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Determining Readiness to Take the National Council Licensure Examination for Registered Nurses®

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DETERMINING READINESS TO TAKE THE NATIONAL COUNCIL LICENSURE EXAMINATION FOR REGISTERED NURSES®

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ABSTRACT

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Numerous studies have examined the association between pre-admission and/or during nursing program variables and the outcome on the National Council Licensure Examination for Registered Nurses (NCLEX-RN®; National Council of State Boards of Nursing [NCSBN]; 2015) but very few studies have examined post-graduation variables. This study examined post-graduation variables associated with the outcome on the NCLEX-RN® examination. The purpose of this exploratory field study was twofold. The first aspect was to identify the benchmark score on a post-graduation test (the Kaplan RN Readiness Exam; Sanders, 2014) correlated with passing the NCLEX-RN® examination. The second aspect was to explore factors that the outliers (those candidates who met the benchmark score on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® examination on the first attempt and those candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt) identified as contributing to their outcome.

The variables examined in this study were graduates' gender, age, previous degree, first-generation college student, type of nursing program, end of program grade point average, amount of recommended NCLEX® (NCSBN, 2015) prep completed, the average score on the recommended NCLEX® preparation tests, the Kaplan RN

Readiness (Sanders, 2014) exam score, outcome on the first attempt on the NCLEX-RN® examination, and factors candidates identified as contributing to their outcome on the NCLEX-RN® examination. The sample for the first phase of the study consisted of 284 pre-licensure baccalaureate nursing program graduates from a private, not-for-profit health sciences college in the Midwestern United States between May 2016 and May 2018. The sample for the second phase of the study consisted of seven participants from the first phase of the study.

The findings of this study identified the Kaplan RN Readiness Exam (Sanders, 2014) as a test that accurately (with 95% confidence) predicted passing the NCLEX-RN® (NCSBN, 2015) examination. Yet, there were some outliers: those who met the benchmark Kaplan RN Readiness Exam score and yet failed the NCLEX-RN® examination and those who scored 4% or more below the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination. The common factor for these outliers was anxiety. All the outliers reported anxiety leading up to the NCLEX-RN® examination and some identified the "check in" process for the licensure examination increased their anxiety. However, those who had scored 4% or more below the benchmark on the Kaplan RN Readiness Exam reported their anxiety subsided while taking the NCLEX-RN® examination and they were able to stay focused while taking the licensure examination. Whereas, those who had met the benchmark score on the Kaplan RN Readiness Exam reported they continued to have anxiety and were distracted by either movement or noises in the testing environment or by thoughts in their head while taking the NCLEX-RN® examination, which prevented them from being able to focus while taking the licensure examination.

This study provided rich data about determining post-graduation readiness to take the NCLEX-RN® (NCSBN, 2015) examination. Very little publicly available published data exist regarding post-graduation factors associated with NCLEX® success so much of the data were new and enlightening with implications for both nurse educators and graduates. The results of this study could lay the groundwork for further research on preparing nursing graduates to be successful on their first-attempt on the NCLEX-RN® examination.

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CHAPTER I

INTRODUCTION

The National Council Licensure Exam for Registered Nurses (NCLEX-RN®) is an examination developed by the National Council of State Boards of Nursing (NCSBN; 2015) and used by state licensing authorities to ensure public protection. This is accomplished by testing candidates on the competencies considered necessary to perform safely and effectively as a newly licensed, entry-level registered nurse (NCSBN, 2015). To practice as a registered nurse, a candidate must successfully pass this exam and candidates (nursing program graduates) are expected to pass it on their first attempt. The significance of passing on the first attempt is due to first time NCLEX-RN® pass rates being considered an indicator of nursing school quality. Thus, identifying a test that accurately predicts a candidate's readiness to take the NCLEX-RN® examination is vital.

