

PREDICTORS OF PERSISTENCE IN ONLINE
GRADUATE NURSING STUDENTS

by

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ABSTRACT

PREDICTORS OF PERSISTENCE IN ONLINE
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Persistence is an important measure of success for individual students and institutions of higher learning. The purpose of this study was to explore personal and academic factors that influence persistence in online graduate nursing students. A predictive correlational study design was used. Data were extracted from existing student records in two online graduate programs within a large, urban college of nursing. A sample size of 197 graduate nursing students was selected, 94 who persisted to graduation from their program within 36 months and 103 who did not. Age, gender, race/ethnicity, undergraduate GPA, undergraduate education (BSN or RN-BSN level) were examined as predictors of persistence in the two online graduate nursing programs. In this study, undergraduate GPA emerged as a predictor of persistence to graduation. It is evident that there are other significant factors that affect persistence that have yet to be determined. By identifying students' characteristics of persistence, strategies can be developed to enhance success in online graduate nursing programs.

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CHAPTER 1

INTRODUCTION

The growth in online education has risen significantly over the past decade in higher education. As many as 50% of universities offer online education programs (Christensen, Horn, Caldera, & Soares, 2011). It is estimated that over seven million or 31% of students enroll in one or more online course during their course of study (Allen & Seaman, 2011). As the demand for all types of advanced practice nurses and faculty continues to increase, colleges of nursing have embraced online education as an efficient and cost-effective delivery method to increase the number of master's and doctorally prepared nurses. In 2013, the American Association of Colleges of Nursing (AACN) reported that 538 institutions offer master's degree programs with an enrollment of 108,490 students (Fang, Li, Arietti, & Bednesh, 2014). Of the programs, 389 have an online component. While admissions in all graduate schools of nursing demonstrate steady growth, student retention remains a challenge. Estimates for attrition in online programs range from 25% to 60% (Levy, 2007; Stanford-Bowers, 2008). Reports of aggregate graduate student retention and attrition rates across universities are scarce in the literature, but there is a consensus among educators that the drop-out rates in online programs are 10-20% higher than in the traditional setting (Angelino, 2007; Carr, 2000; Moody, 2004).

Success in completing a degree is of significant importance for higher education as a measure of program quality as well as a recruitment strategy and a funding mechanism (Park, Boman, Care, Edwards, & Perry, 2008; Willging & Johnson, 2009). Persistence rates are also reviewed for national accreditation and rankings (Cohen, 2012). Financial and emotional costs are tremendous for both the student and the institution when students do not persist and graduate (Cochran, Campbell, Baker &

Leeds, 2014; Tinto, 2007). In two retrospective studies, Mancini, Ashwill, and Cipher (2015) found a 6% attrition rate in an undergraduate RN-BSN online program while Tanyel and Griffin (2014) reported a 12% attrition rate in a similar group of 5,621 students. Although there are some data available to describe undergraduate student persistence (Mancini et al., 2015; Tanyel & Griffin, 2014), little is known about student persistence in graduate nursing programs and even less about online graduate nursing students (Cohen, 2012).

A predictive correlational study design using secondary analysis of existing data was conducted to explore factors associated with persistence in two exclusively online graduate nursing programs at a large public university. Background information on the problem of graduate student persistence will be described. A model of persistence in online education programs will be presented as the theoretical framework for the study, followed by the study purpose, questions, and assumptions.

Background and Significance

Clinical Advanced Practice Needs

With the changes in the healthcare system brought about by the Patient Protection and Affordable Care Act (PPACA) in 2010, advanced practice nurses, nurse educators, and nurse leaders are high in demand. The nurse's role in health reform is significant as alternate care models, such as nurse-managed health centers and patient centered medical homes are utilized (Aiken, Cheung, & Olds, 2009; Auerbach et al., 2013). Aiken et al. (2009) reported that nurse practitioners were responsible for greater than 600 million patient visits per year. The need for master's prepared nurses will only increase as the 80 million Baby Boomers, now reaching the age of 65 years old, are projected to cause a dramatic increase in health care utilization. The expansion of health insurance to millions of previously uninsured Americans, technological advances, and the

primary care physician shortage add to the urgency of advancing nursing education (Tri-Council, 2010).

Nursing Faculty Needs

Complicating the need for training more advanced practice nurses is the nursing faculty shortage. Colleges of nursing in the United States turn away thousands of potential students due, in part, to a lack of faculty (Fang et al., 2014). There are approximately 1400 or 8.3% vacant nursing faculty positions at any given time. The National League for Nursing (NLN) and Carnegie Foundation conducted a study that confirmed the concerns over the lack of qualified educators. Reasons cited for the continued shortage include age, workload, and compensation (AACN, 2005; Fang et al., 2014; NLN, 2010). In the 9th Annual Report to the Secretary of the U.S. Department of Health and Human Services, the National Advisory Council on Nurse Education and Practice (2010) addressed the nursing faculty shortage. The average age of a graduate nursing faculty member is 55 years old with an expected retirement age of 62.5 years old. Replacement faculty for the large number of upcoming retirees will fall short. Another challenge of the nursing faculty shortage involves the workload required. Alternative career choices for nursing are more lucrative and less time-consuming. Notwithstanding faculty shortages, the quest for more nursing graduates continues.

Nursing Administration Needs

The contributions of nursing regarding improved patient outcomes and safety were acknowledged during the recent debate and passage of the Patient Protection and Affordable Care Act. Nurses with graduate preparation are now in a unique position to be leaders in healthcare transformation. There is a growing demand for nursing administrators to be master's prepared due to healthcare institutions' accreditation requirements. Nurse leaders have the ability to affect public policy, administrate both

large and small healthcare systems, act as consultants, and develop new models of care to enhance quality of patient care while managing cost (Council of Graduate Education for Administration in Nursing, 2011).

The Tri-Council for Nursing (2010) issued a policy statement supporting the advancement of nursing education. They found that too few nurses, approximately 20% with a Bachelors of Nursing Science, pursue a master's degree in nursing. To meet the growing demand for master's prepared nurses, colleges of nursing are developing online programs that offer students greater flexibility for pursuing an advanced degree while balancing school, home, and work. These programs may also include multiple entry, exit, and reentry points or more frequent start dates than the traditional three times per year (Strevy, 2009).

Persistence

Despite the convenience of online education, students often fail to complete these programs due to unrealistic expectations of themselves and the delivery system (Conceição & Lehman, 2013). Reasons for these failures are multifaceted and complex and are often not related to knowledge acquisition (Hart, 2012).

Administrators and researchers in colleges of nursing have attempted to identify predictors of persistence in order to develop interventions to increase success in their graduate programs. Park, et al. (2008) reported that the current methods of measuring persistence for selection into a program do not underscore the complexity of the problem. Interviews, grades, and psychological testing are currently determining selection processes for a program to ensure student success. These measures may be inadequate in predicting success. Online programs expose additional factors when determining student success. Student persistence rates remain an issue for online nursing programs.

Rovai (2003) posits that we must understand the factors of persistence in order to satisfy student's needs.

Framework

Rovai's Composite Persistence Model Overview

Rovai's Composite Persistence Model. Rovai's Composite Persistence Model (CPM) shown in Fig. 1 is a synthesis of two persistence models (Rovai, 2003). Tinto's early work (1975) of persistence described the effect of student integration on students dropping out of a traditional post-secondary institution. Tinto based his theory on Durkheim's Theory of Suicide and applied it to dropout factors / behaviors in institutes of higher learning. He described this model as a process of interactions between the individual and the social and academic systems within the institution. Individual characteristics, family background, and prior academic experiences influence commitments to the goal of college completion and to the institution generally. The higher the commitment, the more likely a student is to persist. In this model, Tinto identified two necessary modes of the student's integration into the academic environment that must occur in order for a student to persist in post-secondary education. First, social integration needed to occur during peer and faculty interactions. Second, integration in the academic system encompassed the degree of grade performance and intellectual development (Seay, 2010; Tinto, 1975).

The goal of the student attrition model developed by Bean and Metzner (1985) was to explain attrition of the nontraditional student, introducing a psychological component not found in Tinto's model. Adult students are less interested in college social support, as noted in the Tinto model, and more focused on the academic structure compared to the younger, traditional student. Their social support is predominately from outside the academic setting, family and peers. In addition, from an earlier study by Bean

(1980), nontraditional student satisfaction was found to be an important predictor of intent to withdraw (as cited in Cohen, 2012). Four factors were thought to impact the nontraditional adult learners as they persist in a course of study: 1) academic variables such as advising, course availability and program fit; 2) background and defining variables describing the students' demographics, such as age, ethnicity, and past performance in school; 3) environmental factors including finances and family; and 4) psychological outcomes, utility, satisfaction, goal commitment and stress. The extent to which psychological outcomes are influenced by the academic and environmental variables delineated in the model reflects the degree of a student's intent to leave.

