

October 2017

Graduate Nursing Student Persistence to Graduation

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Graduate Nursing Student Persistence to Graduation

by

Tyler C. Dean

A dissertation proposal submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy
Department of Leadership, Counseling, Adult, Career and Higher Education College
of Education
University of South Florida

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Date of Approval:
September 22, 2017

Keywords: Retention, Student Completion, Pre-Entry Characteristics, Attrition

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Acknowledgements

The completion of this dissertation would not have been possible without the guidance, support, and mentorship of several influential individuals throughout my life. I would like to sincerely thank you for your contributions to my learning, development, and sanity throughout this challenging, yet rewarding experience. I would like to take this time to acknowledge the following individuals:

To my major professor, Dr. William H. Young III, and members of my committee, Dr. Yi-Hsin Chen, Dr. Jody Conway, and Dr. Thomas Miller; thank you for your continued efforts in improving my writing and in teaching me how as educators we can support students both inside and outside of the classroom.

To my colleague, Dr. Tamara Odom-Maryon, for your assistance in statistical analysis and overall support of my study.

To my colleague, Dr. Cindy Fitzgerald, for your mentorship in reviewing my proposal and reigniting my passion to complete this dissertation.

To my colleague, Lynn Turner, for your assistance in organizing my data and making the impossible possible.

To my friends, family, and spouse for your constant unwavering love, support, and reassurance that I can overcome any obstacles in my life.

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ABSTRACT

The purpose of this study was to investigate whether certain student-entry characteristics collected from an admissions application from one nursing school's graduate (master's degree) programs had a statistically significant relationship with student persistence. Specifically, the study determined if the variables sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, graduate-level program of study, and credit hours identified on the graduate nursing admissions application and school transcripts, had a statistically significant relationship in predicting student persistence to graduation. If a relationship existed, it would contribute to graduate student persistence literature and influence how educators and student affairs professionals can identify and support students at risk.

The population was the graduate nursing students who enrolled at a large public research university in the Pacific Northwest of the United States during Spring 2005 through the Fall 2009 terms. Graduate students meeting inclusion criteria had data extrapolated from the college's database; including, the pre-entry characteristics, total credit hours completed, and if (and when) they graduated from their program of study. Astin's (1985) Input-Environment-Outcomes (I-E-O) Model was the theoretical framework utilized in this study.

Out of the 405 graduate nursing students, 257 students (63.5%) graduated within four years from time of matriculation, or 278 students (68.6%) graduated without any time restrictions. Certain pre-entry characteristic data were no longer accessible and not included in the data analysis (most recent schooling year, last statistics course taken and grade). The

analysis showed that the age ($p < 0.010$) and type of graduate program of study one enrolls ($p < 0.010$) plays an influential role in student persistence to graduation at this nursing school during this time period. In summary, on average, those students who graduated within four years from the time of matriculation were 3.2 years younger than the average age of those who did not complete their graduate program, and the completion rates for practitioner-focused students were higher (66.5-70%) compared to their non-practitioner-focused (46.8-61.3%) counterparts.

The results of this study will have an impact on graduate admissions and recruitment, student progression and advising services, and faculty development. Graduate nursing student persistence has multiple implications impacting institutions, communities, and the lives of students. Future opportunities to advancing knowledge on this subject include researching additional pre-entry variables across multi-campus populations with larger sample sizes, longitudinal studies, and interventions to promote persistence.

CHAPTER ONE

INTRODUCTION

The world population continues to grow, and with the advances in technology and medicine, human beings are living longer and with more chronic illnesses than in previous decades. Higher education has provided solutions to critical societal issues ever since the Morrill Acts of 1862 and 1890. The healthcare sector has been one of the few areas that continue to create jobs even during the economic recession (Elliot, 2010). One option for registered nurses is to return to higher education in the pursuit of advanced degrees to learn advanced skills to address the growing shortage of healthcare professionals in the United States, and in the world. Nurses who can persist and earn advanced degrees and training possess the required skills to improve the quality of life for society.

PROBLEM STATEMENT

According to the American Association of Colleges of Nursing (*Nursing shortage*, 2014b), only about half of the registered nurses (RN) population is educated at the baccalaureate or graduate level. Several of the nursing positions that will continue to be in demand are those filled by nurses prepared at the graduate level. These include advanced practice registered nurses, such as: clinical nurse specialists, nurse anesthetists, nurse-midwives, and nurse practitioners. These advanced practice registered nurses “provide and coordinate patient care and they may provide primary and specialty health care” (*Occupational outlook*, 2014). The Institute of Medicine (IOM) reports that “The American population is older—Americans 65 and older will be nearly 20 percent of the population by 2030” (*The future of nursing*, 2011, para 4). The

need for access to healthcare services and access to these practitioners is high, especially in medically underserved areas such as inner cities and rural areas.

The number of licensed advanced practiced registered nurses (APRNs) residing in Washington state has grown from 2,362 in 1999 to 4,354 in 2013 (*Washington State data*, 2013), and a national study showed that APRNs comprise approximately 22% of the U.S. primary care medical workforce (Steinwald, 2008). While the nursing workforce has increased substantially in the 2000s, the Health Resources and Services Administration reports that “about one-third of the nursing workforce is older than 50” (*The U.S. nursing workforce*, 2013, p.vii). It is the recommendation from centers of nursing that attention should be paid to replacing and growing the APRN workforce supply in order to keep up with the high rate at which APRNs will be retiring from the workforce in the next decade. Nursing schools across the country strive to improve their efforts to graduate nurses with advanced degrees. It is estimated that fewer nurses are pursuing advanced education, and over the next decade “more than half of current nursing faculty is expected to retire, along with as many as 500,000 experienced nurses from the clinical workforce” (Daley, 2016). Vacancies left by nurses with advanced degrees retiring and the growing needs of the population will continue to have significant consequences on the delivery of healthcare service and training.

Nursing employers often prefer or require advanced degrees for leadership, management, and teaching positions. The *Nurse Practice Act* (2007) for the State of Florida states: “Fifty percent (50%) or more of the nursing faculty in a professional nursing program shall hold either a bachelor’s degree in nursing plus a master’s or doctoral degree in a related field or a master’s or doctoral degree in nursing” (p.29). State laws are important because they influence and shape the education, training, and practice of registered nurses in each state. Educational requirements

of hospitals seeking Magnet Recognition from the American Nurses Credentialing Center (ANCC) have also been influential in advocating their nursing leadership to seek advanced education. The Magnet Recognition educational requirements for a chief nursing officer (CNO) are at a minimum a master's degree at the time of application, and all nurse managers must have a baccalaureate or graduate degree in nursing (*Magnet recognition*, 2013).

There are several factors to consider in addressing the health crisis in the United States. “For a country expected to see a shortage of 62,900 physicians in just two years, according to the Association of American Medical Colleges....” (*As physician shortage*, 2013), all healthcare providers will need to work collaboratively to address the insufficiencies. Nurse practitioners serve an important role in reducing that gap so that more Americans can have access to healthcare services.

Graduating more baccalaureate prepared nurses is also dependent on having faculty with advanced degrees. The American Association of Colleges of Nursing (AACN) found that in 2011-2012 “U.S. nursing schools turned away 75,587 qualified applicants from baccalaureate and graduate nursing programs in 2011 due to an insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints” (*Nursing faculty*, 2014a). Another survey by the AACN released in October 2012 found that “a total of 1,181 faculty vacancies were identified in a survey of 662 nursing schools with baccalaureate and/or graduate programs across the country” (*Nursing faculty*, 2014a, para. 4). The average retirement age for nurse educators is 62.5 years, and a sizable share of current faculty is expected to leave, and the pipeline is struggling to replenish the loss and fill additional positions (Berlin & Sechrist, 2002). The insufficient availability of nursing faculty has a significant impact on the overall supply of the nursing workforce.

Student enrollment in nursing programs overall has either improved or has begun to flatten out compared to previous years. Total enrollment at U.S. graduate schools fell by 0.2 percent between fall 2012 and 2013, according to the report from the Council of Graduate Schools (Redden, 2014). However, during the recent recession enrollments grew by 3.2 million between 2006 and 2011 (Jaschik, 2014). College enrollments typically fall or flatten when the economy improves, according to Lederman (2013). From 2012 to 2013, community colleges saw the largest enrollment drops; while four-year institutions saw a minimal increase (Jaschik, 2014).

Federal and state cuts have impacted higher education across the country. “States are spending \$2,353 or 28 percent less per student on higher education, nationwide, in the current 2013 fiscal year than they did in 2008, when the recession hit;” according to the Center on Budget and Policy Priorities (Oliff, Palacios, Johnson & Leachman, 2013). “Florida’s higher education system just experienced another year of budget cuts after already having suffered a 22 percent decline in funding between FY 2007 and FY 2012” (Orozco, 2012, para. 3). Cuts have led to many institutions having to raise tuition rates to offset a decline in state and federal funds. Retaining undergraduate and graduate students contributes to revenue generation, which supports the institution’s programs and activities, according to the National Academic Advising Association (*The role of academic*, 2012). “Moreover, graduate student retention may have been affected by federal financial aid policy shifts over the last thirty years” (Gururaj, Heilig & Somers, 2010). Approximately 50% of all graduate students fail to complete their degree (Berelson, 1960; Bowen & Rudenstein, 1992; Lovitts, 1996), whereas 30-50% of undergraduates leave their institution before earning their bachelor’s (BA) degree. The growing concern is how to increase graduate nursing student enrollments and persistence to graduation.

The IOM report recommended higher levels of education in the nursing field. Analysis of Census data from the 2008-2010 American Community Survey (ACS) has shown a small increase of about five percentage points in the number of bachelor's and graduate degree holders over approximately nine years (*The U.S. nursing workforce*, 2013). The ACS has also reported that "...the age distribution is flatter, and a larger proportion is older than age 50" (*The U.S. nursing workforce*, 2013, p.20). If the goal is to increase the number of graduate prepared nurses and to offset those who plan on retiring, then a focus on retention and increasing completion rates of graduate nursing programs is warranted. Unfortunately, over the past forty years, the completion rates have hardly changed at all; while time-to-degree has increased markedly (Bowen, Chingos, & McPherson, 2009). The purpose of this exploratory, quantitative study is to investigate the variables on a graduate nursing admissions application and to determine if those variables have a statistically significant relationship in predicting student persistence.

PURPOSE OF STUDY

The purpose of this exploratory, quantitative study is to investigate: sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, graduate-level program of study, and credit hours identified on the graduate nursing admissions application and school transcripts, and to determine if those variables have a statistically significant relationship with student persistence.