Background of the Study

The purpose of professional licensure is to protect the public from harm by setting minimal qualifications and competencies for safe entry-level practitioners. Nursing is a profession that is regulated because it is a profession that poses a risk of harm to the public if practiced by someone who is not properly educated and/or incompetent. Nurse licensure benefits the public because essential qualifications for nursing practice are identified; a determination is made as to whether or not an individual meets those qualifications; and only a licensed nurse is authorized to use the title of registered nurse

(RN) and certain other nursing titles or to represent themselves as a licensed nurse (NCSBN, 2015).

The process of determining qualification to practice as a registered nurse has evolved over the years. The first licensing examinations in the early 1900s were often both written and practical and included the performance of a nursing procedure (Dolan, 1958). In the 1930s, state board licensure examinations began changing from written essays to a more objective-type examination (Dolan, 1958). The current process used to determine whether an individual meets the qualifications (or competencies) of an entry-level registered nurse is passing the NCLEX-RN® examination. Therefore, it is vital that nursing education adequately prepare its graduates for this examination so they are able to practice as registered nurses after graduation.

Statement of the Problem

Passing the NCLEX-RN® (NCSBN, 2015) examination is required for a graduate nurse to become an RN and practice nursing; passing on the first attempt is not only important to decreasing the current shortage of nurses but is important to the test-taker and nursing program. First-time NCLEX-RN® pass rates are considered by many to be the gold standard of nursing education program quality and success (Davenport, 2007; Sayles & Shelton, 2005). Poor NCLEX-RN® first time pass rates can pose a threat to accreditation of nursing programs, funding of nursing programs, and to enrollment (Carrick, 2011; Giddens, 2009; Simon, McGinniss, & Krauss, 2013). Consequently, all pre-licensure nursing programs are concerned with the NCLEX-RN® pass rate for their programs.

Not only does failure to pass the NCLEX-RN® on the first attempt threaten nursing program accreditation, it also contributes to the nursing shortage. There were more than 135,000 vacant RN positions in the United States in 2007 and due to the increasing age of the baby boomers and their need for healthcare and the aging nursing work force, the number of vacant RN positions is expected to grow to 260,000 by the year 2025 (American Association of Colleges of Nursing [AACN], 2014). Although baccalaureate nursing programs have increased their enrollment, the increase is not sufficient to meet the projected demand for nursing services. According to the AACN (2014), U.S. nursing schools turned away 79,659 qualified applicants from baccalaureate and graduate nursing programs in 2012 due to insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints. As a consequence, admission to nursing programs is limited and students accepted into nursing programs are expected to graduate, successfully complete the NCLEX-RN® exam, and enter the nursing work force.

In addition to limited nursing enrollment, candidates who do not pass the NCLEX-RN® exam on the first attempt or succeeding attempts further contribute to the nursing shortage. In the year 2015, 69.87% of the 229,459 candidates who took the NCLEX-RN® exam passed; however, 31.13% or 69,136 candidates failed the exam (NCSBN, 2016). Candidates who failed the NCLEX-RN® in 2015 had the potential to make a significant impact on the nursing shortage had they passed. In 2007, 69,136 more candidates passing the NCLEX-RN® would have filled over half the number of vacant RN positions (NCSBN, 2016).

Due to the significance of candidates' outcomes on the NCLEX-RN® exam, numerous studies have been conducted over the years attempting to identify predictors associated with success but few have been proven reliable over time. In addition, the majority of these studies have examined factors prior to admission or while students were in a nursing program and few have examined post-graduation factors.

Purpose of the Study

The purpose of this exploratory field study was twofold. The first aspect was to identify the benchmark score on the Kaplan RN Readiness Exam (Sanders, 2014) that is correlated with 95% confidence of passing the NCLEX-RN® (NCSBN, 2015) examination. Identifying a test that candidates can take post-graduation after completing their studying/review for the NCLEX-RN® examination that accurately predicts (with 95% confidence) passing the NCLEX-RN® examination would help candidates make a decision about whether they should take the NCLEX-RN® examination within a few days or delay taking it and do more review. The second aspect of the study was to explore the factors that candidates who met the benchmark score on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® examination on the first attempt and candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt identified as contributing to their outcome. Exploration of these individuals' experiences might provide beneficial information that could be used by nurse educators to prepare future nursing students and NCLEX-RN® candidates. This research would fill a gap to advance knowledge of post-graduation readiness for the NCLEX-RN® examination and might provide new insight on non-academic, post-graduation factors associated with failing the

NCLEX-RN® examination. Other studies have generally only addressed pre-admission and/or during the nursing program variables associated with passing the NCLEX-RN® examination. Furthermore, nursing programs might use this information in future curriculum development or NCLEX-RN® examination preparation of students.