Rovai recognized that an integration of the two models by Tinto and Bean and Metzner could better explain the persistence of the adult learner in an online program. He also extended the model to include the necessary skills that the online student should possess prior to admission to an online program from the work of Rowntree (1995) and Cole (2000). Rovai's model is divided into four components of characteristics that occur prior to and after admission to an online program to explain persistence in the online nontraditional student. Student characteristics and student skills are two of the components of the model identified as affecting the student before admission to a program. Internal factors and external factors influence student persistence after admission.

Table 1. Elements of Rovai's Composite Persistence Model

Student Characteristics	External Factors
-Personal characteristics (Age, gender, race/ethnicity)	-Finances
-Intellectual development	-Hours of employment
-Academic performance	-Outside support
-Academic preparation	-Opportunity to transfer
	-Life crises

Table 1.—Continued

Student Skills	Internal Factors	
-Computer literacy	-Academic integration	-Utility
-Information literacy	-Social integration	-Stress
-Time management	-Goal commitment	-Satisfaction
-Reading and writing	-Institutional commitment	-Commitment
-Computer-based interaction	-Learning community	-Clarity of programs
	-Study habits	-Self-esteem
	-Advising services	-Accessibility to
	-Absenteeism	-Pedagogy
	-Course availability	-Teaching styles
	-Identification with school	-Learning styles
	-Interpersonal relationships	-Program fit
	-Current GPA	

In this study, an adaptation of Rovai’s Composite Persistence Model was used as the theoretical framework. A graphical representation of the framework is provided in Figure 1.

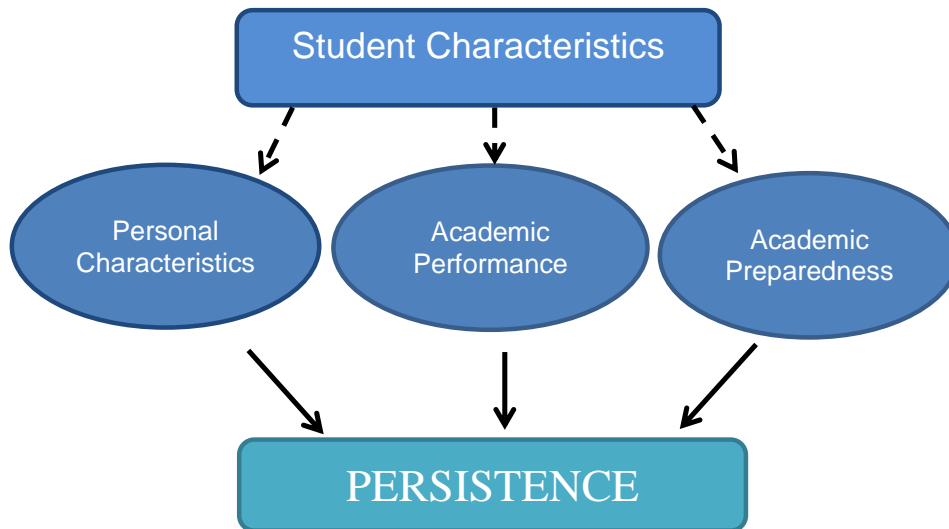


Figure1. Adaptation of Rovai’s Composite Persistence Model

Previous research using the CPM. A search of library databases (Academic Search Complete, CINAHL, ERIC, Health Source: Nursing / Academic, Medline, PsycARTICLES and Google Scholar) using the major headings Rovai and Composite Persistence Model revealed 37 journal articles. The CPM has been used as a framework for identifying strategies for retention of at-risk students for withdrawal (Park, Perry & Edwards, 2011). In addition, several researchers have explored factors that influence persistence in at least one of the four components of the CPM. Numerous disciplines are represented in the studies demonstrating the complexity of the online adult learner.

Cohen and Greenberg (2011) designed a mixed-method study based on the Rovai's CPM to determine the student and institutional characteristics related to persistence. The respondents in the study had many roles to fulfill besides the student role. The researchers found that master's level students were more likely to be influenced by support systems outside of the academic setting. Significant others, children and parents were the highest order of support (68%). Employers often assisted with schedule changes and time away from work. Family members were also found to be the ones who assisted with assignments more than the student's faculty or peers. Interestingly, the level of parent education played a significant role in persisting in graduate school. The higher the level of education of the mother, the more likely the child would attend graduate school to advance their career, satisfy their employer, increase their salary, and enhance personal growth. The mother's lower education level corresponded with the need for academic support services. The father's higher level of education had an effect on why a student would choose to attend graduate school, to satisfy a family member. A greater need for instructional help was evidenced by a lower level of the father's education. Whether the mother or father had a lower level of education related to the

students desire to attend graduate school as a role model for the family. The researchers note that students often do not come to graduate school with adequate social and cultural capital to persist.

Informed by Rovai's CPM, Marshall, Greenberg, & Machun (2012) explored graduate education student's characteristics in the two categories, student skills and internal factors. The aim of the study was to describe the amount and effectiveness of information that students would like to have about an online course prior to selecting. Students prioritized information needs about courses were: 1) required collaboration, 2) synchronous activities, and 3) amount of time spent on course work reported by previous students. Time management was determined by the student to be a significant factor in persisting in a course. Content concerns were secondary. Students also responded that they would rather receive information in pictograph form, such as snapshots and dashboard format as opposed to written format. The students saw this as simpler and clearer. Of note, the more online courses that the students had taken, the more complexity in presentation they would tolerate.

Lee, Choi, and Kim (2012) used multivariate analysis to identify significant predictors of attrition using the CPM as a framework. They focused on three of the components, *internal factors*, *external factors*, and *student skills*. The researchers administered two questionnaires measuring time and study environment, self-regulation, academic self-efficacy, academic locus of control, and support from family and friends. Results indicated that an internal academic locus of control and sufficient metacognitive self-regulation for learning skills influenced a student's persistence. There were no differences between persisters and drop out students in time and environmental management and family support. The researchers suggest the need for an assessment of a student's academic preparedness prior to admission.

Students leave a program due to either personal reasons or program reasons (Perry et al., 2008). In a qualitative study, these nursing researchers utilized Rovai's CPM to identify reasons for withdrawing from an online program. They explained that leaving a program fell into four categories that were related to internal and external factors discussed in the CPM. First, life circumstances interfered with the student's ability to continue studies. For example, a student stated "I can pull off the work and school balancing act, but my family gets the short end of the stick." (Perry et al., 2008, p. 7). Second, work commitments overcame the desire to persist. Learning style preference and evolving career goals, such as changing positions during the program marks a third reason for leaving a program. Others did not discover the poor fit with their goals until after starting the program.

In summary, researchers have used the CPM as a theoretical framework to study the student characteristics, student skills, and internal and external factors that predict persistence in graduate online programs. These components have been operationalized as factors that affect learning and persistence in a program, allowing faculty to evaluate, design, and implement strategies for student success.

Study Definitions

Several terms from the CPM model are relevant to this study. The conceptual and operational definitions for the study are presented in Table 2.

Table 2. Conceptual and Operational Definitions

Term	Conceptual Definition	Operational Definition
Persistence	Continuous progress toward the goal of completing a course or program, often despite difficulties; length of time an adult learner attends classes	Completion of the program in months; graduation

Table 2.—Continued

	Synonyms: completion, retention	
Attrition	Leaving a course or program after being accepted in the program and registering in a course. Synonyms: withdrawal, dropout, non-completion	Leaving the program
Student characteristics	<ul style="list-style-type: none"> • Personal characteristics describing the student e.g. age, gender, ethnicity, employment years in school • academic performance • academic preparation prior to entering the master's program 	Student age, gender, race / ethnicity UGPA Level of undergraduate education (BSN or RN-BSN degree)

From the CPM, it can be postulated that an individual student's characteristics prior to admission to an online program influence internal factors after admission, such as the degree of academic and social integration which, in turn, affects the student's ability to persist. Student factors, both personal and academic, that contribute to persistence in the online graduate nursing student were explored.

Purpose

The purpose of this predictive correlational study was to explore the relationship between students' personal characteristics, academic performance, and academic preparation on persistence in two online graduate nursing programs, Nursing Administration and Education. The theoretical framework for this study was based on Rovai's CPM.

Research Questions

The research questions answered in this study were:

1. What is the association between level of BSN education (BSN versus RN-BSN) and persistence in an online graduate nursing program?
2. Are students' personal characteristics, academic performance, and academic preparation predictors of persistence in two online graduate nursing programs?

Assumptions

The assumptions for this study were:

1. Students begin an online graduate nursing program with the goal of completion.
2. Persistence is multifactorial.

Summary

For decades, educators have been examining why some graduate students are successful in their studies and others are not. With the recent explosion of online programs in higher education, the questions asked were how graduate student success is determined and what factors influence success in online programs. It was expected that by identifying student personal and academic factors, interventions could be instituted to increase persistence among online master's degree program students.

CHAPTER 2

REVIEW OF RELEVANT LITERATURE

Introduction

This literature review presents the theoretical and empirical foundation for the proposed study examining the persistence of graduate students enrolled in online nursing programs. This review includes: 1) exclusively online education related to graduate nursing education programs, 2) characteristics of students enrolled in online graduate programs, and 3) factors of persistence in online education. A proliferation of research investigating success in undergraduate nursing programs is found in the literature. However, there is a paucity of research relating to the success of the graduate level nursing student, especially online.

