneficial.

Directors of nursing programs should consider identifying student who are at-risk for not being successful. Developing individual plans for success with students identified as at-risk may help to assist students in meeting their nursing educational goals. Faculty may also want to discern nursing students' perceptions of faculty support midway through each semester using Shelton's perceived faculty support scale to identify areas of opportunity which may affect student retention.

Finally, to support nursing student retention, nursing faculty professional development should be directed towards developing best-practices for how faculty demonstrate acknowledging when students have done well and confidence in students; provide helpful feedback to students and listen to students. Faculty should be supported in curriculum development during the final semester for addressing student's worries concerning their ability to deal with death and worries about perceptions of public opinion regarding the nursing profession. Surveying students periodically and getting student feedback concerning their perception of faculty support may also be helpful.

Conclusions

The United States is in a nursing shortage. As the nursing shortage continues, strategies to recruit, retain, and graduate students who successfully pass the NCLEX-RN examination will help to meet the needs of the nurse employers. Nursing program success by regulating organizations includes the measures of program retention and passing of NCLEX-RN on first attempt.

There has been a lack of consistent, clear admission criteria predictive of student success, and minimal research for AD mobility nursing education. This study was conducted to determine which admission criteria are associated with students' retention rate and first-time passing of NCLEX-RN AD mobility nursing programs in a Midwest state community college system.

Based on the study results, I found a positive relationship between the variable of Practical Nursing GPA and retention, and between the variable of perquisite GPA and retention. Among the retention survey data, I found several survey scale items to be correlated with nursing student retention in this research study including one demographic variables, four perceived faculty support items, one self-efficacy scale item demonstrating support for Shelton's (2012)

model of nursing student retention in this population. Nursing educators can support student success and retention by acknowledging when students have done well, giving helpful feedback on assignments, demonstrating confidence in students and listening to students.

Mills et al. (1992) reported that admission criteria were the poorest model in predicting student success on NCLEX-RN. Research question four asked about the relationships among the admission criteria used in AD mobility nursing programs and nursing student success in passing the NCLEX-RN examination on first attempt. The Mills et al. study, did not find admission criteria to be predictive of success as measure by NCLEX-RN passing. In this study I found that there was a relation between one admission criterion (prerequisite GPA) and success as measured by NCLEX-RN passing on first attempt, for this study population. More research on this admission criteria would help to discern if this is true for other populations.

Nursing programs are assessed by state boards of nursing, and national nursing accrediting organizations on several outcomes, including first-time passing rates of program graduates on the NCLEX-RN, (Davenport, 2007; Giddens & Gloeckner, 2005; Griffiths et al., 2004; Horkey, 2015; Koestler, 2015; Schwarz, 2005; Spurlock & Hunt, 2008; Wolkowitz & Kelley, 2010; Yates & Sandiford, 2013). The National Council of State Boards of Nursing (NCSBN) developed the NCLEX-RN examination; each State Board of Nursing reports its results (Schwarz, 2005). NCSBN shares the NCLEX-RN test blueprint on their web site. The NCLEX-RN test plan passing standard is reviewed every three years and is available at the NCSBN web site. Nurse educators want nursing students to be successful, graduate, and pass their boards. Directors of nursing programs and nursing faculty can develop their curriculum to meet the content as described in the NCLEX-RN test plan. It would make sense, then, that if students meet all program criteria and graduate, in theory, they should be able to pass their

licensure examination (NCLEX-RN) on the first attempt. This does not always happen. Perhaps future study should ask about the relationship between nursing program graduation rates and NCLEX-RN passing rates on first attempt.