Research Questions and Hypotheses

This study investigated the phenomenon of determining post-graduation candidate readiness to take the NCLEX-RN® (NCSBN, 2015) examination. The following research questions and hypotheses were explored by this mixed methods inquiry:

Q1 Is there is a correlation between the college's Bachelor of Science in Nursing (BSN) candidates' scores on the Kaplan RN Readiness Exam and their outcome on the NCLEX-RN® examination?

H_O1 There is no relationship between the college's BSN candidates' scores on the Kaplan RN Readiness Exam and their outcome on the NCLEX-RN® examination.

H1 There is a relationship between the college's BSN candidates' scores on the Kaplan RN Readiness Exam and their outcome on the NCLEX-RN® examination.

Q2 What is the score on the Kaplan RN Readiness Exam that predicts with at least 95% certainty the college's students passing the NCLEX-RN® examination on the first attempt?

H_O2 There are no significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, grade point average (GPA), first generation college student, previous degree, program (traditional or 15 month), the amount of recommended NCLEX® preparation completed, and the average score on the recommended NCLEX® preparation tests.

H2 There are significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, GPA, first generation college student, previous degree, program (traditional or 15 month), the amount of recommended NCLEX® preparation completed, and the average score on the recommended NCLEX® preparation tests.

Q3 Are there significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, GPA, first generation college student, previous degree, program (traditional or 15-month), the amount of recommended NCLEX® preparation completed, and the average score on the recommended NCLEX® preparation tests?

Q4 How does the college's Kaplan RN Readiness Exam score that predicts with at least 95% certainty passing the NCLEX-RN® examination on the first (benchmark) compare to the benchmark identified by Kaplan, Inc.?

Q5 What factors do NCLEX-RN® candidates who met the benchmark on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® examination on their first attempt attribute to the outcome?

Q6 What factors do NCLEX-RN® candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on their first attempt attribute to the outcome?

Overview of Methodology

An exploratory field study design was used to answer the research questions. The study had two phases. The first phase involved quantitative data collection and analysis, which was then used to conduct the second qualitative phase. According to Creswell (2014), "the quantitative results typically inform the types of participants to be purposefully selected for the qualitative phase and the types of questions that will be asked of the participants" (p. 224).

For this exploratory field study, all possible statistical analyses were explored and only those for which the data met the criteria were used. Although numerous studies have successfully used logistic regression to investigate the relationship among standardized exam scores and other variables with the NCLEX-RN® examination outcome (Brodersen & Mills, 2014; Kidder, 2015; Salvucci, 2015; Silvestri, 2010; Sims, 2012; Sullivan, 2011), the data from this study did not fit the model for logistic regression.

As numerous factors can influence a candidate's outcome on the NCLEX-RN® (NCSBN, 2015) examination, the second phase of the study design involved interviewing NCLEX-RN® candidates who met the identified Kaplan Readiness Exam benchmark yet failed the NCLEX-RN® examination. The purpose of these interviews was to collect data related to participants' perceptions of factors influencing their outcome on the NCLEX-RN® examination. The interviews were semi-structured with use of an interview guide, several probing questions, and was conducted in an informal nature. As analysis and interpretation often intermix in qualitative methodology, analysis and interpretation occurred continually as interviews were completed since opportunities might arise to learn of better probing questions to use in subsequent interviews. This could result in the procurement of richer data from participants.

Definition of Terms

This section defines terms utilized for this study. These definitions are how the researcher defined many of the key terms related to the study.