The search was conducted using several databases through the University of Texas at Arlington Library: Academic Search Complete, CINAHL, ERIC, Health Source: Nursing/Academic, Medline, PsycARTICLES and Google Scholar. Key search words for this review of literature included online education, graduate nursing students, persistence, attrition, and success. These were combined using Boolean operators, such as online education AND graduate nursing students and graduate nursing students AND persistence OR attrition. Inclusion criteria for this review were published in the year 2000 and later, full text articles, peer reviewed journals, government documents, and written in English. Exclusion criteria were articles not related to online education or persistence and related topics.

Online Education

Online education is an accepted higher education delivery method and increasing in utilization globally. In the ninth national survey tracking online education, it

was reported that a majority (65%) of institutes of higher learning consider online programs strategic for future growth and success (Allen & Seaman, 2011). This follows a perpetual increase in online learning programs from 2002 to 2011. The upward trajectory of growth in online offerings is expected to remain strong through 2021.

The number of students taking online courses is significant. The Babson Survey indicates that in the fall of 2012, over seven million students are taking at least one online course out of a total enrollment in higher education of approximately 21.25 million students (Allen & Seaman, 2014). This represents a total growth of 6.1% of online enrollment in 2012 and 33.5% of the total enrollment. According to the American Association of Colleges of Nursing (Fang et al., 2014), 389 masters of nursing (MSN) programs have some component of online design.

Modes of Delivery

Online education is designed in diverse ways. Allen and Seaman (2011) define an online course as one that has at least 80% of content delivered online. Other options include web-facilitated and blended / hybrid programs. Web-facilitated courses continue to have face-to-face classes and supplement materials through a learning management system or web pages by an instructor. Blended or hybrid programs use both face-to-face and online formats for courses. A considerable amount of the content is online with fewer face-to-face interactions. Kumrow (2007) found that students learn well in hybrid nursing courses and were able to self-regulate their learning management strategies such as time management, study environment, help seeking and peer learning as one would expect in a traditional lecture course.

Online learning allows a student to engage in the learning process without boundaries of time and space (Gazza & Hunker, 2014). The learning environment is

flexible to meet the needs of the student. Course material may be delivered asynchronous, synchronous, or a combination of the two methods.

To answer the call for increasing the number of nursing graduates and advancing nursing education, nursing educators have designed innovative programs (Institute of Medicine [IOM], 2010; Lowery & Spector, 2014). One such design is the accelerated degree. These programs are generally 12-18 months long and appeal to second-degree students and students who do not have access to a college of nursing in their community. In a study comparing traditional versus accelerated baccalaureate nursing (BSN) graduates, Bentley (2006) found that there was no significant differences in NCLEX-RN pass rates. However, the researchers documented a 22% attrition rate for the accelerated BSN students. Rouse and Rooda (2010) found higher attrition rates in their accelerated BSN program than their traditional program (50% and 26%). Students cited different reasons for withdrawing which included personal reasons, health (self or family), change of major, and academic dismissal. Seldomridge and DiBartolo (2005) reported that up to 25% of students in the accelerated programs just stop attending courses. Financial challenges and the pace and intensity of the courses were the most cited reasons for this. Although there are increasing numbers of accelerated online nursing programs, few studies were found in the literature about graduate nursing programs utilizing this mode of content delivery.

Student Satisfaction in Online Education

Levy (2007) identified student satisfaction as a key component in the decision to drop out from online courses. From a sample of 133 online students in 18 different online classes, 25 students dropped out and 108 persisted. The researcher found that there was a significant difference in student satisfaction between the two groups; students who dropped out of the courses were less satisfied. The drop out students had a higher level

of frustration with the learning management system (WebCT) and group online activities. Less experienced students dropped more frequently than those more experienced in online education. Another reason cited for dropping a course was the perceived level of higher satisfaction if the course was dropped and repeated for a better grade. Interestingly, Levy reported an overall attrition rate of 18% in the online courses compared to a dropout rate of 8% in the on campus courses.

Herbert (2006) conducted a cross-sectional survey of university students in a mid-sized Midwestern University to determine student satisfaction with online courses. His survey revealed a 25% attrition rate of students who did not complete the course during the semester of the survey. The researcher identified several aspects of student satisfaction; faculty responsiveness being the most important predictor of satisfaction. The second predictor was quality of the instruction and thirdly, timely feedback to students.

In an exploratory study of 38 graduate Human Resource Development students, Johnson, Aragon, Shaik, and Palmas-Rivas (2000) found that students had a higher level of satisfaction based on instructor overall teaching effectiveness in the face-to-face course format as opposed to the online course, despite the instructor, content, and design of the course being held constant. However, the learning outcomes were similar.

Student satisfaction has been shown to influence persistence. The technological aspects of online learning, faculty responsiveness and timely feedback, and perceived teaching effectiveness have been shown to contribute to students' decision to stay or leave.

The Nontraditional Online Learner

Students who transition to post-secondary education immediately after high school are considered traditional college students. These students predominately

participate in face-to-face classroom experiences and join in many activities of campus life. It is to these students that higher education institutions direct the majority of resources (Kasworm, 2010). In the future, institutions will be required to focus more on the nontraditional adult learner as the numbers of adult learners increase on campuses. Due to social and economic pressures, many of these adult learners will be pursuing online education (Chen, 2014; Ross- Gordon, 2011).

Bean and Metzner (1985) recognized that the adult, nontraditional student is difficult to profile. The nontraditional student comes from all walks of life:

...from any part of the country, from rural or urban settings, rich or poor, black, white or Hispanic; 18 years or older: not employed, working full or part-time, or retired, male or female; with or without dependents; married, single, or divorced, and enrolled for vocational or avocational reasons in a single course or in a degree or certificate program (p.488).

From adult learning andragogy, it is theorized that the nontraditional student has a preference for self-directed study and is motivated to learn (Knowles 1980 as cited in Ross-Gordon, 2011). O'Neil and Fisher (2008) also posit that online learners tend to be more responsible and self-directed. These students have more effective time management skills and discipline themselves to study. In this study, students reported increased interactivity with faculty and peers and increased hours in the online course. The online students had higher test scores and final grades compared to the traditional participants. However, the nontraditional adult learner does have a higher rate of attrition (Angelino, 2007; Carr, 2000; Moody, 2004).

The nontraditional adult learner often requires the flexibility of an online environment due to multiple life roles. The typical nontraditional online learner may have a full-time job, a spouse or significant other, children, and live in an area without access

to a university. The nontraditional student most often attends school part time and may already have a degree (Britt, 2006; Ross-Gordon, 2011). There is often a significant gap in years after completing a bachelor's degree (Cohen & Greenberg, 2011). The nontraditional student may also have complex family care responsibilities. Also, nontraditional students' social groups are not associated with campus activities, as there is little time for campus involvement (Rovai, 2003). By attending an online program, the nontraditional adult student is able to pursue knowledge and skills to further a career, save travel costs, and work within a flexible schedule to reduce conflicting demands on their time (Park & Choi, 2009; Park, Perry, & Edwards, 2011).

Although there are many positive aspects of online education, there are challenges in the online learning environment. Time commitments of family and work, lack of technology skills and equipment required for courses, and difficulties with course assignments (e.g. working in groups) may impede student success. Faculty-student interactions were also found to be a challenge in online courses (Willging & Johnson, 2009). Students often fall behind due to the accelerated format (Britt, 2006). In Britt's study, students perceived that their courses were more difficult and the majority of the sample of 27 radiology and nursing students reported lower grades. Park and Choi (2009) found that lack of family and work support was detrimental to persistence.

Persistence

Persistence is an overarching theme in the literature in defining the success of students (Harrell & Bower, 2011; Park & Choi, 2009; Stanford-Bowers, 2008). Hart (2012) defines persistence in graduate programs as the ability of a student to remain in a course of study despite difficulties and complete all requirements in a program within a defined timeframe, resulting in the conferral of a degree. Haydarev, Moxley, and Anderson (2013)

define success more broadly as the attainment of the students' goals of education even if graduation does not occur.

Other terms have also been used to investigate student success in online programs. For instance, Aragon and Johnson (2008) and Nash (2005) define factors that contribute to completion or non-completion of online courses. Success is also characterized by retention in an online or distant education program (Jeffreys, 2007). Morris, Finnegan, and Wu (2005) describe student participation as the ultimate outcome of success online. Hart (2012) characterizes students as persisters or non-persisters.

At the other end of the spectrum, scholars have examined attrition or dropout rates to measure the lack of success in online programs (Park & Choi, 2009). Attrition has been defined as the antonym of persistence or the lack of persistence and leaving a program (Park, et al. 2008). Muller (2008) discusses stop out in a group of women online students. Students may remove themselves from a course of study and eventually return.