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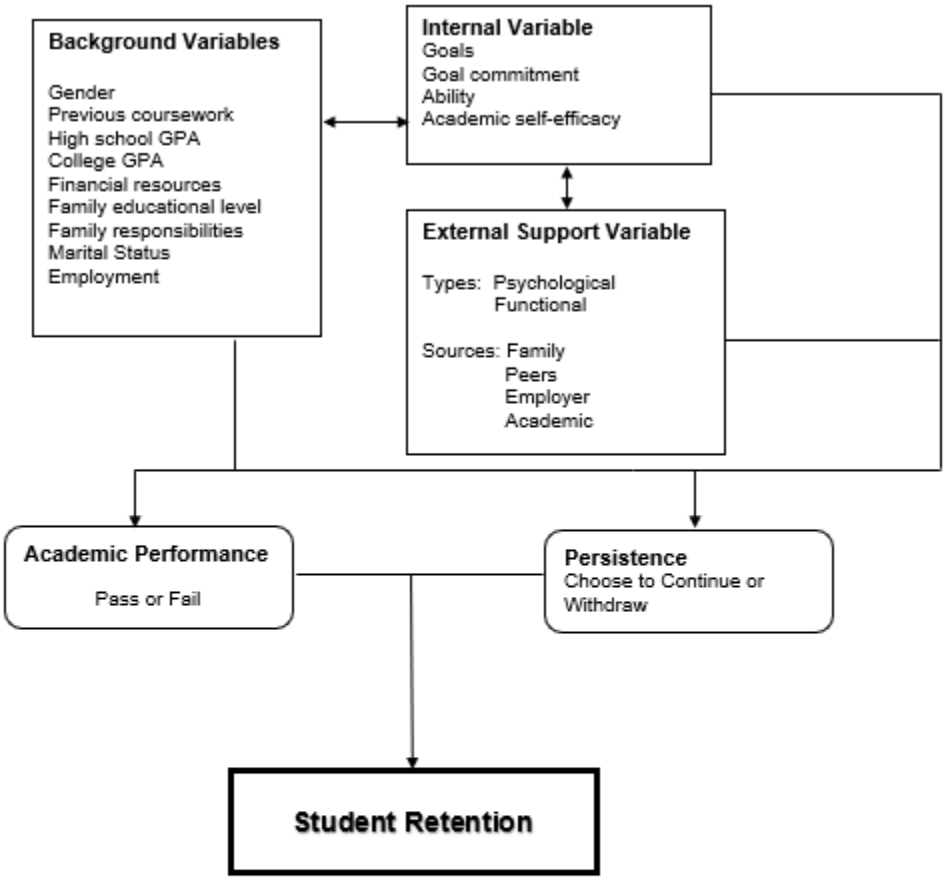
Appendices

Appendix A: Shelton's Model of Nursing Student Retention



Shelton Model of Student Retention

Appendix B: Data Collection Instruments

Name: _____

STUDENT BACKGROUND

Form A – Currently Enrolled Students

INSTRUCTIONS: Please answer each question below by placing an X on the line next to the appropriate response or writing your answer on the blank line as indicated.

1. How old are you? _____

2. What is your gender?

   ____ Female
   ____ Male

3. What is your marital status?

   ____ Never married
   ____ Married
   ____ Separated
   ____ Divorced
   ____ Widowed

4. What is your first language?

   ____ English
   ____ Other

5. Do you have dependent children living in your home?

   ____ Yes
   ____ No

6. Are you the primary caregiver or responsible person for anyone other than your children (e.g. parent, grandparent, grandchild)?

____ Yes
____ No

7. How would you describe your financial resources in meeting necessities?

____ Much less than adequate
____ Less than adequate
____ Adequate
____ More than adequate
____ Much more than adequate

8. What sources of financial aid are available to you for your education? Indicate all applicable sources.

____ No financial aid
____ Loan
____ Grant
____ Partial employer reimbursement
____ Full employer reimbursement
____ Scholarship
____ Other (Please specify) _____

9. How many hours a week are you employed?

____ Not employed
____ Less than 10
____ 10 to 19
____ 20 to 29
____ 30 or more

10. How many credits are you taking this semester? _____

11. Do you reside off-campus or on-campus?

____ Off-campus
____ On-campus

12. What was the highest level of education that you completed prior to entering your nursing program?

____ GED
____ High school diploma
____ Post high school certificate
  Please specify _____
____ Associate degree
____ Baccalaureate degree
____ Master's degree or higher

13. What is the highest level of education that you expect to complete?

____ Less than Associate degree
____ Associate degree
____ Baccalaureate degree
____ Master's degree
____ Doctoral degree

14. What was the highest level of education completed by your mother?

____ Did not complete high school
____ High school diploma
____ Post high school certificate
____ Associate degree
____ Baccalaureate degree
____ Master's degree or higher

15. What was the highest level of education completed by your father?

____ Did not complete high school
____ High school diploma
____ Post high school certificate
____ Associate degree
____ Baccalaureate degree
____ Master's degree or higher