Kaplan Registered Nurse Readiness Exam. Kaplan's RN Readiness Exam (Sanders, 2014) is a computerized standardized exam offered by Kaplan Nursing in conjunction with the Kaplan NCLEX-RN® review course. Kaplan RN Readiness Exam items are written by nursing experts using Bloom's taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) and parallel the methodology used to write NCLEX-RN® exam items. The Kaplan RN Readiness Exam measures cognitive ability at the application level and above while following the most current NCLEX-RN® test plan (NCSBN, 2015). It is a 180-question NCLEX®-style test. Candidates are advised to take the Kaplan RN Readiness Exam about a

week before they are scheduled to take their NCLEX-RN® examination in a quiet, controlled, distraction-free environment to simulate conditions during the NCLEX-RN® examination.

National Council Licensure Exam for Registered Nurses. The NCLEX-RN® examination is an examination that "measures the competencies needed to perform safely and effectively as a newly licensed, entry-level registered nurse" (NCSBN, 2015, p. 3). To ensure public safety, each state and territory of the United States requires candidates for RN licensure to pass this examination in order to practice. The items on the NCLEX-RN® examination are written and coded using Bloom's taxonomy for cognitive domains (Anderson & Krathwohl, 2001; Bloom et al., 1956). Since the practice of nursing requires application of knowledge and clinical reasoning, the majority of items on the NCLEX-RN® examination are written at the application or higher levels of cognitive ability, which requires more complex thought processing (NCSBN, 2015).

National Council Licensure Exam for Registered Nurses first-time pass rates. First-time pass rates are a statistic that represents the number of candidates who passed the NCLEX-RN® examination on the first attempt out of the total number of students who took the exam. For example, if a BSN program had 100 nursing graduates who took the NCLEX-RN® examination for the first time and 95 of the 100 passed the examination, that nursing program would have a 95% first time pass rate. This pass rate could be looked at or compared from various perspectives such as the national pass rate, individual state pass rates, and other nursing program pass rates.

National Council Licensure Exam success. Success is defined as passing the NCLEX-RN® examination on the first attempt.

Predictability. Theoretically, predictability is the ability to estimate that a specified thing will happen in the future or will be a consequence of something. In this study, predictability was the ability of a score on the Kaplan RN Readiness test to estimate passing the NCLEX-RN® examination with a 95% confidence interval.

Readiness. Theoretically, readiness is the state of being fully prepared for something. In this study, readiness was the state of being fully prepared for the NCLEX-RN® examination. The operationalized definition of readiness for this study was meeting the score on the Kaplan RN Readiness test that correlated with a 95% confidence interval of passing the NCLEX-RN® examination.

Recommended National Council Licensure Exam for Registered Nurses preparation. The NCLEX-RN® prep plan is a list of specific tests from the NCLEX-RN® review course company (Kaplan, Inc.) created by the college's NCLEX-RN® Coordinator. Candidates are advised to complete the tests on the NCLEX-RN prep plan (Sample Tests 3 and 4; Question Trainers 4, 5, 6, and 7; eighteen 75 question Qbank tests; and the Kaplan RN Readiness exam; Kaplan Nursing, 2018) prior to taking the NCLEX-RN® examination. They are also advised that they should reach a score of 60% on at least three of these tests prior to taking the NCLEX-RN® examination.

Summary

This introductory chapter presented a background as well as the scope of the problem, the purpose of the study, the research questions, and definition of terms.

Chapter II presents a review of literature that supports the methodology for this dissertation.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of professional licensure is to protect the public from harm by setting minimal qualifications and competencies for safe entry-level practitioners. Nursing is a profession that is regulated because it is a profession that poses a risk of harm to the public if practiced by someone who is not properly educated and/or incompetent. Nurse licensure benefits the public because essential qualifications for nursing practice are identified; a determination is made as to whether or not an individual meets those qualifications; and only a licensed nurse is authorized to use the title of registered nurse (RN) and certain other nursing titles or to represent themselves as a licensed nurse (NCSBN, 2015).