RESEARCH QUESTIONS

The research questions for this study were to explore the relationships between different variables identified on a graduate nursing admissions application and data from college transcripts to see whether or not those variables can predict graduate nursing students'

persistence in their master's degree programs. This study was designed to answer the following research questions:

1. What student-entry characteristics (sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study) are predictors of graduate nursing student persistence to graduation?
2. For non-completers, what is the proportion of required credit hours completed in their graduate-level program of study?

Exploring these questions will provide additional insight into an area of literature that has had limited exploration.

THEORETICAL FRAMEWORK

The theoretical model used in this study was Alexander Astin's (1985, 1993) Input-Environment-Output (I-E-O) model. This model emphasizes the need for understanding student qualities and characteristics upon entry into an education institution. Students enter higher education with individual attributes, different family backgrounds, and various pre-college schooling experiences. Through academic and social integration activities, the environment influences the students' goals and institutional commitment to persistence to degree completion. Student characteristics serve as the "input" and through academic and social involvement researchers can differentiate between persisters and non-persisters. Student characteristics include demographics, skills, experiences, motivation, academic achievements, and aptitude test scores (Astin, 1998). Figure 1 illustrates the relationship of input and the environments' influence on students and outcomes.

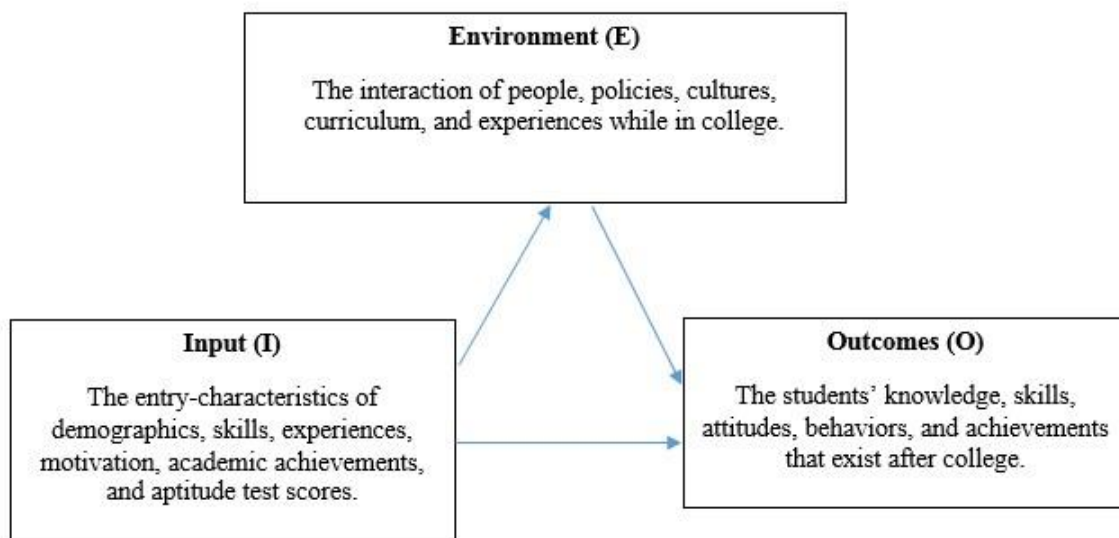


Figure 1. Input-Environment-Outcomes (I-E-O) Model (Astin, 1985).

The I-E-O model demonstrates how students are the prominent stakeholders in their success and persistence. Pre-entry student characteristics, in addition to their environmental influences, ultimately impact outcomes. In today’s higher education environment, the focus is no longer on student enrollment, but comparatively, on an outcome-based focus. For public universities and colleges, there is a greater emphasis on degree completion (Southern Regional Education Board, 2012).

Astin’s I-E-O model has been used in multiple research studies in undergraduate education as the framework for investigating student characteristics, retention rates, and educational assessments (Bitzer & Troskie-De Bruin, 2004; Hu & Kuh, 2003; Kelly, 1996; O’Neill, Markward, & French, 2012; Miller, 2013). This model will be utilized to explore the relationships between the input and outcomes of the I-E-O model in graduate nursing student persistence.

Graduate degree programs leading to a nurse practitioner's license for example, require applicants to have completed a college or university APRN educational program in order to be eligible to sit for their respective board examinations (American Academy of Nurse Practitioners, 2015). Students departing prior to degree completion are unable to practice certain advanced roles; unlike some graduate programs where students may depart prior to degree completion and are able to seek employment advancement opportunities based on their new knowledge and skill acquisitions.

Student entry characteristics may relate to the persistence of graduate nursing students. Astin's theory may be useful in this study in explaining some of the variables and transitions. For example, the variable "age at matriculation" may occasionally correlate with how recent a student may have completed his or her bachelor's degree before applying for a graduate program. Students who have been away from higher education for an extended period of time and returning to graduate school may also experience transitional stress from becoming a student again. This is just one example of how to utilize Astin's (1985) I-E-O model to investigate the entry characteristics of one university's graduate program in predicting student persistence.

More research and theory development are needed in exploring the differences between master's degree and doctoral degree students. "The few studies that have examined graduate students viewed them as a single group, without looking into possible differences between master's and doctoral students" (Poyrazli & Kavanaugh, 2006). Also, the majority of authors trying to explain "graduate" student persistence primarily focus on doctoral students. There may be unique characteristics of master's degree students once studied separately from doctoral students.

Astin's (1985) I-E-O model guided this research in exploring whether certain variables obtained from a graduate application at one university's school of nursing are predictors of students' persistence. The theory may also assist in explaining why certain variables are more or less correlated to predicting persistence than others.

SIGNIFICANCE OF THE STUDY

The significance of this study was explored and contributes to the research on student persistence. Student characteristics, as described by Astin (1993), was investigated along with other variables, as well as compared and contrasted to previous research findings on the growing concern of student persistence in higher education. There is limited research surrounding graduate nursing student persistence, and this study will help identify the unique characteristics of this student population and contribute to learning about persistence in graduate programs.

DEFINITIONS OF TERMS

The following key terms were used in this study:

Completion Status: The term to describe whether a student is a completer or non-completer.

Completer: The completion of program requirements for successful degree attainment by the student within four years from the time the student matriculates into a graduate program. The student has been granted a master's degree in nursing (Gieske, 1995). Also known as a student who has persisted.

Non-completer: The failure to complete program requirements for successful degree attainment by the student within four years from the time the student matriculated into a graduate program. This could be from students' withdrawal or termination from the program before the completion of program requirements (Gieske, 1995). Also known as a student who has not persisted.

ASSUMPTIONS

One of the assumptions for this study is that all graduate enrolled students would have had to answer all of the required fields of the admissions application to submit. The required fields include the biographical and academic information (entry characteristics) being investigated in this study. Another assumption is that graduate records will be able to identify and track student enrollment and whether or not they have completed program requirements for degree attainment. For graduate students who are enrolled as “degree seeking” students it will be assumed that their goal for enrollment is degree attainment.

LIMITATIONS

There are some restrictions to this study that must be taken into consideration before making inferences and predictions based on its findings. First, the definition of persistence in this study is whether or not the student completes his or her program of study within four academic years. It does not discriminate whether students drop out, transfer to another institution to finish their degree or completes their degree over the four-year benchmark. Secondary data in the form of student admissions applications and transcripts were used in this study that may contain missing or inaccurately entered data from the student or university employees. However, this is the most efficient way to collect data to explore the population, its variables, and preserves the ecological validity of the institution’s processes. There may be other documents that were required and submitted at the time of the application (e.g. resume, reference letters) and interviews completed, which may have been significant in the decision-making process on whether a student was accepted into a graduate degree program. Those records may not be available, and therefore the researcher will focus on the application that was submitted electronically and archived.

Additional limitations in this study, are that variables that have shown statistically significant relationships between student persistence in previous research studies are not being explored in this study. For example, financial aid (Andrieu & St. John, 1993; DeAngelis, 1998), high school or undergraduate grade point averages (Cabrera, Nora, & Castaneda, 1993; Ceja, Rewey, & Kaylor, 1998), and the integration of students with campus environments (Lovitts & Nelson, 2000) have shown positive influences on student persistence, but because that information was not asked for or not attainable on the graduate admissions application, those variables will not be included in this study.

DELIMITATIONS

Only graduate nursing applicants who have an earned bachelor's degree in nursing who have applied and were accepted into a master's degree in nursing program will be included in the sample population. This would exclude applicants whose highest degree in nursing is an associate's degree and are applying for a graduate degree and applicants who are seeking a nursing certificate. Students transferring college credit into the program will also not be included in the sample population. Students' perceptions were not included in this study, or other factors to assess the environment of the institution or other outcomes other than degree completion. The limitations of graduate enrollment in the range of academic years in this study will therefore only provide a snapshot of graduate nursing student enrollments and persistence at one institution.

RESEARCHER SUBJECTIVITY

The researcher for this study has been a registered nurse for over ten years and has worked in nursing higher education for over six years in a variety of roles. Throughout his nursing career, and as a student, he has been interested in exploring why students enter programs of study and then do not complete their program requirements as originally intended. In his

current primary role, he assists nurses in career development training to return to the workforce. There is no vested interest, other than exploring this phenomenon and answering the research questions in this study.

ORGANIZATION OF STUDY

In Chapter 2, a review of the related literature was explored. In Chapter 3, the methods of this quantitative exploratory study is described. Chapter 4 presents the research findings from the study, and Chapter 5 includes the conclusions, discussion, and suggestions for future research.

CHAPTER TWO

REVIEW OF LITERATURE

In 2008, the Robert Wood Johnson Foundation and the Institute of Medicine (IOM) created a committee to address the growing concern about the future of nursing. In their report the committee recommended that schools of nursing not only increase the proportion of nurses with baccalaureate degrees to 4:1 (80 percent), but that the schools also “prepare more students at the graduate level who can assume roles in advanced practice, leadership, teaching, and research” (*The future of nursing*, 2010, p.4). Employment of registered nurses is expected to grow 26 percent from 2010 to 2020; primarily due to the advancements in technology, emphasis on preventative care, and the aging baby-boomer population (*Occupational outlook*, 2012). Advanced practice nurses and nursing faculty educated at the masters’ degree level or greater will be needed to address these community demands.

The American Association of Colleges of Nursing (2010) and the Canadian Association of Schools of Nursing (CASN) (2010) have both documented the growing shortage of nursing faculty. Graduate preparation is a requirement for most faculty positions, and higher education institutions have to compete with the non-academic sectors for graduate-prepared nurses. A driving force for nurses to seek an advanced degree has been to advance one’s education and to support their families (Cathro, 2011). According to the study by Livsey, Campbell, and Green (2007), graduate nursing students were more likely to be part-time students and traditionally support their education through employment income, as well as employer-sponsored tuition reimbursement programs (Aiken, Cheung, & Olds, 2009).