16. Which of the following is closest to your high school grade point average? (A = 4.0, B = 3.0, C = 2.0, D = 1.0)

____ 3.6 to 4.0
____ 3.1 to 3.5
____ 2.6 to 3.0
____ 2.1 to 2.5
____ 1.6 to 2.0
____ 1.1 to 1.5
____ 1.0 or less

17. Which of the following is closest to your college grade point average, including nursing and non-nursing courses? (A = 4.0, B = 3.0, C = 2.0, D = 1.0)

____ 3.6 to 4.0
____ 3.1 to 3.5
____ 2.6 to 3.0
____ 2.1 to 2.5
____ 1.6 to 2.0
____ 1.1 to 1.5
____ 1.0 or less

18. What grade did you receive for the nursing course you took last semester?

____ A or A-
____ B+, B, or B-
____ C+, C, or C-
____ D+, D, or D-
____ F

19. Have you withdrawn from your nursing program at any time since your original entry?

____ Yes
____ No

If you answered "yes", please answer questions 20 – 24. If you answered "no", please omit questions 20 – 24.

20. At what point in the program did the withdrawal occur?

____ 1st semester
____ 2nd semester
____ 3rd semester
____ 4th semester
____ Other (please specify)

21. When you left the nursing program was it:

____ Your choice
____ Not your choice

22. What was the primary reason for your withdrawal? (Choose the reason that was **most** significant in leading to the withdrawal.)

____ Academic difficulty
____ Financial reasons
____ Family responsibilities
____ Health problems
____ Too difficult to manage work and school
____ No longer wanted to be a nurse
____ Other (please specify) _____

23. How long after the withdrawal did you re-enter a nursing program?

____ Less than 1 year
____ 1 year to 2 years
____ More than 2 years

24. Did you return to the same nursing program or to a different program?

____ Same program
____ Different program

PERCEIVED FACULTY SUPPORT SCALE

INSTRUCTIONS: Think about faculty members in your nursing program. Indicate how much you agree or disagree with each of the following statements by circling the appropriate number.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Most faculty members:					
1. Know if students understand what is being taught.	1	2	3	4	5
2. Demonstrate respect for students.	1	2	3	4	5
3. Set challenging but attainable goals for students.	1	2	3	4	5
4. Acknowledge when students have done well.	1	2	3	4	5
5. Are helpful in new situations without taking over.	1	2	3	4	5
6. Stress important concepts.	1	2	3	4	5
7. Are approachable.	1	2	3	4	5
8. Correct students without belittling them.	1	2	3	4	5
9. Listen to students.	1	2	3	4	5
10. Can be trusted.	1	2	3	4	5
11. Give helpful feedback on student assignments.	1	2	3	4	5
12. Are open to different points of view.	1	2	3	4	5
13. Encourage students to ask questions.	1	2	3	4	5

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
14. Provide assistance outside of class.	1	2	3	4	5
15. Vary teaching methods to meet student needs.	1	2	3	4	5
16. Make expectations clear.	1	2	3	4	5
17. Are patient with students.	1	2	3	4	5
18. Are good role models for students.	1	2	3	4	5
19. Are realistic in expectations.	1	2	3	4	5
20. Present information clearly.	1	2	3	4	5
21. Clarify information that is not understood.	1	2	3	4	5
22. Have a genuine interest in students.	1	2	3	4	5
23. Provide study guides and written materials.	1	2	3	4	5
24. Demonstrate confidence in students.	1	2	3	4	5

SELF-EFFICACY FOR SELF-REGULATED LEARNING SCALE

INSTRUCTIONS: Circle the number that most closely corresponds with how well you think you can do each of the following:

	Not well at all		Not too well		Pretty well		Very well
	1	2	3	4	5	6	7
1. Finish assignments by deadlines.	1	2	3	4	5	6	7
2. Study when there are other interesting things to do.	1	2	3	4	5	6	7
3. Concentrate on courses.	1	2	3	4	5	6	7
4. Take class notes.	1	2	3	4	5	6	7
5. Use the library to get information for assignments.	1	2	3	4	5	6	7
6. Plan your coursework.	1	2	3	4	5	6	7
7. Organize your coursework.	1	2	3	4	5	6	7
8. Remember information presented in class and textbooks.	1	2	3	4	5	6	7
9. Arrange a place to study without distractions.	1	2	3	4	5	6	7
10. Motivate yourself to do coursework.	1	2	3	4	5	6	7
11. Participate in class discussions.	1	2	3	4	5	6	7