Mandatory nurse licensure gained momentum in the early 1900s and by 1923, 48 states in the United States had passed some form of nursing licensure legislation (NCSBN, 2018). To qualify for state registration or licensure as a nurse, a graduate typically has to complete an approved school curriculum and pass a board examination. The first licensing examinations were often both written and practical and included the performance of a nursing procedure (Dolan, 1958). In the 1930s, state board licensure examinations began changing from written essays to a more objective-type examination (NCSBN, 2018).

With the onset of World War II and the need for more trained nurses, the National League of Nursing Education's National Committee on Nursing Tests began offering a state board test pool examination (SBTPE) to facilitate efficient licensure of nurses (Benefiel, 2011b). The initial SBTPE included 13 tests: (a) anatomy and physiology, (b) chemistry, (c) microbiology, (d) nutrition and diet therapy, (e) pharmacology, (f) nursing arts, (g) communicable disease, (h) medical nursing, (i) nursing of children, (j) obstetric and gynecologic nursing, (k) psychiatric nursing, (l) surgical nursing, and (m) social foundation of nursing. In 1949, the SBTPE was reduced to six examinations: (a) medical, (b) surgical, (c) obstetric, (d) communicable disease, (e) psychiatric nursing, and (f) nursing of children. By 1950, 48 states were using the SBTE (Benefiel, 2011). In 1955, the American Nurses Association took over management of the SBTPE; the SBTPE became a four-part examination consisting of 600 questions plus 120 validator questions divided among the four sections (Benefiel, 2011b). The examination score was calculated by subtracting the incorrect answers from those that were correct, thus being normative referenced. By 1975, state board examinations were being offered twice a year on the same days in every state. Due to some instances of cheating, different examinations were developed and administered at each examination date (Benefiel, 2011b).

In 1978, the National Council of State Boards of Nursing (NCSBN) was created and took over development and management of nursing licensure examinations (Benefiel, 2011b). The impetus for the creation of the NCSBN arose from the recognition that to guard the safety of the public, the regulation of nurses should be a separate entity from the organization representing professional nurses (NCSBN, 2018) and that state boards of

nursing should have autonomous control over the entire licensure process (Benefiel, 2011b). The NCSBN consisted of a representative from each state board of nursing and provided "an organization through which state boards of nursing act and counsel together on matters of common interest and concerns affecting the public health, safety and welfare, including the development of licensing examinations in nursing" (Dorsey & Schowalter, 2008, p. 183).

When the NCSBN assumed ownership of the national licensure examinations in 1978, the content validity and reliability of the SBTPE and the critical requirements for safe and effective nursing practice were examined (Benefiel, 2011b). Based on data from these studies, the 25-year-old SBTPE RN test plan was revised. Instead of merely providing a list of nursing abilities by 10 categories, the new test plan presented the beliefs to be incorporated into the test, the nursing behaviors to be tested, and how those behaviors would be tested. The test plan was based on a client needs framework because it provided a universal structure for defining nursing actions and competencies and focused on clients in all settings. The new test identified nursing behaviors to be tested including assessing, analyzing, planning, implementing, and evaluating; it explained that those behaviors would be tested through client-nurse situations requiring decision-making. This new test, implemented in 1982 and now called the NCLEX-RN® examination, became a comprehensive criterion referenced (rather than norm referenced) examination (Dorsey & Schowalter, 2008).

It is important for nursing educators to remain informed of the NCLEX-RN® test plan and revisions made it so they ensure their graduates are adequately prepared for the NCLEX-RN® examination. This might include a review of and revisions to the nursing

curriculum to confirm inclusion of concepts on the NCLEX-RN® examination. Since the NCSBN adopted a motion in 1989 to conduct RN job analyses on a regular schedule of no less frequently than every three years (Dorsey & Schowalter, 2008) and to also conduct a triannual evaluation of the NCLEX-RN® examination test plan, the test plan has been revised at least eight times. This was done to ensure the NCLEX-RN® examination was current and reflected the competencies essential for the newly licensed nurse to practice.