There is a lack of consistent terminology relating to success, persistence, and attrition in the literature (Hart, 2012; Muller, 2008). For most programs, the preferred outcome would be graduation despite personal or program difficulties. It is difficult to study persistence and, conversely, attrition due to universities lacking a common method for defining and tracking students using these terms. "Statistics on attrition or persistence compare apples to oranges" (Park et al., 2008, p. 228).

Rovai (2003) defined persistence as the "length of time that an adult learner attends classes" (p. 2). He considered persistence to be a positive attribute for the student and university. Hart (2012) built upon this definition and added that persistence is the "ability to complete an online course despite obstacles or adverse circumstances" (p. 30).

On the other hand, attrition is the departure from a program without successful completion (Hart, 2012; Rovai, 2003). Perry et al. (2008) considered attrition to be withdrawal from the graduate program after being accepted and registering for the first course. These researchers further categorized withdrawal as: 1) university withdrawal, when not meeting program requirements; 2) academic withdrawal or students who fail two courses in the program; and 3) student withdrawals, or personal reasons. Other researchers have used withdrawal after the census date or the after the last drop date. Of note, Perry et al. (2008) did not view attrition as detrimental to the student. Leaving a program may meet the goals of the student and as such would be appropriate.

Furthermore, persistence, or the lack thereof, is a problem in all online programs. Although aggregate rates of retention in online nursing programs are not published, it is known that leaving online programs is 10-20% higher than traditional programs (Wilson, 1999; Patterson & McFadden, 2009). In addition, attrition rates are higher in graduate programs than undergraduate (Cohen & Greenberg, 2011). In their study of part-time graduate students, Cohen and Greenberg (2011) identified many barriers to persistence that included competing responsibilities, lack of family and social support, personal health issues, and financial concerns. Attrition affects not only the individual, but the institution, as well. High attrition rates reflect poorly on an institution's reputation, impacting program promotion and recruitment (Willging & Johnson, 2009). Graduation and attrition rates are also used as an indicator of program success for program accreditation (Rice, Rojjanasrirat, & Trachsel, 2013).

Barriers to Persistence

Marshall, Greenberg, and Machun (2012) posit that students generally do not have the information they need for decision-making prior to choosing an online route. They identified that prior to enrolling, students want information on the course attributes

to help them manage their time, such as the amount of collaboration expected and previous student reports of the amount of time spent on the course. Students often enter into online education with little knowledge of the time commitment involved (Nash 2005). Nash also found that students attempt too much in one enrollment period. Another issue noted was the difficulty of the course work. Students may enroll in online courses because they have the misconception that they are easier (Nash, 2005).

Learning styles can also be a factor in online persistence and lead to withdrawal. Students with an auditory learning style may have problems in the online environment (Harrell & Bower, 2011). The student's proximity to graduation can influence persistence in an online program. For instance, students in the beginning courses are at higher risk for attrition than those toward the end of the program. Levy (2007) found that the closer the student is to graduation, the greater the persistence to complete the program. Students withdraw from courses in the beginning of programs, often within the first semester.

Another issue that can affect students in online courses is lack of technological expertise. Harrell and Bower (2011) found that advanced computer skills positively correlate with persistence. Poor computer skills may prevent students from accessing and utilizing electronic resources such as e-libraries and learning management systems necessary to complete coursework (Levy, 2007).

Rovai (Rovai, 2003; Rovai & Grooms, 2004) relates success in online education to student satisfaction. Feelings of isolation, frustration with computer mediated communication with peers and faculty, and lack of prompt and clear feedback influence satisfaction within a course or program.

Administrators and researchers in colleges of nursing have attempted to identify these predictors of success in order to develop interventions to increase persistence

rates in their graduate programs. Park, et al. (2008) reported that the current methods of measuring persistence for selection into a program do not underscore the complexity of the problem. Selection processes for a program are currently being determined by interviews, grades, and psychological testing. These measures may be inadequate in predicting success. Online programs expose additional factors when determining student success. Student persistence rates remain an issue for online nursing programs. Rovai (2003) posits that we must understand the factors of persistence in order to satisfy student's needs.

Persistence factors can be categorized as student characteristics, student prior skills and academic performance, external factors, and internal factors. (Cohen & Greenberg, 2011; Park, 2007; Rovai, 2003). Student characteristics are those characteristics present prior to admission to a program, such as demographic and academic attributes. In addition, students should demonstrate skills that will be useful in participating in an online academic program, including computer and information literacy, time management, and study skills (Park, 2007; Rovai, 2003). External factors most often investigated according to Park (2007) are time conflicts, family issues, financial difficulties, and job support. In addition, Park posited that the external factors are the most difficult to manipulate to prevent attrition due to the lack of control by the faculty or program managers. Lastly, Park (2007) identified several internal factors from the CPM (Rovai, 2003) present after admission to a program which included individual and institutional characteristics necessary for the success of the student, such as social and academic integration, involvement in a learning community, and teaching pedagogy, among others. Student characteristics included in this study will be discussed in the following section.

Student Characteristics

Student characteristics influence success in an online program. Age, gender, ethnicity, intellectual development, academic performance and academic preparation are thought to effect persistence in varying degrees.

Age. The majority of graduate students are nontraditional; age upon admission of 25 years or greater. Age is thought to be a significant factor in persistence in both online and on-campus based graduate degree programs. Some researchers found that older age was the only demographic characteristic to affect the attrition rate in a group of graduate online and on campus students. (Patterson & McFadden, 2009; Pierrakeas, 2004; Xenos et al., 2002).

Gender. According to Rovai, women are more successful in online programs than men due to communication styles. This was thought to be associated with differences in communication patterns and connectedness (Rovai, 2002; Rovai & Baker, 2005). This was validated in a study of graduate Human Resource Development students in an online program that found males were more likely to leave the program. This is of significance to nursing, as men comprise a small minority (10%) of the total number of nurses in graduate programs (Fang et al., 2014). The recruitment and retention of male nurses is a priority for stakeholders in the nursing profession as the need for diversity in the workforce exists.

An examination of graduate student women revealed that the mother role greatly affects success in a program of study and places the student at a higher risk of attrition (Lynch, 2008). In a qualitative study, it was found that from a cultural aspect, women have expectations in their mothering role that may not be congruent with the emotional intensity and time required for pursuit of an advanced degree. Lynch found that

environmental structures, including financial support and childcare issues, may lead to attrition.

Race and ethnicity. Ethnic and racially diverse individuals account for approximately 40% of the United States population (United States Census Bureau, 2014). However, less than one quarter of registered nurses in the workforce represent ethnic and racially diverse backgrounds (Fang et.al, 2014). Presently, 29% of graduate nursing students enrolled in master's degree programs are from minority backgrounds (Fang et al., 2014). Attrition of minority students is high in graduate programs and exacerbates the problem of too few of minority nurses graduating.

Rovai (2003) suggested that minority students may feel isolated in online courses and not feel connected. While no studies were found describing the influence of online education on ethnically diverse graduate nursing students, two studies were reviewed regarding facilitators and barriers to persistence in a graduate nursing program. When interviewed in focus groups, ethnically diverse graduate nursing students divulged that returning to graduate school caused multiple stressors: not feeling connected, existing within the cultural environment, and difficulty with utilizing technology (Veal, Bull & Miller, 2012). Over time, the majority of students were able to integrate socially and achieve academic success when utilizing institutional and peer support.

Bond et al. (2012) were interested in the perceptions of hardiness, institutional support and social support of minority graduate nursing students. Students reported adequate institutional support in the form of advising and technical support. However, social support and mentoring were lacking and may have influenced the lack of persistence in this population. The authors voiced concern about this perception in light of the proliferation of online programs that may potentially decrease socialization even further. Of interest, there was a 24% attrition rate during the three-year period of this

descriptive, pilot study; no reasons for the dropouts were provided. It is evident that studies on diverse graduate students are needed.

Academic Factors

Academic performance. Undergraduate grade point average (UGPA) was found to be a predictor of success in a study conducted by Newton and Smith (2007). In this sample of 120 graduate nursing students, a cut off of 3.28 UGPA was determined to measure persistence in the graduate program. In addition, the UGPA was able to predict Graduate Record Exam performance, e.g. those students with higher UGPA had higher verbal and quantitative GRE scores. The authors conservatively recommended that the GRE may not be necessary admission criteria for their nursing program. In another study comparing Masters in Business Administration and Masters of Communication Sciences and Disorders (MCSD) students, Patterson and McFadden (2009) also found that UGPA was inversely related to attrition rates in the MCSD online master's program.

In a secondary data analysis, Cameron (2013) reviewed 507 application records between 2005 and 2010 in a public university college of nursing. This researcher found the BSN GPA to be higher for those that applied to the face-to-face MSN programs. However, there were no significant differences between the admission and graduating GPA scores between the online and face-to-face programs. The author posits that the programs would, therefore, be considered equivalent.

Participation in online courses was also found to be an important component of academic performance. Nistor and Neubauer (2010) observed interactions with faculty and peers within a course including emails to the faculty, total number of messages, length of messages and activity in the discussion boards. The researchers found a significant difference between persisters and drop out students, with the drop out group participating less in the course activities.