OUTCOME EXPECTATIONS QUESTIONNAIRE –

ASSOCIATE DEGREE NURSING

INSTRUCTIONS: Please indicate how much you agree or disagree with each of the following statements, by circling the appropriate number.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Administrators of hospitals may not be supportive of nurses.	1	2	3	4	5
2. With an associate degree in nursing I would be respected by others.	1	2	3	4	5
3. I worry that I would not be able to deal with death.	1	2	3	4	5
4. A career in nursing would allow me time for a family, friends, and leisure activities.	1	2	3	4	5
5. An associate degree in nursing would provide me with strong relationships with other people.	1	2	3	4	5
6. The public generally has a low opinion of people in the nursing profession.	1	2	3	4	5
7. An associate degree in nursing would allow me to obtain a well-paying job.	1	2	3	4	5
8. I worry that I would not be able to pass the licensure exam to become an RN.	1	2	3	4	5
9. I worry that employers would doubt my competence.	1	2	3	4	5
10. I worry that nursing would be too physically and emotionally draining to handle.	1	2	3	4	5

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
11. I worry that I would not be able to make the correct ethical choices about patients' needs.	1	2	3	4	5
12. With an associate degree in nursing I would always be assured of a job.	1	2	3	4	5
13. I believe that I would practice competently as a registered nurse.	1	2	3	4	5
14. An associate degree in nursing would allow me to work with people in a very constructive way.	1	2	3	4	5

Appendix C: Institutional Review Board Approval

ST. CLOUD STATE UNIVERSITY
EDUCATION FOR LIFE.

Institutional Review Board (IRB)

720 4th Avenue South MC 204K, St. Cloud, MN 56301-4498

Name: Connie Frisch

Address

Brainerd, USA

Email: frco1301@stcloudstate.edu

IRB PROTOCOL DETERMINATION:
Exempt Review

Project Title: Is admission criteria predictive of Nursing students success in Associate Degree (AD) Mobility Nursing Programs?

Advisor Dr. Michael Mills

The Institutional Review Board has reviewed your protocol to conduct research involving human subjects. Your project has been: **APPROVED**

Please note the following important information concerning IRB projects:

- The principal investigator assumes the responsibilities for the protection of participants in this project. Any adverse events must be reported to the IRB as soon as possible (ex. research related injuries, harmful outcomes, significant withdrawal of subject population, etc.).

- For expedited or full board review, the principal investigator must submit a Continuing Review/Final Report form in advance of the expiration date indicated on this letter to report conclusion of the research or request an extension.

-Exempt review only requires the submission of a Continuing Review/Final Report form in advance of the expiration date indicated in this letter if an extension of time is needed.

- Approved consent forms display the official IRB stamp which documents approval and expiration dates. If a renewal is requested and approved, new consent forms will be officially stamped and reflect the new approval and expiration dates.

- The principal investigator must seek approval for any changes to the study (ex. research design, consent process, survey/interview instruments, funding source, etc.). The IRB reserves the right to review the research at any time.

If we can be of further assistance, feel free to contact the IRB at 320-308-3290 or email ri@stcloudstate.edu and please reference the SCSU IRB number when corresponding.

IRB Institutional Official:

Latha Ramakrishnan

Dr. Latha Ramakrishnan
Interim Associate Provost for Research
Dean of Graduate Studies

OFFICE USE ONLY

SCSU IRB# 1642 - 2055	**Type:** Exempt Review	**Today's Date:** 11/16/2016
1st Year Approval Date: 11/14/2016	**2nd Year Approval Date:**	**3rd Year Approval Date:**
1st Year Expiration Date:	**2nd Year Expiration Date:**	**3rd Year Expiration Date:**

Appendix D: Definitions

ACEN: Accreditation Commission for Education in Nursing; ACEN provides specialized accreditation through recognition of nursing program found to meet or exceed standards and criteria for nursing education quality (www.acenursing.org/mission-purpose-goals/).

AD Associate Degree: When discussing nursing programs, an Associate Degree in Nursing is also referred to as ADN Associate Degree in Nursing or ASN, Associate of Science Degree in Nursing.

BSN: Bachelor of Science Degree in Nursing

Mobility nursing program: a nursing program which is designed for nurses to move from one level of nursing to another, such as LPN to RN or BSN to MSN for example. A mobility nursing program might also be known as a bridge, ladder or step-in program.

NCLEX-RN: National Counsel Licensure Examination for Registered Nurse, the licensing test taken by all graduates of nursing programs preparing for taking the examination for licensure at the registered nurse scope of practice.