The NCLEX-RN® examination test plan evaluation process includes a review of the scope of nursing practice and activities entry-level nurses carry out in the performance of their jobs (Wendt, 2003). The NCSBN's (2015) Examination Committee evaluates the data from the RN practice analyses using pre-established criteria to determine whether the activity statements in the survey are reflective of current entry-level nursing practice. This empirical data is then used to determine if, and what, revisions to the NCLEX-RN® test plan are needed (Wendt, 2003).

Past revisions to the NCLEX-RN® test plan have included revisions to the titles of the various client need categories and subcategories, changes in the percentages of test items in the various client need categories, and the implementation of alternate item formats on the NCLEX-RN® examination (NCSBN, 2015). The implementation of alternate item formats in 2003 was one change to the examination that had a significant influence on nursing programs and nursing course exams. An "alternate item" was an examination question (item) in a format other than the standard four-option, multiple-choice item (i.e., multiple response [select all that apply] item, fill-in-the-blank, hot spot

[point and click to identify an area on a picture or graphic], etc.; Wendt, 2003; Wendt & Kenny, 2007).

For nurse educators, the NCLEX-RN® test plan provides a useful framework for curriculum design, didactic content, and exam development (NCSBN, 2015). Although the test plan and practice analyses were not intended to serve as the sole basis for nursing curriculum and instruction, these documents could provide educators with current data on entry-level nursing practice that might be useful in updating existing course content and teaching strategies (Wendt, 2003).

Passing the NCLEX-RN® examination is required for a graduate nurse to become an RN and practice nursing. Passing on the first attempt is important to the test-taker and nursing program and to decrease the shortage of nurses. Predicting the outcome on the NCLEX-RN® examination has been a widely studied topic for decades. The literature reflected a wide array of academic and non-academic variables used to determine readiness for or success on the NCLEX-RN® examination. The literature reviewed contained research on several variables used to predict NCLEX-RN® outcomes for both baccalaureate and associate degree nursing students.

Databases used for this study included Academic Search Premier, Cumulative Index to Nursing and Allied Health (CINAHL), MEDLINE, and ProQuest Dissertations & Theses Global. No limitation on the year of publication was set. Over 1,900 search results were generated by using key words and phrases such as “NCLEX,” “licensure,” “predictors of success,” “NCLEX-RN® success,” “NCLEX-RN® failure,” “readiness,” “NCLEX review course,” “Kaplan,” “HESI,” “ATI,” “nursing shortage,” “Bloom’s taxonomy,” and “classical test theory” with several variations of these terms. The search

results were scanned and over 500 abstracts were critically reviewed. The final articles selected covered a wide range of factors associated with NCLEX-RN® examination outcomes. However, a dearth of literature on factors associated with NCLEX-RN® success was noted.

A review of the literature provided the basis for discussion on determining readiness to take the NCLEX-RN® examination. Selected articles were carefully addressed to highlight mixed findings regarding predictors of NCLEX-RN® success and the gap in the literature on post-graduation predictors. This literature sets the stage for the need to identify post-graduation predictors of NCLEX-RN® success that could aid candidates in determining their readiness to take the NCLEX-RN® examination. Two theories, Bloom's (Bloom et al., 1956) taxonomy and classical test theory (DeVellis, 2006), were used to frame the current research study.

Importance of Passing the National Council Licensure Exam for Registered Nurses on First Attempt

The United States is experiencing a significant nursing shortage. According to the AACN (2014), in 2007, more than 135,000 RN) positions were vacant in the United States and that number is expected to grow to 260,000 by the year 2025. This substantial increase in the shortage of nurses is anticipated due to the increasing age of the baby boomers, their need for health care, and an aging nursing workforce (AACN, 2014). The United States needs more nurses but to become an RN, persons must graduate from an accredited nursing program and pass the National Council Licensure Exam for Registered Nurses (NCLEX-RN®). This exam is used by state licensing authorities to ensure public protection. In the year 2016, 81.43% of the 168,642 of candidates who took the NCLEX-RN® exam for the first time passed; however, 18.57% or 31,317 candidates failed the

exam (NCSBN, 2017). The number of candidates who failed the NCLEX-RN® in 2016 alone had the potential to make a significant impact in decreasing the nursing shortage had they passed.