Since the 1980s, there has been significant research related to student persistence at associate and baccalaureate nursing programs (Aber & Arathuzik, 1996; Bessent, 1997; Brennan, Best, & Small, 1996; Hansen, 1988). There is, however, a gap in the literature when investigating the persistence of graduate nursing students. “There is no national database that tracks graduate student attrition, and colleges and universities often lack systems to follow the progress of graduate students at the institution” (Bair & Haworth, 2004). Investigating the relationship of certain key variables identified in undergraduate nursing persistence research may prove beneficial in exploring how higher educational professionals can improve the persistence of graduate nursing students.

BARRIERS & CHALLENGES

There are unique barriers and challenges facing students when they decide to enter or return, to higher education in the pursuit of a degree. There can be geographical access barriers for nurses seeking to pursue certain graduate studies (Leners, Wilson, & Sitzman, 2007). The proliferation of online programs does provide opportunities for students to overcome geographical barriers and often provides flexibility for working adults who are not able to attend face-to-face instructional programs. However, certain graduate programs may not be available completely online or be the preferred learning environment for some students.

There may be cultural influences affecting student enrollment and persistence. Minner (1995) identified barriers that Native Americans face when trying to complete a college degree, which includes: family influences and responsibilities, lack of financial resources, campus attitudes towards Native Americans, and poor academic preparation as reasons for leaving school. University retention efforts and programs may apply to all students, but additional

attention to the unique differences between student groups may provide additional insight to overcoming barriers.

Students with disabilities may tend to favor the online environment over a traditional face-to-face format (Crum, 2009; Stewart, Mallery, & Jaehwa, 2010). These findings have indicated that adult students with disabilities perceive the online environment to be more comfortable and the courses more adaptable to their disability and learning preference. Challenges have also been identified in online learning versus the traditional face-to-face learning. Attrition in online courses, when compared to face-to-face courses, is higher (Ward-Smith, Schmer, Peterson, & Hart, 2013). Obstacles to complete online courses that strongly impacted persistence were time limitations, feelings of isolation, and lack of family or school support (Bunn, 2004).

Several researchers have found no significant difference in satisfaction, motivation or achievement between online and traditional learners (Bernard et al., 2004). Some researchers found that online learning can be as effective as traditional learning (Zhao, Lei, Yan, Lai, & Tan, 2005), and one national study found that on average students performed better in an online education situation than in face-to-face situations (Feintuch, 2010). Wilson and Allen (2011) compared online students to face-to-face students and concluded that withdrawal rates and failure rates were not significantly different between the two modes of course delivery.

There are additional challenges that need to be addressed by the nursing profession. Nurse educators face significant challenges in keeping nursing on track and creating the curriculum to support nurses in today's changing healthcare systems. Challenges may include: confronting nursing and faculty shortages, eliminating inconsistent and confusing educational

choices, taking responsibility for mandates to stay on the cutting edge of quality initiatives, providing challenging clinical experiences for students, and being willing to step out of comfort zones to engage in designing imaginative and innovative ways to educate nurses in the future (Rich & Nugent, 2010). Each challenge may have positive or negative influences impacting student persistence in higher education and the performance of the nursing profession in the community.

CAREER DEVELOPMENT

Students who have decided to enter or return to higher education in the pursuit of degrees undergo certain life transitions. Super's (1990) theory of career development posits four stages: exploration, establishment, maintenance, and disengagement. Traditional students may experience some degree of all four stages; however, one is more likely to witness a dramatical change in non-traditional students, specifically in the disengagement stage. In the disengagement stage the student is exiting one career to explore another. In some situations, obtaining a graduate degree in nursing may not be unrelated to the student's current practice. For example, a nurse manager or educator is currently practicing in a position and whether by choice or requested by management to pursue an advanced degree, but the nurse plans on staying in their current position. In other situations, an advanced registered nurse practitioner (ARNP) or certified registered nurse anesthetist (CRNA) receive advanced assessment training and prescriptive authority in graduate school, which may lead to a career with a different set of skills and responsibilities requiring time in the establishment and maintenance stages.

Astin's (1993) empirical study of his model found that student-student interaction was one of the single most important elements in creating environments conducive to academic

success, campus integration, and student persistence rates. Students are social and interactive learners and a survey by Willms, Friesen, and Milton (2009) stated they want to interact with people both within and beyond the classroom and school environment. Opportunities for interaction vary when discussing with undergraduate and graduate students; as most graduate students do not live on campus or participate in extracurricular activities like student clubs or intramural athletics.

Robertson, Smeets, Lubinski, and Benbow's (2010) research into ability differences and persistence concluded that a student's ability level predicts the level of achievement, and ability pattern predicts the realm of achievement. The authors also added that vocational interest refines prediction of career choices and that lifestyle preferences, performance, and persistence often change between ages 25 and 35.

Graduate students may have greater responsibilities than when they completed their post-secondary education; including family, financial, and community obligations. Heins, Fahey, and Leiden (1984) investigated stress in medical, law, and graduate students and discovered that the highest stressors identified by students were related to time restrictions, economic, and academic issues. To better understand persistence in graduate education, it is important to first review the literature in undergraduate education.

UNDERGRADUATE PERSISTENCE

Persistence studies have been a popular topic for higher education scholars for the past few decades. Tinto and Astin led the research field in exploring the first-year persistence of undergraduate students and developing theories of student persistence (Astin, 1984, 1985, 1991, 1993; Tinto, 1975, 1987, 1993, 1998, 2006-2007). Pervin, Reik, and Dalrymple's (1996)

research focused on educational preparedness as a primary cause of attrition. Cope and Hannah (1975) discovered that other causes for early student departure were related to nonacademic reasons, including; boredom, financial hardship, lack of motivation, and mental and physical health. Regardless of the multiple causes of departure, it is estimated that nearly one-third of all students who enter higher education each year will not return to the institution for the second year (ACT, 2010).

Pascarella and Terenzini's (2005) data show statistically significant effects on the levels of student persistence rates from a student's first-year to their second. Enrollments rose for first-year students to 2.1 million in 2010, a 6.8 percent increase from 2006 (Hoover, 2011). Several prominent characteristics that attributed to institutional persistence included: prior academic success, socioeconomic status, gender, race/ethnicity, family, and commitment to a degree (Upcraft, Gardner, Barefoot & Associates, 2005). Thus, increased attention and resources have shifted from enrollment to the retention of these students.

Multiple efforts to improve retention have been implemented; however, attrition rates have endured (*U.S. colleges*, 2004; Braxton, Brier, & Steele, 2007; Terenzini, Cabrera, & Bernal, 2001). According to the National Center for Educational Statistics, only 59 percent of first-time, full-time students who began their pursuit of a bachelor's degree at a 4-year degree-granting institution in Fall 2007 completed the degree within six years (*Graduation rates*, 2013). This is compounded by the inability to accurately determine graduation rates by the Integrated Postsecondary Education Data System (IPEDS) because calculations exclude students who begin part-time, who enroll mid-year, or who transfer from one institution to another (Cook & Hartle, 2011).

GRADUATE PERSISTENCE

While there has been an abundance of research investigating persistence of traditional undergraduates (Spady, 1970; Fishbein & Ajzen, 1975; Tinto, 1975; Pascarella, 1980; Bean & Metzner, 1985; Cabrera, Nora & Castaneda, 1992; Sandler, 2000), much less exists on the persistence of graduate students (Girves & Wemmerus, 1988; Tinto, 1993; Strayhorn, 2005; Veal, Bull & Miller, 2012). Although Tinto (1993) and others (Thomas, Clewell, & Pearson, 1991) have reported similar findings regarding persistence between undergraduate and graduate students, Tinto clarifies that differences between graduate and undergraduate students involve the strength of academic and social integration. Further explaining, that doctoral students pass through three distinct phases-coursework, candidacy, and dissertation and that for each of those phases persistence challenges vary and may be different than other degree programs.

Adult graduate nursing students are often commuter, part-time, returning students, and often have work and family obligations. These types of students have historically faced transitions without the support and infrastructure characteristic of the traditional student experience often seen with undergraduates (Borden, 2004; Schlossberg et al., 1989).

Tinto has cited Attinasi (1989) in believing that the scope of transition depends in part “upon the degree to which individuals have already begun the process of transition prior to formal entry” (p.97). Colleges and universities are also composed with unique characteristics and identities. The characteristics of students and the culture of the colleges or universities they attend may or may not be synchronous, and that may lead to conflict or an inability for integration.

Research on graduate student persistence by Andrieu (1991) and Andrieu and St. John (1993), examined graduate student persistence and made six conclusions: (1) like in the case of undergraduate students, persistence decisions are influenced by their backgrounds (i.e. parental education and student dependency); (2) graduate experience added modestly to student success; (3) attending a private university was positively associated with persistence by graduate students; (4) there was an association with expected earnings and persistence in public universities; (5) graduate students at public colleges were sensitive to tuition charges; and (6) the amount of graduate assistantship awarded was negatively associated with persistence at public universities. In contrast, a study by Strayhorn (2005) found that student aid tends to improve one's chances of persisting in graduate school and has positively influenced within-year persistence (DeAngelis, 1998). Graduate student persistence meta-analysis conducted by Gururaj, Heilig, and Somers (2010) concluded that every form of aid is significant in promoting graduate student persistence. The authors also recommend that institutions and policy makers focus on grants as a means to prevent attrition and to promote persistence.

Astin's (1985) I-E-O model has also suggested the importance of the environment being integrated with the student in determining persistence. Lovitts and Nelson (2000) survey results discovered a high correlation between integration into a department's social and professional life and successful completion of the Ph.D., with the most important factor being the relationship the student has with the faculty adviser. Students who did not persist and left the institution were discovered to be equally well qualified as students who persisted (Lovitts & Nelson, 2000).

The American Association of Colleges of Nursing (AACN) conducted a survey and found that nursing schools with master's programs reported an 8.2 percent increase in enrollments (AACN releases, 2012). The state of Washington's 2013-2014 annual report

revealed 257 nurses graduated with a master's degree in nursing (MSN or MN), an increase from 136 in 2012-2013, and 187 graduated with an MSN/ARNP (advanced registered nurse practitioner), a slight increase from the previous two years (*Nursing education*, 2015). Still, there is no state or national data bank that tracks the retention rates of these graduate students.