Academic preparation. Graduate school applicants pursue several pathways to the prerequisite BSN. All BSN programs adhere to the *The Essentials of Baccalaureate Education for Professional Nurse Practice* (AACN, 2008), whether traditional BSN, RN-BSN, on-campus or online. These program requirements delineate the didactic and clinical experiences required in all BSN programs. Yet some have questioned the rigor of the RN-BSN programs compared to the traditional BSN. Mancini et al. (2015) demonstrated that accelerated online RN to BSN students are similar to on-campus students in terms of persistence to graduation when controlled for the number of courses taken during enrollment in the program. On-campus students usually took prerequisite courses prior to starting the nursing program and online students took courses concurrently with nursing courses. Allowing for the time in program differences, online students had a 93% graduation rate and on-campus, 94%.

A lack of academic preparedness is often demonstrated by students entering a graduate nursing degree program (Pintz & Posey, 2013). One concern is that students have not used writing and research skills in their nursing employment. Another issue is the lack of exposure to online learning technologies prior to admission, signifying the student may have a deficit in academic skills necessary for the online environment.

Hoffman and Hester (2012) posited that students go through a period of transition when entering into a master's degree program mediated by their academic preparedness. They found that students had a lack of understanding of the research process and few had participated in scholarly activities prior to entering the nursing program. The researchers also explored whether students would utilize institutional support services to assist with a smooth transition into the program including orientation, a research enhancement program, library services and the academic writing center, and individual academic consultation. Findings for this study demonstrated that institutional

services, such as the writing center, were not utilized effectively. This was concerning, as English language proficiency was an issue for this program in an English-medium university in South Africa and contributed to transitional challenges for graduate nursing students.

English language competency can also be a challenge for international students attending programs in the United States (Olson, 2012; Poyrazli & Grahame, 2007). In a systematic review, Olson (2007) reported that English-as-a-second language (ESL) nursing students have significant barriers to achieving academic success. English reading, writing, and comprehension are problematic as well as listening and verbal skills. Cultural differences may impact the way that ESL students interact with faculty and patients. For example, in some cultures ESL students would not challenge a faculty on content out of a sense of respect and would not ask for direct assistance.

Poyrazli and Grahame (2007) conducted focus groups with a small group of ESL students in a semi-urban university community. They found that the students felt ill-prepared to meet the challenges of academic life. Of particular concern was communication, both with faculty and peers. Students may have problems participating in class due to a need to translate and have a difficult time understanding colloquial speech.

Cohen and Greenberg (2011) examined institutional and external factors that influence persistence in a sample of 465 graduate online students. Using a survey method, the researchers identified that advising, use of the library, and faculty-peer interactions were very important to the student in an online program. Rovai (2003) recognized that deficits in academic preparation, including online student skills, can be mediated prior to or concurrent with admission into an online program. Students at risk should be identified and programs put in place, such as early counseling and creating a learning community, connecting the students to the faculty and institution.

Summary

Researchers have identified possible attributes of students who persist in their programs of study. However, there is inadequate research describing factors associated with persistence in online nursing education. Several modes of program content delivery were described; however, it is noted that few studies were found describing students in accelerated graduate programs or their persistence or attrition. There were also few studies in the nursing literature that predict factors of persistence in graduate online nursing programs.

CHAPTER 3

METHODS AND PROCEDURES

Introduction

This predictive correlational study explored the association between the association of student characteristics and academic performance on the outcome of persistence. Logistic regression was used to develop a model of predictors of persistence. This chapter begins with a description of research design, sample, and setting. Measurement method, procedure, ethical considerations are discussed. The chapter concludes with data analyses, and delimitations.

Research Design

A predictive correlational study design using secondary analysis was conducted. A secondary analysis uses an existing data set to answer research questions. The data can be originally collected for many uses: administrative, clinical, educational, census, or from another study (Law, 2005). For this study, administrative data was used to describe the demographic and academic predictors of persistence in online graduate nursing students. Doolan and Froelicher (2009) recount the advantages of secondary analysis as expending less time and financial resources in conducting a study. This design also had weaknesses. In a secondary analysis, the researcher has no control over the choice of variables or the way the data was collected. It is not known if the measurement methods used were reliable or valid (Hulley, Cummings, Browner, Grady, & Newman, 2007).

This retrospective study examined the predictors of persistence in online graduate nursing students. The independent and dependent variables of interest were known to be included in the Central Advising Record (CAR) and ImageNOW databases, thus a measure of control existed for this study.

Studies to Support the Use of Secondary Analysis

It is not uncommon to see nurse researchers conducting studies using secondary analysis of available data. A descriptive study using archival data was conducted to examine and compare the student characteristics of online graduate nurses in on-campus and online programs (Cameron, 2013). Using five years of data, the researcher was able to determine that while the on-campus students were admitted to the program with a higher undergraduate GPA, there were no significant differences between the MSN GPA's at the end of program between the two groups. Therefore, she surmised that the program outcomes were equivalent. The researcher reported a limitation of the study as few variables being available and only two programs had data to use. Cameron suggested that the information from this study could be used to provide advisors insight into program successes.

In another secondary analysis study, Rouse and Rooda (2010) described the success of an accelerated online BSN program using demographic, academic, and admission records. The first two cohorts were examined for graduation and attrition rates. The authors found a high rate of attrition in both groups (29% and 50%). The researchers posited that results from this study could be used to develop interventions to decrease attrition. A limitation of the study was only using data from two cohorts and plans were voiced to continue to analyze archival data at the college of nursing (CON).

Mancini et al. (2015) reported a comparative analysis of five years of data from a large online RN-BSN program versus on-campus RN-BSN students. They found that students in the online group were significantly older and predominantly Caucasian compared to the on-campus nursing students. International students were only included in the on-campus program due to VISA restrictions. On-campus students took less time to graduate and had a higher graduation rate. However, a large number of online

students continued to progress toward graduation despite not graduating as quickly. These researchers used regression modeling to explore the outcome of student success.

Sample

Data for this study was abstracted from the CAR and ImageNOW databases for a large college of nursing in the southwest. The sample included graduate nursing students enrolled in two online master's programs, Nursing Administration and Nursing Education. This CON has a large, diverse student body and is home to the largest nursing program for online Nursing Administration and Nursing Education in the state with an estimated 8,000 online students. Program requirements for the Administrator and Nurse Educator tracts include 12 online courses, delivered in either five or ten week terms. Students may complete the program in as few as 21 months. Data collection began with the most recent group of graduates from Fall of 2014 and going backward to previous years until an adequate sample, as determined by power analysis, was obtained (N=197).

Inclusion criteria for this study was graduate nursing students enrolled in online graduate programs in Administration and Education that met the enrollment criteria of the undergraduate GPA and a minimum of two years of clinical experience. Subjects were excluded if enrolled in the online RN to MSN program or withdrew from the program after enrollment and prior to their expected start date in a course.

Power analysis was performed using G*Power 3.1.0 for a Chi-square test to measure the difference in persistence in students from a generic BSN versus RN-BSN program. A probability level of .05, power of .80, and small effect size (0.2) were used to calculate the a priori sample size of 197. No prior studies of the association between type of baccalaureate program and student persistence were retrieved to assist in estimating effect size; therefore, a small effect size was used in the power analysis. This projected

sample size of 197 will support sufficient power for a logistic regression model with five predictors (Vittinghoff & McCulloch, 2006).

Subjects were selected consecutively in the education and the administrative tracks beginning with the cohort of students in the Fall of 2014 and continuing backward until the sample size of 197 is met. The use of a consecutively chosen sample of students minimized selection bias (Hulley et al., 2007).

Setting

The setting for this study was a large urban university in the north central region of Texas. Total enrollment approached 48,000 students for on campus and online programs. The university has a diverse population with 22% Hispanic, 15% African American, 10% Asian and 11% International (UTA, 2015). Online nursing students lived across the United States.

Measurement Methods

Data collection was performed by a review of existing electronic student records. The source of the data was extracted from the CAR and ImageNOW software databases for the college of nursing. The dependent variable of persistence was defined as completion of the course of study within 36 months of matriculation. It was expected that students will graduate from an online graduate program within 36 months (J. Gray, personal communication, October 3, 2014). Independent (predictor) variables are those student characteristics and academic performance variables associated with student persistence as identified in Rovai's model (2003). Independent (predictor) variables are those student characteristics of age, gender, race/ethnicity, undergraduate GPA, and type of baccalaureate program (BSN or RN-BSN).

Procedure

Approval from the Institutional Review Board of the university was sought. After approval was obtained, a review of the ImageNOW database was conducted beginning with the most recent graduates from the online MSN Administration and Education programs. Moving backward from that point in time, participants were consecutively enrolled until the target number of 197 is reached.

CAR and ImageNOW are software programs used by the college of nursing that enables document storage and retrieval from many sources. This program stores the information from all student admissions and subsequent data obtained during the course of the student's enrollment in the college of nursing. The data required for this study was extracted from CAR and ImageNOW and entered into the researcher's database for analysis. Accuracy was established by a random selection of 10% of the student's files for audit. It was not necessary to review a larger percentage of student files due to less than 10% inaccuracies in data extraction found. In the event of missing data, no subjects were excluded. The data collection tool is located in Appendix A.