Not only is it important that NCLEX-RN® candidates pass the exam to become a registered nurse to alleviate the nursing shortage but first-time NCLEX-RN® pass rates are considered by many to be the gold standard of nursing education program quality and success (Davenport, 2007; Sayles & Shelton, 2005). Poor NCLEX-RN® first time pass rates for a nursing program pose a threat to their accreditation, funding, and enrollment (Carrick, 2011; Giddens, 2009; Simon et al., 2013). In addition, failing the NCLEX-RN® exam can be devastating to candidates; NCLEX-RN® pass rate data indicated candidates who were unsuccessful on their first attempt of the exam were even more likely to be unsuccessful on subsequent attempts (NCSBN, 2017). In light of the significance of candidates' outcomes on the NCLEX-RN® exam, the ability to identify variables associated with NCLEX-RN® success is vital.

Variables to Predict National Council Licensure Exam for Registered Nurses Success

Predicting success on the NCLEX-RN® examination has been widely studied for decades. The literature reflected a wide array of variables used to predict NCLEX success with varied findings. Variables to predict NCLEX found in the literature were divided into two categories--academic and non-academic. Academic variables were further divided into admission or pre-program variables and in-program variables; the non-academic variables were divided into pre-graduation and post-graduation.

Academic Variables

Academic variables investigated included (a) college GPA, (b) course grades, (c) standardized test scores, (d) critical thinking, and (e) preparation strategies. Many of these variables were examined for admission to the nursing program or pre-program and during the nursing program or in-program. The literature for each of these variables provided a foundation for understanding how they factored into predicting NCLEX success or determining readiness for NCLEX. A limitation of the majority of these studies was the relationship of a single variable with success on NCLEX was rarely studied. Rather, the relationship of several academic variables with NCLEX success was studied, thus limiting a definitive conclusion about the predictive nature of a single variable alone and NCLEX success.

Pre-program variables. Nursing curricula in many undergraduate programs are structured into pre-program or pre-nursing courses taken before admittance into the nursing program and nursing courses. Researchers have investigated relationships among pre-program or admission criteria such as college GPA, specific prerequisite course grades, standardized test scores, and critical thinking with first-time success on the NCLEX-RN® exam.

Grade point average and course grades. Due to the demanding course of study required to become a nurse, pre-nursing courses reflect a heavy focus on foundational science courses such as biology, chemistry, anatomy, and physiology. Several studies demonstrated that students with a higher GPA in pre-nursing coursework were more likely to achieve first time NCLEX success (Benefiel, 2011a; Bennett, Bormann, Lovan, & Cobb, 2016; Cornelius, 2012; Elkins, 2013; Horton, 2006; McCarthy, 2012: McGahee,

Gramling, & Reid, 2010; Newton & Moore, 2009; Yin & Burger, 2003). However, other researchers did not find a statistical significance between pre-nursing GPA and NCLEX success (Crow, Handley, Morrison, & Shelton, 2004; Haas, Nugent, & Rule, 2004; Seldomridge & Dibartolo, 2004; Uyehara, Magnussen, Itano, & Zhang, 2007).

Simon et al. (2013) conducted a descriptive, correlational study using regression analysis to investigate multivariate relationship among predictors and NCLEX-RN® readiness exam scores, which was implied to predict NCLEX-RN® results. They examined 171 student transcripts and analyzed how predictive the nursing students' grades in prerequisite courses were with scores on the NCLEX-RN® readiness exam. The researchers found conflicting results. Initially, grades in the pre-nursing biology and chemistry courses and GPA seemed predictive of student success but the researchers determined content from the core nursing courses overrode the predictability of those prerequisite courses. Simon et al. also identified the presence of transfer credits might have been a potential predictor of success. They concluded transfer students were often more mature and motivated than traditional students and older nursing students were more likely to pass the NCLEX-RN® exam (Simon et al., 2013).