STUDENT-ENTRY CHARACTERISTICS

Bean (1980) stated that the background characteristics of students must be taken into account to understand their interactions within the environment. Research in student retention and persistence can no longer place sole responsibility of student attrition on the student but on a combination of student and higher institutional factors. The underlying causes for student departure have evolved to the point where the complex interplay of student characteristics with institutional people, policies, and programs determines students' decisions to stay or to leave (Habley, Bloom, & Robbins, 2012). For this study, only student entry characteristics and persistence (or departure) will be investigated.

Student-entry characteristics have often been investigated in connection with social integration based on the research findings of Astin (1978) and Tinto (1987) showing a positive association with student persistence. Burks and Barrett (2009) investigated student characteristics, institutional classification, and activity choices of college first-year students and discovered that freshmen students who developed close relationships in college, who allowed their social activities to interfere with their schoolwork, and who reported higher GPAs were more likely to intend to persist to their sophomore year. Other characteristics found to be significant with increased persistence were: male gender, attendance at services/classes/labs, lived off campus, joined a fraternity/sorority, and had higher levels of faculty/student interaction.

Glynn, Sauer, and Miller (2003) surveyed freshmen students and used “pre-matriculation data” to discover nine variables and seven factors that surfaced as potentially the most effective predictors of student attrition (e.g. high school academic average, off-campus hours worked per week, age at matriculation, etc.) and created a logistic regression model that can be utilized to prioritize student interventions and maximizing retention efforts. This type of survey would be beneficial once researchers know more about the predictors of student persistence/attrition in graduate education.

The student characteristic most frequently cited in persistence studies showing a significant relationship to between-year persistence and graduation rates has been grade point average (GPA) (Gramling, 2013; Campbell & Fuqua, 2008; Utzman, Riddle, & Jewell, 2007). While other studies have not found undergraduate GPA to be significant in their studies (Gieske, 1995). Previous academic performance and achievements are incorporated in the “Input” category of Astin’s (1985) I-E-O model.

Student-entry characteristics in research linking to student persistence are typically based on demographic characteristics or socioeconomic characteristics rather than personality traits (Reason, 2009). Some entry characteristics affect the student’s initial level of commitment to the chosen college or university (Tinto, 1975, 1993; Braxton, Sullivan, & Johnson, 1997). For this study, the following student entry characteristics obtained from the graduate nursing application include: sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study enrolled.

SEX

The sex of a student has often been a variable investigated in student persistence. Bean and Metzner (1985) reported “gender” as a background and a defining variable that

influenced nontraditional student attrition with higher attrition rates for nontraditional male students than for nontraditional female students among multidisciplinary college populations. Another study by Flemming (2010) found “gender” as a significant predictor of persistence in community colleges. Research findings looking at race/ethnicity and gender groupings have found that females do consistently better than males (Bowen, Chingos, & McPherson, 2009). Other studies with a focus on investigating graduate student persistence have found no significant findings related to “gender” (Andrieu, 1991; DeAngelis, 1998).

Male nurses have increased from 2.7 percent of the nursing population in 1970, compared with 9.6 percent in 2011 (Landivar, 2013). Although the nursing profession continues to be underrepresented by males, Landivar (2013) does report that some nursing specialties like nurse anesthetists, which requires a graduate degree, has a 41 percent representation of men. Although Gieske (1995) did not find “gender” to be a significant variable in determining the completion of nursing students in master’s degree programs, the author did state that “50% or more of the male students did not complete a program” (p.283). Due to the disproportionate number of men in nursing, gender or sex has been examined as a sample descriptor within studies of nursing student attrition (Jeffreys, 2012).

AGE AT MATRICULATION

Persistence studies on age often look at traditional versus non-traditional aged students. In graduate school, students are often working professionals who have already endured and overcome the challenges to earn a bachelor’s degree. In Fall 2007, 22 percent of all graduate students were 40 years of age and over; compared to 23 percent in Fall 1997 and the percentage 30 to 39 years of age declined, from 35 percent in 1987 to 28 percent in 2007 (*Data sources*, 2009). Graduate school programs are now facing the realization that their students have different life and work experiences, varying expertise in technology, and

approach graduate school with different expectations than they might have had in their undergraduate education.

Research findings looking at age in nursing have been inconsistent. Some studies suggest that age is a significant predictor of academic achievement and retention (DeAngelis, 1998; DeFelice, 1989; Manifold & Rambur, 2001; Murtaugh, Burns & Schuster, 1999). Another study found that mature students had a high success rate, but they often had other responsibilities, and there was a substantial attrition rate (Crawford & While, 2009). Older students and those who are parents have shown a lower risk of dropping out in distance education (Stoessel, Ihme, Barbarino, Fisseler, & Sturmer, 2015). Research findings have also concluded no significant results with age in the study of student persistence (Andrieu, 1991; Liseo, 2005). Further research into whether age is a predictive factor in graduate nursing student persistence is warranted.

U.S. CITIZENSHIP

International students who travel to the United States to study face different challenges than those who are U.S. citizens and have acclimated to the country. In Astin and Tinto's theories, social and academic integration are elements that influence a student's persistence.

Campus climate has been found to be a significant predictor in international students' sense of belonging on campus, while faculty and peer interactions have differential effects on students' sense of belonging (Stebbleton, Soria, Huesman Jr. & Torres, 2014).

Students who come from countries where English is not one of their common languages or English-as-a second language (ESL) nursing students have also faced struggles to integrate, overcome language barriers, and persist in nursing programs. Gilchrist and Rector (2007) found attrition rates for ESL nursing students as high as 85 percent. In

examining the National Council Licensure Examination (NCLEX) pass rates, Boshier and Bowles (2008) identified a 40 percent disparity in NCLEX pass rates between ESL and non-ESL students regardless of academic record. In a review of the literature of ESL nursing student success, Olson (2012) found that language barriers were identified as the single most significant obstacle facing the ESL nursing student. While there has been research investigating ESL in student persistence, more research investigating domestic students compared with international students as a predictor of graduate nursing student persistence is needed.

STATE RESIDENCY STATUS

There has been limited research investigating students who identify as resident or non-resident and student persistence. Often this is a subpopulation, and if investigated it is only in the undergraduate population. Fields, Langdon, Stahlschmidt, Street, and Terrell (2013) investigated the Non-North Carolina students at Appalachian State University and noted that they “historically have lower retention rates, however, little attention has gone towards finding out the why” (p.2). The cost of tuition for out-of-state students is cited as one possible reason for why college students might transfer to a more affordable institution in their home state or country. Lieber (2014) claims “...the difference between in-state and out-of-state tuition for students who get no financial aid can now approach \$100,000 per undergraduate degree.”

Students who identify as out-of-state on the graduate nursing application may help answer the question if there is a difference in persistence, and why?

MOST RECENT SCHOOLING YEAR

The amount of time between when an applicant was last enrolled in a higher education course to enrolling in a graduate program can vary. Graduate admissions and

faculty differ on their policies and in their decisions on which students would be accepted into their various graduate nursing programs. Some require work experience before applying. As long as students who have recently completed their bachelor's degree in nursing (BSN) or their associate's degree in nursing (ADN) and have a bachelor's degree in another program, they may be able to apply without nursing work experience. Also, the admissions standards for the type of nursing graduate program (practitioner versus non-practitioner) the student applies for can vary, even within the same institution.

In the literature, it has been reported that many nurses who have returned to higher education to obtain a bachelor's degree or an advanced degree have experienced role stress due to work and family commitments (Delaney & Piscopo, 2004). Lengacher (1993) discovered that the characteristics of personality, stage of career development, and marital status were significantly related to role strain in RN students returning to school. Those returning RN students who were able to maintain balance while managing multiple roles were more likely to complete the program (Thompson, 1992).

Krintzline and Staunton (2012) discovered that the greater the length of time between completing an undergraduate degree and enrolling in graduate school, the greater the difficulties the student might have in successfully transitioning back to school. While faculty and institutions have shared the pros and cons of either working first or going directly to graduate school for an advanced degree (*Should you go*, 2012), there is not enough research exploring the relationships between time away from higher education to starting a master's degree in nursing and student persistence.

LAST STATISTICS COURSE TAKEN AND GRADE

Graduate nursing programs vary on some different pre-application requirements. One of those requirements may be that all applicants have completed a college-level or approved

statistics course that includes descriptive and inferential statistics. Inadequate academic preparation is a concern for graduate nursing programs. Students who enroll in prerequisite coursework gain confidence and enhance their skills as they prepare to enter graduate school (Krintzline & Staunton, 2012). Research has shown that the combination of the cumulative grade point average and undergraduate nursing grade point average are predictive of success for advanced practice programs in nursing and that the addition of the Graduate Record Examination (GRE) scores adds no additional predictive value (Suhayda, Hicks, & Fogg, 2008). Exploring the timeframe of when a student completes his or her statistics coursework to matriculation, and how well students performed on their statistics coursework in preparation for graduate school will add to the limited research on this variable in graduate nursing school persistence.

Prerequisite coursework varies among graduate programs. Admission applications will usually specify whether prerequisite courses are required to be completed within a certain timeframe before matriculation (e.g. five or seven years) and what would be an acceptable grade (e.g. “C” or higher). Other programs will not impose any time limitations on when prerequisite coursework is completed but may have minimum grade passing requirements. Bacon’s (2006) findings indicated that most of the knowledge gained in one course studied was lost within two years. More research investigating the differences in courses and student knowledge retention after completing the course may have implications on student performance in graduate programs.

GRADUATE-LEVEL PROGRAM OF STUDY

A graduate nursing program could result in a master’s degree or doctoral degree. Within a master’s degree there are different specialty areas (practitioner, leadership, education, etc.) and among doctoral degrees in nursing, it is common to see a doctor of

philosophy (Ph.D.) and a doctor of nursing practice (DNP). Each degree has its own unique requirements and number of credit hours needed for successful completion. If approximately 50 percent of all doctoral students will not persist to graduation (Isacc, 1993; Tinto, 1993), then it would be beneficial to separate academic programs further to investigate different variables and persistence.

CREDIT HOURS AND PERSISTENCE

Each academic program has a required number of credit hours and courses that must be completed by the student to graduate. The Noel-Levitz Report found that at four-year public institutions, first-year students completed 87 percent of the credit hours they attempted in the fall term and their persistence to the next term was 89 percent (*2013 student, 2013*). The report also shows that within that same demographic, 10.6 percent of students enrolled drop out between their first term and the second term of their first year of enrollment. Between their first term of their first year and their first term of their second year, the census jumps to 27.8 percent of the population no longer enrolling (*2013 student, 2013*). In bachelor's degree programs, nearly half (44 percent) of all withdrawals occur after the second year (Bowen, Chingos, & McPherson, 2009); which suggests there is attrition occurring throughout a program and not only in the first academic year.