Ethical Considerations

Loss of confidentiality is an inherent risk for administrative data analysis as the student identifier is originally stored with the data set. In order to assure confidentiality, the subject information was de-identified. Each subject was assigned a unique identification number and the student information was separated from the student identification. The code sheet with the unique identification number and the student identification number were stored away from the database in a secure location. Additionally, the list of databases and the data contained therein were kept in a separate file and locked in the researcher's file cabinet at the university. The encrypted flash drive

with the researcher's database and a hard copy of the record was secured in a locked file cabinet at the university.

Data Analyses

IBM SPSS Statistics 23 was used to perform analysis of data. Descriptive statistics were used to report age, race/ethnicity, undergraduate GPA, and type of baccalaureate program. A logistic regression model was created to evaluate the contributions of the independent variables (age, gender, race/ethnicity, undergraduate GPA, baccalaureate program) on the dependent variable of persistence (completion of graduate program within 36 months). Due to a non-normal distribution of age and UGPA data, a Mann-Whitney *U* statistical test was used to compare age and undergraduate GPA in students who persisted versus those who did not. Chi-square analysis was used to compare the categorical data of race/ethnicity, gender, and BSN program level in persisters vs. non-persisters.

Delimitations

Only graduate nursing students who were enrolled in the online MSN for administration and education at one college of nursing were recruited for the study. Data was obtained from a convenience sample; therefore, the generalizability of the study results will be limited.

Summary

A secondary data analysis was used to describe the persistence of online graduate nursing students in two master's degree programs tracts, administration and education. Secondary analysis is a method that has been used by nursing researchers to describe the success of nursing programs. Secondary analysis of existing data enabled the creation of a predictor model of student persistence. Although a disadvantage of

using a secondary analysis is a lack of variable choices, this data set contained the variables of interest in this study.

CHAPTER 4

FINDINGS

Introduction

The findings of this predictive correlational study are presented in this chapter. Descriptive statistics for the personal and academic variables (see Figure 1) and results of the analyses used to answer each research question will be reported. Results of the logistic regression model identifying predictors of persistence to graduation for students in two online graduate nursing programs are included. The chapter concludes with supplemental results discovered in the analysis of the students' data.

Results

Sample Description

The sample included 197 graduate nursing students enrolled in either the online Nursing Administration (n = 160) or Education (n = 37) programs at a large, urban university in the north central region of Texas from February 2011 to December 2014. Data were obtained from an existing electronic database for the College of Nursing. Students were selected consecutively in three cohorts beginning in Fall 2014, and continuing backward until the pre-determined sample size was reached.

The overall age range of the 197 students was 24 to 65 years (M = 40.36, SD = 9.174). The sample of students consisted of 182 (92.4%) females. Out of the total sample of students, 195 reported their race/ethnicity on the original college application. The race/ethnicity characteristics of the sample were White 61.9% (n = 122), Black 22.3% (n = 44), Hispanic 13% (n = 26), Asian 13% (n = 13), American Indian 1% (n = 2), and Native Hawaiian 0.5% (n = 1).

The 197 students in this study attended from 1 to 52 months. Of the 197 students, 94 students (47.7%) persisted to graduation within 36 months (persister) and 103 students (52.3%) entered a program and did not graduate within 36 months (non-persister).

The majority of the graduate nursing students obtained their BSN from an RN-BSN program as opposed to a traditional BSN degree. One hundred twenty three (62.4%) students held a BSN from an RN-BSN program while 74 (37.6%) had a traditional BSN degree. No students were found who graduated from an online, traditional BSN program. The majority of the students (n = 86) in the online graduate Nursing Administration and Education programs received their BSN from the same university's online RN-BSN program.

The undergraduate grade point average (UGPA) for the entire sample ranged from 2.68 to 4.00 on a 4-point scale. The mean was 3.5059 (SD = .31).

Analysis of Personal Variables

The personal variables examined in this study were age, gender, and race/ethnicity. A comparison of these variables for those who persisted and those who did not was conducted. Because the distribution of the age variable was skewed (Kolmogorov-Smirnov statistic = .135, p = .007), a nonparametric test, Mann-Whitney U, was performed to compare age in persisters and non-persisters. There was no significant difference in age between the persisters (Md = 38, n = 94) and non-persisters (Md = 41, n = 103), U = 4316.500, z = -1.313, p = .189.

Of the 182 females, 88 (48.4%) were in the persisters group. Six (40%) persisters were males. In the non-persisters, 51.6% were females (n = 94) and 60% were males (n = 9). To explore the relationship between gender and graduation within 36 months, a Chi-Square test for independence was conducted. A Chi-square test for

independence with Yates Continuity Correction (used to compensate for the overestimation of the X2 value when using a 2X2 crosstabs table) indicated no significant difference between gender and persistence to graduation, $X^2(1) = .125$, $p = .724$. The proportion of males who graduated within 36 months is not significantly different from the number of females who graduated within the same timeframe.

For the race/ethnicity variable, two missing values, comprising 1% of the total sample, were entered as missing data ($n = 195$). To adjust for the missing data, the analyses excluded the cases pairwise. The race/ethnicity categories were collapsed to prevent violation of the assumption for chi-square regarding the expectation that at least 80% of the cells have a frequency of five or greater (see table 3). The percentage of each racial/ethnic group graduating within 36 months was found to be 69.2% of Hispanics, 61.5% of Asians, 47.5% of Whites, and 40.1% of Blacks. A Chi-square for independence revealed that there was no significant association between race/ethnicity and graduation status, $X^2(3) = 3.676$, $p = .299$.

Table 3 Personal characteristics of online graduate nursing students

Characteristic		Persister Students n (% or Mean (M))	Non-persister Students n (% or Mean (M))	p
Age		94 (M = 39.34)	103 (M = 41.29)	ns
Gender	Male	6 (6.4%)	9 (8.7%)	ns
	Female	88 (93.6%)	94 (91.3%)	
Race/Ethnicity	White	58 (61.7%)	64 (62.1%)	ns
	Black	18 (19.1%)	26 (25.2%)	
	Hispanic	9 (9.6%)	4 (3.9%)	
	Asian	8 (6.5%)	5 (4.9%)	
	American Indian	1 (1%)	1 (1%)	
	Native Hawaiian	0 (0%)	1 (1%)	

Table 3.—Continued

Race/Ethnicity (collapsed)	White	58 (61.7%)	64 (62.1%)	ns
	Black	18 (19.1%)	26 (25.2%)	
	Hispanic	9 (9.6%)	4 (3.9%)	
	Other	9 (9.6%)	7 (6.8%)	

Analysis of Academic Variables

The academic variables (performance and preparation) explored in this secondary analyses were UGPA, type of baccalaureate program (BSN or RN-BSN), and length of time in the program. Results of the comparison of students who persisted and those who did not on the academic factors of UGPA and type of BSN program are presented in Table 4.

Table 4. Academic characteristics of online graduate nursing students

Characteristic		Persister Group n (% or Mean(M))	Non-persister Group n (% or Mean(M))	p
UGPA		94 (M = 3.5524, SD = .3188; Md = 3.61)	103 (M = 3.4634, SD = .2969, Md = 3.44)	.027
Type of baccalaureate program	BSN	33 (35.1%)	41 (39.8%)	ns
	RN-BSN	61 (64.9%)	62 (60.2%)	
Type of baccalaureate program (expanded)	BSN	33 (35.1%)	41 (55.4%)	ns
	RN-BSN	8 (8.5%)	7 (6.8%)	
	RN-BSN online	53 (56.4%)	55 (53.4%)	

Due to the non-normal distribution of the undergraduate GPA scores (Kolmogorov-Smirnov statistic =.087, p =.001), a Mann-Whitney U test was used to compare the UGPA between the graduate students who graduated from a BSN or RN-BSN program. There was a significant difference in the UGPA between the two

baccalaureate programs, revealing that the RN-BSN students had higher UGPAs (Md = 3.63, n = 123) compared to BSN (Md = 3.33, n = 74), $U = 2630.00$, $z = -4.958$, $p = 0.00$. A Mann-Whitney U test was also used to compare the UGPA of persisters and non-persisters in the online graduate nursing student sample. It was determined that there was a significant difference in the UGPA values between the two groups, with the persisters having a higher undergraduate GPA than non-persisters ($U = 3959.00$, $z = -2.207$, $p = .027$).

Length of time in the program was reported in months. The range in months for the 197 students was 1 to 52 months. Students that persisted and graduated in the program attended an average of 23.55 months ($M = 23.55$, $SD = 3.181$). The average number of months in the program for non-persisters was 7.46 ($M = 7.46$, $SD = 9.382$). Of the students who did not complete the program within 36 months, 17 out of 103 (16.5%) withdrew in the first course. Twenty-nine students (28.16%) left the program due to poor academic performance ($GPA < 3.0$), either not returning after being placed on probation or dismissed from the program. Four students (4.27%) completed the program in greater than 36 months. The majority (51.46%) of the non-persisters were academically successful in the program at the time of leaving the program, completing at least one course and not returning in the next term. However, 44% of students who began the program left after one or two courses, regardless of academic standing.