Traditionally, in undergraduate education students would be considered to have a full course load if they enrolled in 15 credits. According to the federal student aid handbook, a full-time student is one who is taking at least 12 credit hours per semester, quarter or trimester (U.S. Department of Education, 2015-2016, p.3-47) and for graduate students full-time is nine credit hours or more. National Center for Education Statistics data shows that less than one-third of the college class of 1990 had graduated within four years (Volkwein & Lorang, 1996). The Federal Student Right to Know Act requires two-year campuses to report

a three-year graduation rate and four-year campuses to report a six-year rate. Rationales for why students are extending their time to degree completion may be related to inability to register for required courses, credits lost in transfer, and financial obligations of attending school (Lewin, 2014)

In graduate school, “the Council of Graduate Schools reports that in most math and science fields, the students who will leave are usually gone by year three...” while in the humanities it’s “only half of all attrition takes place by the third year” and the other 25 percent drop out over the following seven years (Cassuto, 2013). Investigating when students no longer persist in graduate programs may aid educators in either assisting graduate students in enrolling and completing their coursework and/or reviewing the program curriculum and instruction for improvements.

CONCLUDING REMARKS

In the literature, there have been substantial research and development of various theories exploring and explaining student persistence in higher education. Unfortunately, the majority of these findings have been focused on undergraduate students at four and two-year institutions, with limited research investigating graduate student persistence. Even in graduate student persistence studies, some studies do not differentiate between students in master’s degree programs and those in doctoral degree programs. More research is necessary to explore those differences and within graduate nursing programs.

CHAPTER THREE

RESEARCH METHODS

The purpose of this exploratory, quantitative study was to investigate the variables in graduate nursing admissions applications and to determine if those variables have a statistically significant relationship with student persistence. There are a variety of questions and biographical data that can be collected from an admissions application. That data are used to create a student profile that impacts the decision-making process regarding acceptance into a graduate program. This study will contribute to existing research on investigating whether those data being studied have any relevance on student persistence. A quantitative methods approach was decided as the most practical approach in investigating the research questions in this study.

The variables being investigated include sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, graduate-level program of study, and their relationships in predicting student persistence to graduation. Total credit hours completed was also evaluated in their relationship to program completion. The following research methods investigate and answer the following research questions:

1. What student-entry characteristics (sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study) are predictors of graduate nursing student persistence to graduation?
2. For non-completers, what is the proportion of required credit hours completed in their graduate-level program of study?

A correlational design was used to determine the relationship between these variables.

In this section, the methods utilized in this study are described.

This includes a detailed explanation of the setting, population/sample and power analysis, data collection, and data analysis of this study.

SETTING

This research is conducted at a large public research university in the Pacific Northwest of the United States. Open-access institutions are crucial contributors to college access and account for the majority of the increase in college graduation rates (Braxton et al., 2013). The graduate nursing programs being investigated are predominately taught face-to-face or a hybrid of face-to-face and online instruction. Carr (2000) reported dropout rates as high as 80 percent in online programs, with a widely accepted rule of thumb that “course-completion rates are often 10 to 20 percentage points higher in traditional courses than in distance offerings” (para. 11). There is no student housing on campus and students commute to attend classes or utilize videoconferencing.

POPULATION SAMPLE AND POWER ANALYSIS

The sample population included cohorts of nursing students who matriculated into a master’s degree program beginning as early as Spring 2005 through Fall 2009 (Fall, Spring, and Summer) at one university. Data were not available before Spring 2005 and significant curriculum and program requirements changed for some graduate-level nursing programs after Fall 2009. Persistence was evaluated as to whether or not the graduate nursing student has completed the program requirements (completer) within four years from the time of matriculation. For example, if students had matriculated in a master’s degree program with the Spring 2005 cohort, then they would have had to complete program requirements before Spring 2009 in order to be classified as a completer. It is possible for students to not continually enroll in all semesters and still graduate within four years. If students have not completed their

program requirements for degree attainment within four years from the semester of matriculation, then they were classified as students who have not persisted in this study (non-completer).

The amount of time to degree completion can vary depending on some variables. According to the American Association of College of Nursing (AACN), most baccalaureates to master degree programs can be completed in 18-24 months of full-time study, and even in part-time study most students should be able to complete the program within three years.

The City University of New York (CUNY) also decided to use four years as the benchmark in a similar research study of students admitted into Master of Science (MS) nursing programs (*Nursing degree*, 2011). Based on these findings, there is not a significant percentage increase of students graduating after four years in masters' nursing degree programs, and therefore, that will be the benchmark for time to degree completion for this study.

This is an exploratory study that uses a convenience sample, which includes cohorts of students who matriculated between Spring 2005 and Fall 2009. Use of student enrollment data during this period allows for evaluation of all students regarding completion of the degree program within four years of starting their coursework. For example, if between 2005 and 2009, 365 students were enrolled in the program using the G*Power3.1 software, this sample size allows for detecting an effect size of 0.15 with 80% power ($\alpha = 0.05$). The magnitude of this effect size is bound between a small (0.1) to a medium (0.3) effect size. An effect size of 0.15 corresponds to an absolute difference in rates of persistence (completion of degree) between levels of a predictor variable of about 15% (e.g. 70% versus 85%) and assuming that about 70% of the total sample is described by the predictor variable. For example, assuming 70% of the sample are females, if the observed completion rate for male students is 70%, a total sample size of 365 would allow for detecting a completion rate of around 85% for female students with 80%

power and $\alpha = 0.05$. Based on availability and completeness of the admission data, it may be necessary to restrict the cohort years to between 2007 and 2009 (during which time a fewer number of cohorts and students would have matriculated). This decrease in sample size (for example possibly 225 students versus 365 students) would require the desired effect size to increase to 0.19 (i.e. making the required observed difference to be larger; e.g. 70% versus 90%) to have adequate power for the test. The largest sample size possible was used.

DATA COLLECTION

Institutional Review Board (IRB) approval from the University of South Florida in Tampa, FL and the host institution was obtained. Secondary data was collected from the population of students enrolled in any of the master's degree in nursing programs from Spring 2005 to Fall 2009 with the assistance of the Information Office Management within the College of Nursing and the Office of Student Affairs at the host institution. Students not meeting the eligible criteria for inclusion in this study were excluded from data analysis. Student admission records and official transcripts were compiled for each eligible student within the aforementioned timeframe on a spreadsheet. Student records and reports were collected using the student identification number assigned by the university and stored on a private secured hard drive. The identification number was documented and coded before the researcher obtaining the data to protect students' identity before running analysis of the data. The strengths in using secondary data in the form of student records and archived research data are that it is often reliable and valid, inexpensive, and often unobtrusive; making reactive and investigator effects very unlikely (*Methods of data*, 2012). Weaknesses are that the data may be missing or entered inaccurately by the student or by a university employee and changes to the admissions application may have occurred during the timeframe. Colleges and universities may also have time-limits to how long they store individual student records, which may impact the student

population sample being investigated.

The independent variables are biographical data obtained from the graduate nursing admissions application and include sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study. In addition, the number of completed graduate-level credit hours were obtained from the student transcripts to explore question two.

The dependent variable was defined as whether or not the student persisted and completed the required program credit hours for degree completion within four years of matriculation.

Data were collected about each of the variables and later categorized for analysis (see Table 2). The variables of age at matriculation and total credit hours completed were the only continuous variables in this study.

DATA ANALYSIS

Data analysis includes descriptive statistics, which are methods used to summarize the characteristics of the sample (Bower, 2013), such as the mean and standard deviation, and will be used to describe the variable that is continuous (age at matriculation).

Table 1. Listing and Definition of Variables

Variables	Definitions
Sex	Student sex coded as 1=Female, 0=Male
Age at matriculation	Age coded as two-digit number
U.S. citizenship	Student citizenship coded as 1=U.S. citizen, 0=non-U.S. citizen
State residency status	Student residency coded as 1=In-state resident, 0=Out-of-state resident
Most recent schooling in years	Most recent schooling coded as 1=less than 5 years from semester first enrolled in graduate program, 0=5 or more years from semester first enrolled in graduate program
Last statistics course taken in years	Last statistics course coded as 1=less than 2 years from semester first enrolled in graduate program, 0=2 or more years from semester first enrolled in graduate program
Last statistics course grade	Last statistics course grade coded as 1=A (+/-), 0=other grade
Master's degree program enrolled	Student master's degree program coded as 1=practitioner focus, 0=non-practitioner focus
Persistence	Student completed program requirements to graduate coded as 1=completer, 0=non-completer
Total credit hours completed	Number of total credit hours completed in graduate nursing program

Categorical variables about student-entry characteristics were summarized as frequencies and percentages. To answer the first research question: “What are the relationships between the variables: sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study identified on the graduate nursing admissions’ application and student persistence?” logistic regression was used.

Since the outcome variable is dichotomous (the student completed or not), logistic regression is used in place of Ordinary Least Squared regression (Cabrera, 1994). Logistic regression permits the use of continuous or categorical predictors and provides the ability to adjust for multiple predictors (La Valley, 2008). Several variables were included in the logistic regression model to explore their association with persistence. Also, the pre-entry

characteristic variables included in the logistic regression model that represents the interaction between sets of variables were analyzed.

To investigate whether or not entry-characteristics relate to the persistence, the likelihood ratio: Chi-squared statistics and p-value were examined. In addition, the odds ratio (OR) with a 95 percent confidence intervals (CI) was computed. The OR and CIs are calculated because the dependent variables is dichotomous (Gliner, Morgan, & Leech, 2009). The OR also shows the strength of the association (Nunnally & Bernstein, 1994). The CI measures the precision of the OR (Hulley et al., 2007). A wide range in the CI for the OR suggests that different results would occur with repeated studies, while a narrow range for the CI indicates that similar results would occur with repeated studies (Booth, Rees, & Beecroft, 2010).

The second question in this study, “For non-completers, what is the proportion of required credit hours completed in their graduate-level program of study?” A distribution of frequencies of credit hours completed among these students was taken. This is an exploratory question to determine if a student does not persist to graduation, then where in the program of study did he or she stop persisting? This may provide useful information in the comparing of persistence rates to other graduate programs, and investigate persistence in graduate students compared to undergraduates. SPSS Statistics 22 was used to analyze the data in this study.