Additional Findings on Persistence

In addition to the potential predictors of persistence explored in this secondary analysis, additional information about factors influencing students' decisions to withdraw was explored. With only 28% of students in the sample withdrawing for poor academic performance, the majority left for other reasons. Additional insight into these reasons was sought from documents that students complete when withdrawing from a course and/or

the program. Only 26 forms were retrieved for the 103 students who did not persist. The inability to obtain all of the withdrawal forms was likely due to the fact that some students leave without completing the form, and that the college of nursing was transitioning to an online database archive for these forms during the period that the students were in the program. See table 5 for reasons for leaving the program.

Table 5 Reasons for leaving the graduate program

Reason	Number (%)
Family issues (family issues, health issues, death in the family, problem pregnancy, divorce)	10 (38.5%)
Academic performance	4 (15.4%)
Changed to another program/university	3 (11.5%)
Did not return from LOA	2 (7.7%)
Does not like online courses	1 (3.8%)
Course content too difficult	1 (3.8%)
Work schedule	1 (3.8%)
Finances	1 (3.8%)
Moved out of country	1 (3.8%)
Poor communication with administration	1 (3.8%)
Plagiarism	1 (3.8%)

Association between Level of Education and Persistence

In order to determine if there was an association between the baccalaureate levels, BSN versus RN-BSN, and persistence in an online graduate nursing program, a non-parametric test was conducted for categorical variables. A Chi-square for independence revealed that there was no significant association between the levels of

BSN and RN-BSN and persistence status, $X^2(1) = .284, p = .594$. The category of BSN levels was expanded to explore if the online RN-BSN level would establish an association between BSN, RN-BSN, and online RN-BSN and persistence in a program in this sample (see table 2). Statistical results demonstrated that there was no relationship between the three levels and persistence in graduation within 36 months; $X^2(2) = .559, p = .756$ (see Table 4).

Predictors of Persistence

Logistic regression analysis was performed with graduation as the dependent variable and age, gender, race/ethnicity, level of undergraduate education (BSN or RN-BSN), and undergraduate GPA as predictor variables. The overall model was significant, $X^2(1) = 4.299, p = .038$. The GPA variable was significant (Wald 5.054, $p = .025$), showing that as undergraduate GPA increased, the likelihood of graduation increased.

Summary

In this sample of 197 students, analyses revealed that one academic characteristic, undergraduate GPA, was a significant predictor of persistence to graduation within 36 months. Logistic regression analysis demonstrated that as the UGPA of students increased, the likelihood of successful graduation increased. Age, gender, race/ethnicity, or level of BSN were not found to be predictors of persistence. Differences between those who persisted and those who did were explored on the demographic variables and none were identified. There are likely additional predictors of persistence that were not analyzed in this study such as family issues.

CHAPTER 5

DISCUSSION

Introduction

To meet the increased demand for advanced practice, education, and leadership in nursing, faculty and administrators of colleges of nursing must focus on improving persistence rates in online nursing graduate programs. Many factors have been identified that impact persistence, but few studies have been conducted in graduate nursing education (Jeffreys, 2015). The purpose of this study was to explore the influence of selected student characteristics (age, gender, and race/ethnicity), academic performance (undergraduate GPA), and academic preparation (the level of BSN program attended) on students' persistence to graduation in two online graduate nursing programs.

The importance of advancing nursing education was discussed in the first chapter. Rovai's Composite Persistence Model provided the framework to identify selected student factors leading to persistence in online graduate programs.

In chapter two, relevant literature on online graduate education related to persistence in graduate students was reviewed. Studies identified student characteristics and student academic skills as important influences on persistence in online programs, however, studies on student demographic factors had conflicting results in the literature. Four studies documented persistence in online graduate nursing students.

A predictive correlational study using secondary data analysis was chosen to evaluate persistence in students with selected demographic or academic performance and preparation in an online graduate nursing program. The study methodology was discussed in chapter three. A secondary analysis is limited by the finite data previously collected. However, this database contained the selected variables for this study. The sample was drawn from an administrative database in the CON. To decrease bias in a

convenience sample, consecutive subjects were chosen in three cohorts. The analyses were performed after a power analysis was performed to ensure adequate sample size. Appropriate statistics were performed to match the study design.

The results of the data analyses were reported in chapter four. Students who persisted to graduation were comparable in age, gender, and race/ethnicity to those who did not persist. Results of logistic regression analysis demonstrated that higher undergraduate GPA was associated with higher rates of persistence. The level of BSN (traditional or RN-BSN) was not a predictor of persistence in this sample.

Interpretation of Findings

Overall Persistence

Persistence rates in higher education are of major concern. This is particularly true for nursing as the need for masters prepared practitioners, faculty, and administrators is great. Low persistence rates mean fewer numbers of nurses to fill vacant positions. Individual universities' persistence rates are generally proprietary and no recent persistence/dropout rates in nursing programs were found in the literature. Patterson and McFadden (2009) reported a dropout rate of 24.5% in an online Communications program and 43% in a Master's of Business online program. It is generally accepted that the attrition rate for graduate students is high – approximately 50% nationally (Cohen & Greenberg, 2011). The persistence rate for this sample of graduate nursing students in the Nursing Administration and Education programs at this university was 47.7%.

Not only do lower persistence rates negatively affect the individual student who withdraws, but also the university. Persistence is a metric by which colleges of nursing are evaluated. Loss of student revenue impacts the university, as well. With tuition of \$17,000 and \$20,000 per student for the MSN in Administration and Education,

respectively, a conservative estimate of potential lost revenue for this sample was \$891,000 per year (University of Texas At Arlington, 2015). Due to the impact on the individual, college of nursing, and university, it is critical that persistence rates are addressed.

Personal Factors of Persistence

Age. The majority of graduate students are considered nontraditional, defined as being over 25 years of age. The mean age of students in the sample was 40.36 (SD = 9.174) with a range of 24- 65 years old. These findings are comparable to those in other studies (Perry et al., 2008; Willging & Johnson, 2009). No significant difference in age was found between those students who persisted to graduation and those who did not. This is consistent with several researcher's findings when studying persistence (Levy, 2007; Park & Choi, 2009; Patterson & McFadden, 2009) However, others have found that older age was a factor in students leaving a program (Pierrakeas, 2004; Xenos et al., 2002).

Gender. Of the 95,344 students in the United States reported to be enrolled in master's degree programs in nursing in 2013, 10.3% were males and 87.9% were females (Fang et al., 2014). This large percentage of females is consistent with the historical majority of women in nursing. Males comprise a slightly smaller percentage (7.6%) in this sample of Nursing Administration and Education students. This may be explained by the propensity of men preferring faster paced specialty areas such as critical care and emergency (Stokowski, 2012). It is documented that 41% of nurse anesthetists are men, another indication direct patient care is preferable (Budden et al., 2013).

In this study, 60% of men did not complete their program compared to 51.6% of women. In a study of undergraduate male nursing students, McLaughlin, Muldoon, and

Mountray (2010) showed that men in nursing have a higher attrition rate. No studies specific to men in online graduate nursing programs were retrieved. In a study of online graduate students in an instructional technology program, Waugh and Su-Searle (2014) found that younger males were more likely to complete a program, though the sample was small.

Rovai (2001) found that women tended to be more successful in online programs due to connected communication patterns and an enhanced sense of community. Men, on the other hand, were more voice independent, leading to the possibility of feelings of disconnectedness and a perception of isolation in the online environment. Müller (2008) also discussed engagement in the learning community as facilitating persistence in women. As with age, no significant difference between gender and persistence was found in this sample. One explanation for this finding may be that in the MSN in Administration and Education programs, strategies are in place to enhance a sense of community in the online environment.

Race and ethnicity. The 2014 US Census revealed that 62% of the population is classified as White, 15.5% Hispanic, 13.2% Black, and 5.4 % Asian. Ethnically diverse nurses play an important role in the care of a growing minority populace; yet, the numbers of ethnically diverse nurses are not keeping pace with the current rapid growth of the general minority population (Veal, Bull, & Miller, 2012). Minority nurses in the workforce remain underrepresented at 19% (AACN, 2014). However, in this sample of graduate nursing students, 38.1% were considered ethnically diverse, significantly higher than the national average of 29.3% (AACN, 2014) in graduate nursing programs. The minority persistence rate was 38.3% for this sample of graduate nursing students in the Nursing Administration and Education programs at this university. Fang et al. (2014) reported that in 514 graduate nursing programs in 2013, the graduation rate was 27.4%

for minority graduate students. Furthermore, the proportion of the minority students graduating within 36 months was high within each ethnicity group, Hispanics (69.2%), Asians (61.5%) and Blacks (40.1%). In this study, there was no significant association between race/ethnicity and persistence, although students in this study persist at a greater rate than the general graduate minority nursing student.