SUMMARY

In summary, the methods for this study used a correlational design using logistic regression to explore the relationships between graduate nursing students entry characteristics and persistence. Through this process, researchers and educators will be able to come closer to

answering the questions proposed in this study and new questions will emerge. While limitations exist for all research study designs, for this exploratory study new research findings will build on the existing body of knowledge about student persistence.

CHAPTER FOUR

RESEARCH FINDINGS

This chapter reviews the results from this exploratory, quantitative research study investigating the variables on graduate nursing admissions' applications and determines if those variables have a statistically significant relationship in predicting student persistence. The research questions for this study are 1) what student-entry characteristics (sex, age at matriculation, U.S. citizenship, state residency status, most recent schooling year, last statistics course taken and grade, and graduate-level program of study) are predictors of graduate nursing student persistence to graduation, and 2) for non-completers, what is the proportion of required credit hours completed in their graduate-level program of study?

DATA COLLECTION LIMITATIONS

In consulting with college personnel it was previously noted that the graduate admission application to the college of nursing explored in this study had asked specific questions related to the variables 1) most recent schooling in years, 2) last statistics course taken in years, and 3) last statistics course grade. College personnel discovered that the college of nursing either did not have access or store all of the data on the application. Through further exploration, student affairs professionals concluded that the graduate school kept responses to those variables by applicants and not by the college of nursing. Data relating to those variables during that period were either destroyed or not recorded by the graduate school, and therefore, were not accessible or included in this study.

DESCRIPTIVE STATISTICS

Students who were transferring graduate college credits into the nursing program were excluded from the population. Once transfer students were removed, there were 408 graduate student profiles meeting inclusion criteria. Data review and SPSS confirmed three students had incomplete data (sex, age, and state residency status). Because of the small number of students with missing data, the researcher decided to remove them from the case analysis. The final sample included data from 405 graduate (master's degree) students who enrolled in Spring of 2005 to Fall of 2009.

Data analysis discovered that all 405 students in the sample population reported as U.S citizens. Due to no variation seen in this variable, U.S. citizenship was excluded before running analysis because it would not add any significance in exploring its relationship with persistence in this study. The remaining variables examined in this study answering research question one were: sex, age at matriculation, state residency status, and master's degree program enrolled.

To control for extraneous variables, the researcher further categorized the sample population for descriptive purposes by cohort, matriculated semester, and by academic year of matriculation. The four-year benchmark for degree completion was the definition in this study as a "completer," but the researcher also included a comparison of degree completion within four years with degree completion with an unlimited time. Students did not have to enroll in every semester continuously. Table 1 describes the student academic enrollment characteristics of the sample.

Table 2 illustrates that those graduate enrolled master's degree-seeking students at one college of nursing between the Spring semester of 2005 to Fall semester of 2009 had 257

students (63.5%) complete their program of study and graduate within four years from the time of matriculation. Completion rates after four years only increased by 5.1 percent (n = 21).

Table 2: Student Academic Enrollment Characteristics (n=405)

Characteristics	Graduated Within 4 Years		Graduated Unlimited Time	
	Completers (n=257)	Non-Completers (n=148)	Completers (n=278)	Non-Completers (n=127)
Cohort, n (%)				
Sp 05	14 (73.7)	5 (26.3)	16 (84.2)	3 (15.8)
Su 05	9 (81.8)	2 (18.2)	9 (81.8)	2 (18.2)
Fa 05	22 (57.9)	16 (42.1)	29 (76.3)	9 (23.7)
Sp 06	18 (60.0)	12 (40.0)	21 (70.0)	9 (30.0)
Su 06	8 (66.7)	4 (33.3)	8 (66.7)	4 (33.3)
Fa 06	18 (62.1)	11 (37.9)	21 (72.4)	8 (27.6)
Sp 07	22 (64.7)	12 (35.3)	24 (70.6)	10 (29.4)
Su 07	10 (71.4)	4 (28.6)	10 (71.4)	4 (28.6)
Fa 07	31 (73.8)	11 (26.2)	32 (76.2)	10 (23.8)
Sp 08	19 (63.3)	11 (36.7)	19 (63.3)	11 (36.6)
Su 08	9 (52.9)	8 (47.1)	9 (52.9)	8 (47.1)
Fa 08	14 (58.3)	10 (41.7)	14 (58.3)	10 (41.7)
Sp 09	20 (71.4)	8 (28.6)	20 (71.4)	8 (28.6)
Su 09	21 (63.6)	12 (36.4)	24 (72.7)	9 (27.3)
Fa 09	22 (50.0)	22 (50.0)	22 (50.0)	22 (50.0)
Total	257 (63.5)	148 (36.5)	278 (68.6)	127 (31.4)
Semester, n (%)				
Fa	108 (60.3)	71 (39.7)	119 (66.5)	60 (33.5)
Sp	92 (66.2)	47 (33.8)	99 (71.2)	40 (28.8)
Su	57 (65.5)	30 (34.5)	60 (69.0)	27 (31.0)
Total	257 (63.5)	148 (36.5)	278 (68.6)	127 (31.4)
Academic Year, n (%)				
Su04-Sp05	14 (73.7)	5 (26.3)	16 (84.2)	3 (15.8)
Su05-Sp06	49 (61.3)	31 (38.8)	59 (73.8)	21 (26.3)
Su06-Sp07	48 (65.8)	25 (34.2)	53 (72.6)	20 (27.4)
Su07-Sp08	60 (69.0)	27 (31.0)	61 (70.1)	26 (29.9)
Su08-Sp09	42 (61.8)	26 (38.2)	42 (61.8)	26 (38.2)
Su09-Sp10	44 (56.4)	34 (43.6)	47 (60.3)	31 (39.7)
Total	257 (63.5)	148 (36.5)	278 (68.6)	127 (31.4)

The descriptive characteristics based on cohort displays completion rates ranging from 50% (Fall 09) to 81.8% (Summer 05) for those who graduated within four years. The small sample size based on cohort alone would be too small to make any statistical inferences.

The sample population categorized by the semester of matriculation illustrates that most graduate students entered in the Fall with the fewest starting in the Summer. There was minimal variance between completion rates by semester for those who graduated within four years and those without a time limitation. The sample population was categorized by academic year in which they matriculated into graduate coursework and revealed similar results as the semester of matriculation. Completion rates were the highest between Summer 2004 to Spring 2005 academic year (73.7%) for those who graduated within four years, and the lowest completion rates were during Summer 2009 to Spring 2010 (56.4%). The small population size of 2004-2005 ($n = 19$) is significantly lower than the other semesters due to a lack of data that was available before the Spring 2005 semester. If data were available, it could be closer to the completion rates listed in the ascending years.

Table 3 illustrates the descriptive statistics for the predictor variables investigated in this study. Completion rates for those who graduated within four years from the time of matriculation were compared with those who graduated without a time limitation.

In examining the variable "sex," males represented 9.4 percent of the student population in this study, which is identical to a survey conducted in 2011 comparing sex in nursing programs (Landivar, 2013). The males in this study completion rates (76.3%) were higher compared to females (62.1%), and this was a similar finding with no time limitation on program completion to graduation.

Table 3: Student-Entry Characteristics (n=405)**Graduated Within 4 Years****Graduated Unlimited Time**

Student Characteristics	Completers (n=257)	Non-Completers (n=148)	Completers (n=278)	Non-Completers (n=127)
<i>Demographics</i>				
Sex, n (%):				
Males	29 (76.3)	9 (23.7)	30 (78.9)	8 (21.1)
Females	228 (62.1)	139 (37.9)	248 (67.6)	119 (32.4)
Age, mean (SD)	35.0 (10.2)	38.2 (11.2)	35.2 (10.3)	38.2 (11.3)
Median, IQR	35.0, 16.8	39.7, 20.0	35.4, 16.9	39.2, 20.3
State Residency Status, n (%):				
In-State Resident	180 (63.8)	102 (36.2)	240 (70.0)	103 (30.0)
Out-of-State Resident	77 (62.6)	46 (37.4)	38 (61.3)	24 (38.7)
Graduate Program, n (%):				
Practitioner	228 (66.5)	115 (33.5)	240 (70.0)	103 (30.0)
Non-Practitioner	29 (46.8)	33 (53.2)	38 (61.3)	24 (38.7)
Cumulative Credits, mean (SD)	47.9 (7.2)	20.3 (19.3)	47.8 (7.3)	15.9 (16.9)
Median, IQR	47.0, 5.0	39.7, 20.0	47.0, 5.0	7.0, 24.0

Note: SD=Standard Deviation; IQR=Interquartile Range

The variable "age" was a continuous variable that included the age at the time of matriculation. The mean age for degree completion within four years of matriculation was 35.0 years and a standard deviation (SD) of 10.2. On average, "completers" were 3.2 years younger than the average age of those who did not complete their graduate program. The average age for completers was a similar finding for those who did not have a time limitation to graduation.

Since age and cumulative credits were the only non-binary variables in this study, the researcher wanted to check for a normal distribution. Kolmogorov-Smirnov's Test of Normality was used, and age was statistically significant ($p < 0.001$) suggesting it did not follow a normal

distribution (see Table 4). In logistic regression, this is not a requirement, but the median and interquartile range (IQR) is included to provide a more accurate depiction of the distribution.

Table 4: Tests of Normality for Age and Cumulative Credits

Tests of Normality							
	Graduated	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Age	No	.110	127	.001	.948	127	.000
	Yes	.079	279	.000	.969	279	.000
Cumulative Credits	No	.251	127	.000	.821	127	.000
	Yes	.179	279	.000	.887	279	.000
a. Lilliefors Significance Correction							

"Cumulative Credits" were examined in this sample, but not as a predictor variable in answering question one of this study. In graduate programs, there is a minimum number of credit hours and courses required for degree completion. On average, graduate students completed approximately 48 credits to graduate. Those who did not complete the program (either within four years or with unlimited time) averaged only around 16-20 credits, which is less than half of the average number of credit hours for those graduating from their programs. Table 4 also includes Kolmogorov-Smirnov's Test of Normality for cumulative credits and was found to be statistically significant ($p = 0.000$). The median and IQR was also included to explain the distribution in Table 2. The median of credits completed for non-completers with unlimited time was only seven credit hours. Credit hours is valuable in answering question two of this research study "For non-completers, what is the proportion of required credit hours completed in their graduate-level program of study?"

The descriptive statistics for the variable "state residency status" displayed that the majority of students said that they were in-state residents ($n = 282$; 69.6%) versus out-of-state

residents (n = 123; 30.4%) based on the geographic location of the university. However, completion rates for those who identified as "in-state" (63.8%) or "out-of-state" (62.6%) were similar for those who graduated within four years. Students with unlimited time to graduation had similar completion rates.

The final predictor variable explored in this study was the type of "graduate program of study" in which the student enrolled. Descriptive statistics depicted that the majority of students enrolled in a practitioner-focused program (n = 343; 84.7%) versus a non-practitioner focused program (n = 62; 15.3%). The completion rates for practitioner-focused students were higher (66.5-70%) compared to their non-practitioner-focused (46.8-61.3%) counterparts. When time was not a limitation for graduation, the non-practitioner-focused students had an additional 14.5 percent completion rate compared to only a 3.5 percent increase in completion rates for the practitioner-focused graduates.

MODEL DEVELOPMENT

The model development process utilized in this study was employed in previous research studies (DeAngelis, 1997; St. John & Andrieu, 1993). This study used logistic regression to construct a model. In the regression, each student-entry characteristic is added to the model. As predictor variables are added to the regression, its influence is studied by examining the Pseudo R², R-Squared and -2 Log Likelihood statistics. The addition of each student-entry characteristic to the model should more accurately predict those students who persisted and those who did not persist. Logistic regression statistics were run using SPSS software, as well as computing beta coefficients into delta-p statistics.

The researcher tested the model by examining the -2 Log Likelihoods and the R-Squared values after the variables were entered. When the -2 Log Likelihood decreases between the additions of another variable, it indicates that a number of unexplained error decreases and the ability of the model to correctly predict the outcome increases. The R-Squared attempts to measure the strength of the association between the independent and dependent variables. The variables selected for this study were collected from the admission applications for graduate nursing programs and were included in persistence literature and similar persistence studies (Andrieu, 1991; DeAngelis, 1998; Gieske, 1995).

Logistic regression was used to analyze the graduate student data with all of the variables included. Regression coefficients were converted to delta-p statistics. Petersen (1984) recommended using this method to make it easier to analyze predictors of the probability of an outcome based on a unit change.

RESULTS OF UNIVARIATE LOGISTIC REGRESSION DATA ANALYSIS

Following analysis of the descriptive data for the variables investigated, the researcher then performed a univariate logistic regression analysis to examine the association between each predictor variable with the outcome variable persistence (graduation within four years). The unadjusted odds ratio (OR), 95% confidence interval (CI), and p-value are reported in Table 5.

In evaluating the relationship of "sex," the odds of graduating within four years is 1.96 (95% CI: 0.903, 4.273) times greater for males compared to females. However, the association between sex and graduating within four years was statistically non-significant (Wald's Chi-square = 2.90, $df = 1$, $p = 0.089$). The variable "age" odds of graduating within four years is 0.97

Table 5: Univariate logistic regression analysis to examine association between each predictor variable and graduation within 4 years.

95% C.I. for EXP (B)

Student-Entry Characteristics	Reference Group	Coefficient (B)	Standard Error for B (S.E.)	Wald Chi-Square Statistic	df	p-value	Odds Ratio (OR)	Lower	Upper
Sex (Males)	Females	0.675	0.396	2.901	1	0.089	1.964	0.903	4.273
Age		-0.029	0.010	8.492	1	0.004	0.972	0.953	0.991
State Residency Status (Out-of-State)	In-State	-0.053	0.224	0.056	1	0.813	0.949	0.62	1.471
Graduate Program (Practitioner)	Non-Practitioner	0.814	0.279	8.501	1	0.004	2.256	1.306	3.898

(95% CI: 0.953, 0.991) times less for every increase of one year of age of the student (Wald's Chi-square = 8.49, $df = 1$, $p = 0.004$). The coefficient (B) of -0.029 illustrates a negative association of an increase in age corresponding to a decrease in completion. "State residency status" showed no statistically significant association between state of residency (in-state compared to out-of-state) and graduation (Wald's Chi-square = 0.07, $df = 1$, $p = 0.813$). The "graduate program of study" revealed that graduate students odds of graduating within four years are 2.26 (95% CI: 1.306, 3.898) times greater for students enrolled in nurse practitioner-focused programs compared to non-practitioner programs (Wald's Chi-square = 8.50, $df = 1$, $p = 0.004$). The positive value of the Coefficient (B) = 0.814 illustrates that when students enrolled in practitioner-focused programs they more likely to graduate when compared to the reference group of non-practitioner programs. The researcher assumed that there would be a statistically significant relationship with the number of credit hours completed and the completion of a program of study, as these are requirements and outlined in graduate handbooks. Therefore, "cumulative credits" will not be included in the multiple variable logistic regression analysis.

The variable “sex” was also ran as a categorical variable to further explore the distribution of age within the student population. Student completion within four years from time of matriculation were compared based on age categories of < 30 years (68.4%), 30-39 years (70.0%), and ≥ 40 years of age (54.1%). The similar completion rates of < 30 and 30-39 years of age groups provided justification and the decision to combine them and compare them to the ≥ 40 years of age group. Student completion with unlimited time for graduation were < 30 years (72.9%), 30-39 years (72.7), and ≥ 40 years of age (61.8%). The final categories of “sex” were ≤ 39 years of age ($n = 247$) and ≥ 40 years of age ($n = 158$). Logistic regression analysis concluded that the odds of completing within four years was 1.88 times greater for students under 40 years of age compared to those who were 40 years of age and older ($p = 0.003$). Students who graduated with unlimited time had an odds of graduating 1.65 times greater for students under 40 years of age compared to those who were 40 years of age and older ($p = 0.022$).

RESULTS OF MULTIPLE VARIABLE LOGISTIC REGRESSION DATA ANALYSIS

The multiple variable model included all of the variables from the univariate analyses except the variable “state residency status,” whose p-value was non-significant ($p = 0.813$). The remaining variables had p-values near or below $p = 0.05$ (sex p-value = 0.089; age p-value = 0.004; and graduate program p-value = 0.004). “Cumulative credits” will be excluded because it is not a variable being explored in question one of this study. Table 6 includes the multiple variable logistic regression for the variables sex, age, and graduate program of study.

Table 6: Multiple variable logistic regression analysis to examine association between subset of univariately significant predictor variable and graduation within 4 years.

95% C.I. for EXP (B)

Student-Entry Characteristics	Reference Group	Coefficient (B)	Standard Error for B (S.E.)	Wald Chi-Square Statistic	df	p-value	Odds Ratio (OR)	Lower	Upper
Sex (Males)	Females	-0.609	0.403	2.283	1	0.131	0.544	0.247	1.198
Age		-0.025	0.010	6.103	1	0.013	0.976	0.957	0.995
Graduate Program (Practitioner)	Non-Practitioner	0.728	0.284	6.568	1	0.010	2.070	1.187	3.612

Sex was not significant at the alpha level $< .05$, so it was removed from the next logistic regression model. Table 7, illustrates the model found statistically significant associations between graduation within four years for graduate program of study (adjusted OR = 2.069 and 95%CI = 1.188, 3.603; Wald's Chi-square = 6.595, $df = 1$; $p < .05$) and age (adjusted OR: 0.976 (95%CI = 0.957, 0.994); Wald's Chi-square = 6.654, $df = 1$; $p < .05$).

Table 7: Multiple variable logistic regression analysis to examine association between subset of univariately significant predictor variable and graduation within 4 years (w/o the variable Sex).

95% C.I. for EXP (B)

Student-Entry Characteristics	Reference Group	Coefficient (B)	Standard Error for B (S.E.)	Wald Chi-Square Statistic	df	p-value	Odds Ratio (OR)	Lower	Upper
Age		-0.026	0.010	6.654	1	0.010	0.975	0.957	0.994
Graduate Program (Practitioner)	Non-Practitioner	0.727	0.283	6.595	1	0.010	2.069	1.188	3.603

To determine if the addition of the variable sex to the model increased the predictability, a -2 Log likelihood was calculated for both models. Table 8, compares the three predictor variables versus the two predictor variables (age and graduate program of study).

Table 8: Comparison model of -2 Log likelihood between three predictor variables versus two predictor variables.

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Three variables (Sex, Age, Graduate Program)	514.039a	0.043	0.059
Two variables (Age & Graduate Program)	516.506a	0.037	0.051

a. Estimation termination at iteration number 4 because parameter estimates changed by less than .001.

The change in the -2 Log likelihood due to the addition of sex in the model was 2.47 (516.51 for the two variables model minus 514.04 for the three variables model) with degrees of freedom of 1. The three variables model did not fit significant better than the two variables model (Chi-square = 2.47, $df = 1$, $p > 0.12$). Predictors with little effect on the response may be removed to create a parsimonious model (Avalos, 2008). The simplest model with the least assumptions and variables, but with the highest explanatory power is the preferred model. The final model only included age and graduate program of study as seen in Table 6.

POST-HOC POWER CALCULATIONS

The study used a sample of convenience consisting of 405 students of which 257 completed their program within four years and 148 did not complete their program within four years. Absolute differences of 15% between the proportion of students graduating within four years for each of the binary independent variables (e.g. sex, state of residency and graduate program of study) was considered a meaningful change to administrators of the graduate programs. For the binary independent variable sex, the number of male students ($n = 38$) in the program was small, resulting in analyses of sex to be statistically underpowered (57% power). For the other three binary independent variables, the observed sample sizes were adequate to detect absolute differences in the proportion of students graduating within four years with 80% power ($\alpha=0.05$, one-sided). The observed number of completers ($n = 257$) and non-

completers (148) was also sufficient to detect an effect size of $d=0.25$ which corresponds to a difference in mean age of about three years ($SD = 10.5$ years) of age with 80% power and $\alpha = 0.05$ (one-sided). The association of sex and completion within four years needs to be examined in a study with a larger sample size of males to determine if the statistical significance with adequate power.

SUMMARY

This study utilized a model that sought to examine the relationship between data collected from a graduate admissions application and student persistence to graduation. The analysis showed that the age and type of graduate program of study in which one enrolls at this institution was a significant variable in student persistence to graduation. The results indicate that the older student has a less likelihood of him or her graduating and students enrolled in practitioner-focused programs are more apt to succeed in finishing program requirements for graduation at this college of nursing.

CHAPTER FIVE CONCLUSIONS, DISCUSSION, AND SUGGESTIONS FOR FUTURE RESEARCH

INTRODUCTION

A new model of graduate persistence to graduation within four years from time of matriculation was examined and advanced by exploring the population of graduate nursing students at one college using SPSS Statistics 22. This study investigated the relationship between the type of questions asked on a graduate admissions application and their relationship to persistence to degree completion.