Academic Factors of Persistence

Academic performance. A significant finding from this study was that students who persisted to graduation within 36 months had a higher undergraduate GPA (UGPA) than those who did not persist. The mean UGPA score for persisters was 3.5524 (n = 94) and non-persisters, 3.4634. This is consistent with several studies of graduate nursing students. Suhayda, Hicks, and Fogg (2008) determined that a combination of the cumulative nursing GPA of 3.0 and the UGPA of 3.25 were predictive of 99% success in a nurse anesthetist program. Likewise, Newton and Moore (2007) found that a cut score of the UGPA 3.28 would be a greater predictor of program success than a Graduate Record Examination score. In the current study of the Nursing Administration and Education programs, there were 34% non-persister students and 19% persister students (or 53% of all students) with a UGPA score of 3.28 or lower. Although Harrell and Bower (2011) conducted their study on undergraduate nursing students, they found that students with higher GPAs are better able to function in an online setting and practice successful academic behaviors, which would be applicable to the students in this sample. In a study of family nurse practitioner students, Cameron (2013), found that the UGPA in on-campus students were higher on admission than online but it did not affect the graduation outcomes between the groups.

Academic preparedness. No previous studies were found that compared the level of BSN program attended and persistence in a graduate nursing program. In this

study, results indicated that there was no relationship between the three levels of BSN education, traditional BSN, RN-BSN, and online BSN, and persistence in graduation within 36 months; $\chi^2(2) = .559, p = .756$.

Predictor Model of Persistence

A set of demographic and academic variables identified in the review of literature were entered into a logistic regression model to predict whether the variables (age, gender, race/ethnicity, UGPA, and level of BSN education) predicted the outcome of persistence (graduation from the Nursing Administration or Education program within 36 months). Student characteristics of age, gender and race/ethnicity were not significant predictors of persistence in this sample, though Levy (2007) suggested that demographic characteristics may have a minimal effect on persistence.

When academic factors were explored as potential predictors of persistence, level of BSN education was not a significant predictor. The analysis revealed that UGPA was a predictor of persistence in this sample of students from two online graduate nursing programs, with higher UGPA, being associated with a greater likelihood of persistence to graduation.

Limitations

Limitations are acknowledged in this study. A predictive, correlational design using secondary analysis limited the number of variables and data that could be collected to those available in the Central Advising Record (CAR) and ImageNOW databases used by the college of nursing. Other demographic variables such as marital status, years of nursing experience, and number of hours worked may have provided insight into the predictors of persistence. Only one academic factor was found to predict persistence. It is likely that many other factors, depicted in Rovai's CPM, contribute to persistence. Studies in graduate students have focused on demographic information, educational experiences,

academic preparedness (including technology and writing skills), academic support, and student services. In addition to these factors, Cohen (2011) included other factors from Rovai's CPM model in a survey, family and social support as well as career and economic considerations. Nichols (2010) found that students did not perceive student support services as important until these services were not available. As few studies have been conducted to identify predictors of persistence in the online graduate nursing student's population, prospective studies could identify additional factors that impact persistence.

Another limitation of the study was the multiple sources of student records. The original purpose of the databases was for the repository of student information for administrative use. The student files were both electronic and paper. Numerous administrative staff members entered the student information into files over time. This may have allowed error in the input of the data. In addition, paper files are being scanned into the electronic record on an ongoing basis so it is unclear if all data is available for use.

The sample was obtained from two graduate nursing programs at a single university; therefore, the generalizability of the study was limited. The graduate nursing students selected for this retrospective study were by convenience, though an attempt to control for bias occurred as students were enrolled consecutively. By using a convenience sampling method, representativeness of the larger population of graduate nursing students admitted to either of the programs could not be assured.

Conclusions

There are few studies identifying the factors that influence student persistence in online graduate nursing programs. This study showed that as the undergraduate GPA increased for this sample of students, the greater the probability of completing an online

graduate nursing program. It is evident that there are other factors that are important in predicting persistence that must be explored.

Implications for Nursing

Program administrators and faculty want students to be successful and graduate from online graduate nursing programs. Students beginning a graduate program come with varying degrees of academic and information literacy as well as life experiences that impact their ability to persist. Perry, et al. (2008) offered two reasons why students withdraw from online graduate nursing programs that align with Rovai's CPM, personal and program issues. Personal reasons included the external factors of life circumstances and work commitments. External factors comprised the largest number of reasons why students leave the Nursing Administration and Education programs at this university, with the most prevalent being family crises. Learning styles and evolving career aspirations were program reasons found for leaving a program (Perry et al. 2008). Several students in the current study reported program issues: not liking an online venue, poor communication with administration, and changing nursing programs. The majority of reasons for withdrawing in this sample was unknown. Program administrators and faculty should be informed as to what student factors may affect the ability to be successful in the program. Little information on what the students bring to the program is available to faculty to develop strategies in their courses to enhance persistence.

Students frequently underestimate the time commitment and intensity of graduate education, particularly in online programs. Strategies to assist students gain the academic skills and confidence they need to continue in their course of study are necessary beyond the obligatory orientation modules. Hart (2014) has recently introduced the Persistence Scale for Online Education in Nursing (PSOE-N), a tool to identify students' modifiable characteristics, social connectedness, stress, motivation,

and goals. Screening new students for skills such as learning styles, time management skills, writing and reading abilities, and technology abilities required for being successful would be helpful. Not only should these skills be recognized at the beginning of the program, but embedded throughout the programs.

Gazza and Hunker (2014) offered several mechanisms to promote retention in graduate programs. Examples of strategies were: relationship building and maintaining a social presence between student, faculty and staff, enhancing course and program quality using student feedback; designing activities to appeal to a variety of learning styles; clear and frequent student feedback, identifying at-risk students at the beginning of the program, and making a return plan for withdrawing students. Student attrition is costly for the student and the university both in terms of both time and money. As evidenced by the high attrition rate in this sample of students, strategies are needed to identify causes and assist the student to succeed in their courses.

Recommendations for Future Studies

Multiple factors related to persistence, including demographic, academic, administrative and personal, need further examination. Expanding the sample to other online graduate nursing programs and universities would increase the knowledge base of which factors influence student persistence the most. As this study was limited to secondary data, future studies should include prospective data on students' perceptions of what factors encourage or impede their success in online graduate nursing programs. Associations between other student characteristics and program outcomes would add to the current body of knowledge. Additionally, inquiry of faculty to ascertain student success factors could detect differences between student and faculty perceptions of needs in their courses and programs. Intervention studies could identify the best

practices for assisting a student to transition to the academic setting and be successful throughout the program.

Summary

Few studies have been conducted to explore the factors that influence persistence in online graduate nursing programs. Identifying the student characteristics, academic skills, and external factors affecting persistence is critical to meeting the growing need for advanced practice nurses in the administrator and educator roles. In this study, UGPA emerged as a predictor of persistence to graduation. More research is warranted to validate these results.

The findings of this study contributed to the theoretical knowledge of student persistence in online graduate nursing programs by describing student demographic and academic characteristics as identified in Rovai's Composite Persistence Model. The findings of the study provided evidence to assist program administrators to develop organizational and teaching strategies to enhance academic preparedness and performance in a diverse, nontraditional student population.

APPENDIX A
DATA COLLECTION TOOL

Data Collection Tool

Study # _____ (student ID will be obtained and immediately de-identified)

Start date (of first course)	
End date (final date attended)	
Duration of program in months (time elapsed between start of first course and final date attended)	
Completed course of study within 36 months	Yes/No
Age (in years)	
Gender	
Race/ethnicity	
Undergraduate GPA	
Type baccalaureate program	BSN or RN-BSN

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BIOGRAPHICAL INFORMATION

Denise Cauble completed her undergraduate nursing education at the University of Texas at Arlington in 1982. A practicing nurse for 33 years, Denise has spent the last 17 years in various leadership capacities in inpatient and outpatient settings as a Certified Wound, Ostomy, Continence Nurse. She is a contributing member to the Wound, Ostomy, Continence Nursing Society where she serves on the national education committee and was recently elected as secretary in Region 6.

In 2007, Denise began her doctoral studies in the BSN to Ph.D. program at the University of Texas at Arlington. While pursuing her doctorate, she was selected for the Summer Genetics Institute Fellowship at the National Institutes of Health—National Institute of Nursing Research in 2009. In 2011, she was recognized as a University Scholar at the University of Texas at Arlington and received a Junior Investigators Award from the National Institute of Nursing Research. Denise is a Ferne C. Newman Kyba Endowed Fellowship recipient. She also received a Sigma Theta Tau Scholarship, Joyce Thompson Hall Nursing Scholarship, and Ella Kate and Wallace Ralston Nursing Scholarship. Denise is an active member of Sigma Theta Tau, the international nursing honor society, and is a member of the Honor Society of Phi Kappa Phi.

After graduation, Denise will continue teaching undergraduate nursing students while maintaining a clinical practice as a WOCN nurse. She plans to extend her research into additional factors and strategies that influence and enhance persistence in nursing students.

Denise has been married to her husband, Thomas, for 40 years. They have three married children and four grandchildren (with two more on the way) who are the light of her life.