This chapter begins with a summary of the study and its conclusions. Second, the significance of the study is discussed, and the research questions are addressed. Third, the limitations and unforeseen obstacles that were in this study will be reviewed. Fourth, the implications of this research for academic and student affairs professionals. Finally, suggestions for future research will be explored.

CONCLUSIONS

Descriptive statistics of this sample concluded that 257 students (63.5%) graduated within four years from the time of matriculation. Most graduate students enrolled in the Fall and Spring semesters; however, this did not appear to impact completion rates. The academic year, cohort and the semester of matriculation assists the researcher in controlling for environmental factors that may have potentially influenced persistence in this study. Completion rates were similarly based on the academic year with the highest completion rate during Summer 2004 to Spring 2005 of 73.7 percent (n=14) and the lowest completion rate during Summer 2009 to

Spring 2010 of 56.4 percent (n=44). Categorizing the population based on semester and academic year condensed the population into smaller sub-groups and sample sizes; therefore, restricting the ability of the researcher to make any statistically significant associations with persistence.

Data shows more than 21 students (5.1%) did graduate after the four-year benchmark for this research study. The literature referred to this group as "stop out" and defined as "a person who is still actively engaged in pursuing the intended goal at the end of the allotted time but who, for a variety of reasons, has not yet attained that goal" (Hilton, 1982, p.1). While there were not significant differences in completion rates between those who were able to graduate within four years and those with unlimited time, it is important to note that some graduate students may need additional time and are unable to enroll full-time or consecutive semesters. Faculty and advisors should continually try to connect and monitor all graduate nursing students to facilitate a nurturing environment as described in Astin's I-E-O model (1985).

Females comprised of the largest number of enrollment in graduate nursing programs (n=367 compared to n=38) at this institution; however, male student completion rates were higher (76.3%) compared to females (62.1%). Univariate logistic regression analysis concluded that men were 2.901 times likelier to complete their program compared to women. However, this was statistically not a significant finding ($p = 0.089$).

Completion rates were very similar between in-state and out-of-state resident students. Student affairs professionals revealed that there was a boarder-bill in place during this period, and currently exists, allowing students from one particular state to pay in-state tuition for out-of-state residents. The boarder-bill was a marketing tool to allow more students into their programs

and compete against other universities near the university. Tuition is often cited in the literature as a concern for graduate students and may have influenced completion rates if it were not higher for some out-of-state residents.

The median age of a completer graduating within four years was 35 years and a non-completer within four years was 39.7 years. On average, students who matriculated into their program at a younger age are more likely to complete the program. Age was a statistically significant finding ($p < .01$). When age was categorized versus being a continuous variable, the researcher discovered that students who were ≤ 39 years of age were more likely to graduate than those ≥ 40 years of age ($p < .05$).

More students enrolled into a practitioner-focused graduate program of study ($n=343$) compared to a non-practitioner-focused program ($n=62$) in this population. Practitioner-focused students also had a higher completion rate (66.5%) compared to non-practitioner-focused students (46.8%) for those who graduated within four years. Practitioner-focused students were 2.256 times likelier to graduate than non-practitioner students, and this was a statistically significant finding ($p=0.004$). Completion rates after four years did see a gain of 14.5 percent for non-practitioner-focused students versus only 3.5 percent for practitioner-focused students suggesting that non-practitioner students may need additional time over four years to complete program requirements. An additional exploration into the admission requirement differences between the different programs (grade point average (GPA) requirements, number of spots available, work experience) could provide insight into the decision-making process of which program of study the students selected.

Research Question One of this study asked, "What are the relationships, if any, between the variables identified on the graduate nursing admissions application and student persistence?" Using multiple variable logistic regression analysis, based on the data that was available only the predictor variables "age" and "graduate program of study" were found to be statistically significant ($p < .05$). Students who were younger and/or enrolled in practitioner focused graduate programs were more likely to persist and graduate than older students and those enrolled in non-practitioner-focused programs.

In exploring Research Question Two of this study, "What conclusions can be made, if any, between graduate students who do not persist and where in the graduate curriculum they stop persisting?" the descriptive statistics of cumulative credits completed were examined. The median cumulative credits completed for completers were 47 credits. For those non-completers, within four years the median credits completed were 39.7 (84.5 percent of the curriculum compared to completers). However, when time was not a factor the median value was 7.0 credits completed for those that were non-completers, which is approximately only 15 percent of the curriculum of those who were completers. Suggesting that students who do not complete their program stop persisting as few as seven credits into their program and even up to 39 credits.

SIGNIFICANCE OF THE STUDY

The results of this study should have multiple implications. According to the National Academic Advising Association (NACADA, 2012) it is important to be concerned about student persistence and success because of the following reasons; (1) college persistence and graduation rates influence public perception of the quality of the institution; (2) state legislatures are increasingly concerned about graduation rates; (3) focusing on student success is

programmatically responsible; and (4) improved student persistence towards graduation can provide additional resources to invest in people and programs.

This study may lead to revisions and updates to practices which improve graduate nursing student outcomes from student advising and recruitment to institutional policy changes and even faculty development. Attrition has important fiscal and moral implications for the students and faculty of any college (Rosenberg, Perraud & Willis, 2007). The financial effects of the loss of students from these programs have gone largely undocumented (Rosenberg et al., 2007). "For the college, state funding and institutional reputation are tied to students completing programs" (Sass, Pederson & Truman, 2007). Nursing schools and admission committees have an opportunity to use current research to assist in identifying what admission criteria will be the most beneficial in assessing whether or not an individual will be successful in a nursing program and which student profile characteristics and academic variables which may need closer monitoring to help support student's persistence to graduation.

No national database that tracks graduate student attrition exists, and according to Bair and Haworth (2004), colleges and universities often lack systems to follow the progress of graduate students at the institution. It is necessary that schools of nursing who produce research on graduate persistence collaborate and disseminate their findings to improve graduate student persistence to meet the healthcare demands of the current and future populations. The research results of this study will be added to persistence literature and hopefully provide more insight into how higher educational professionals can better identify graduate nursing students at risk and provide resources to support their pursuits of degree attainment.

LIMITATIONS

The scope of this research study is limited to the population and data that are accessible at one university in the Pacific Northwest. The electronic records restrict the analysis to only investigating variables that have been identified on the graduate nursing application and using student self-reporting. The data provided are not able to be verified for accuracy. Data addressing all the variables in this study were not available and accessible before Spring of 2005. During this study, it was also discovered that some data were only collected and stored in the graduate school, and not in the college of nursing. The college of nursing did not have access to these application questions and therefore, restricted the number of possible predictor variables investigated in this study.

Following Fall of 2009, significant changes in program curriculum for some graduate nursing programs occurred and it was determined by the researcher to restrict the timeframe to prevent different standards for degree completion within one program of study. This limitation prevented the addition of the following cohorts to be included in the sample but also allowed sufficient time for existing students to progress to degree completion within the timeframe of this study. Graduate programs offered at universities often have different requirements for completion of degree (i.e. the number of credit hours), including options for part-time or full-time study. Graduate records may also not provide information as to the cause for why a student did not persist, whether it's academically related or personal in nature. Transfer students were excluded from this population, therefore, it is unknown if their completion rates differed from those students without any graduate transfer credits.

IMPLICATIONS

The sample and population of this study were restricted to one college of nursing in the Pacific Northwest. While data revealing completion rates and other descriptive statistics can be valuable to every institution, it is important to consider that the results, implications, and conclusions inferred from this study are restricted to the school. The statistically significant variables (age and the graduate program of study) are important to the institution in their self-reflection and review of policies, curriculum development, faculty development, campus resources, and admission and progression considerations. The graduate nursing programs underwent significant curricular changes after 2009 per interviews with student affairs professionals and college administrators. The results of this study only describe particular characteristics of this population from one institution during a given period.

While this study alone may not have significant implications nationally, it does contribute to the growing knowledge on student persistence, and specifically of graduate nursing student persistence. Research findings from this study also support similar findings suggesting age is a significant predictor of academic achievement and retention (D'Angelis, 1998; DeFelice, 1989; Manifold & Rambur, 2001; Murtaugh, Burns & Schuster, 1999). Further exploration in how to assist the older student succeed and persist are warranted. There is limited literature on the type of graduate nursing program and persistence leading up to this study. Practitioner-focused graduate students were more successful in completing program requirements than their non-practitioner-focused colleagues, beckoning a further exploration of this variable in other populations to investigate more about the differences between graduate students enrolling in these various graduate nursing programs.

SUGGESTIONS FOR FUTURE RESEARCH

This research study, along with the majority of persistence studies in higher education, is limited based on data from: single schools, small samples, retrospective data collected after the student has stopped persisting, and a narrow range of possible causal variables. More research looking into additional variables, longitudinal studies, and interventions to promote persistence would add to the literature in exploring this student population. Having a database that collects and retains data from admission applications and other student records that can be accessible by researchers and higher educational professionals within the entire university would be beneficial in exploring the associations of additional student-entry characteristics with student persistence, including environmental variables as described in Astin's I-E-O Model (1985).

There is limited research in the literature exploring persistence in graduate nursing programs. This study revealed statistically significant associations between the variables age and the type of graduate program enrolled with persistence. Additional studies exploring these variables, among others, in a larger sample, including graduate programs from different geographical areas, would add to the significance and future implications of those findings. Identifying risk factors as early as the application process can better provide higher educational professionals the tools to assess and support these graduate students to progress, persist, and achieve their academic and personal goals. Graduating more registered nurses at the graduate level assists in addressing the growing requirements for healthcare services of our communities and is a step in solving future personnel shortages.

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APPENDIX A

IRB LETTER



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

December 6, 2016

Tyler Dean
L-CACHE - Leadership, Counseling, Adult, Career & Higher Education
Tampa, FL 33612

RE: **Not Human Subjects Research Determination**
IRB#: Pro00028742
Title: Graduate Nursing Student Persistence to Graduation

Dear Mr. Dean:

The Institutional Review Board (IRB) has reviewed your application and determined the activities do not meet the definition of human subjects research. Therefore, this project is not under the purview of the USF IRB and approval is not required. If the scope of your project changes in the future, please contact the IRB for further guidance.

All research activities, regardless of the level of IRB oversight, must be conducted in a manner that is consistent with the ethical principles of your profession. Please note that there may be requirements under the HIPAA Privacy Rule that apply to the information/data you will utilize. For further information, please contact a HIPAA Program administrator at 813-974-5638.

We appreciate your dedication to the ethical conduct of research at the University of South Florida. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink, appearing to read "Tyler Dean", followed by a horizontal line.

Kristen Salomon, Ph.D., Vice
Chairperson USF Institutional Review
Board