Standardized test scores. Many nursing programs use prospective students' or applicants' scores on standardized tests as part of the admission process. These tests often report subscale scores and composite scores intended to measure entry level academic readiness of applicants. The American College Test (ACT), the Scholastic Assessment Test (SAT), and the Test of Essential Academic Skills (TEAS) are three tests used by colleges and nursing programs as measures of potential academic success and for admission.

Multiple studies found performance on the ACT or SAT was predictive of NCLEX success (Crow et al., 2004; Daley, Kirkpatrick, Frazier, Chung, & Moser, 2003; Elkins, 2013; Grossbach and Kuncel, 2011; Haas et al., 2004; Humphreys, 2008). However, these two standardized tests weigh each subscale score equally despite the fact the subscale sections do not all have the same number of items. Thus, the composite is an unweighted average of the components. The TEAS is a standardized test designed for students applying to the health science fields and assesses similar content areas as the ACT and SAT but the composite score is a weighted average. In the TEAS, English is weighted the most heavily in the overall score, followed by mathematics, reading, and science, respectively.

Several studies investigated the relationship between TEAS scores and NCLEX success and many found the composite TEAS score predictive of NCLEX success (Benefiel, 2011a; Cooper, 2012; Cornelius, 2012; Kehm, 2013; McCarthy, Harris, & Tracz, 2014; Wolkowitz & Kelley, 2010). In a study of 794 participants, McCarthy (2012) investigated the relationship of the scores in each of four individual content areas of the TEAS and NCLEX success through logistic regression and found the TEAS scores in each area were predictive of NCLEX success. However, Santiago (2013) found a significant correlation among TEAS math scores and NCLEX success and DiNatale Stoehr (2014) found no correlation among TEAS scores and NCLEX success.

Critical thinking. Critical thinking is an integral part of quality care within the nursing profession and the development of critical thinking requires time and experience. Thus, it is important to assess the critical thinking abilities of students applying to the nursing program and admit those students who demonstrate critical thinking skills.

Several studies have been conducted assessing pre-program critical thinking skills and passing the NCLEX-RN® exam. While Henriques (2002) did not find a statistically significant correlation between pre-admission critical thinking and passing the NCLEX-RN®, several other researchers did (Giddens & Gloeckner, 2005; Kaddoura, Flint, Van Dyke, Yang, & Chiang, 2017; Wacks, 2005). Giddens and Gloeckner (2005) used both the California Critical Thinking Skills Test (CCTST) and the California Critical Thinking Disposition Inventory (CCTDI) to measure critical thinking prior to entry in the nursing programs and results showed a difference in entry CCTST scores between participants who passed and failed the NCLEX-RN®. Wacks (2005) and Kaddoura et al. (2017) also found significant correlations between pre-program critical thinking and passing the NCLEX-RN®. Wacks (2005) used the Watson-Glaser Critical Thinking Appraisal to measure critical thinking and Kaddoura et al. (2017) used a standardized critical thinking test developed by Health Education Systems, Inc. (HESI).

In-program variables. In-program variables were those variables that measured after admission to or while in the nursing program. These variables included grade point average, nursing course grades, standardized test scores, critical thinking, and preparation strategies.

Grade point average and course grades. Several researchers have found nursing course grades and nursing GPA to be predictive of NCLEX-RN® success. Simon et al. (2013) found student grades in core nursing curriculum overrode the predictability of prerequisite courses. Several other studies also identified a correlation between overall nursing GPA and success on the NCLEX (Alameida et al., 2011; Daley et al., 2003; Haas et al., 2004; Romeo, 2013; Uyehara et al., 2007). Other researchers identified grades in

specific courses as predictors of NCLEX success. Daley et al. (2003), Kehm (2013), and Seldomridge and Dibartolo (2004) found performance in medical-surgical nursing courses to be a significant predictor of NCLEX success while Uyehara et al. (2007) found student grades in a fundamentals course to be predictive. Thus, the review of the literature indicated a correlation among nursing course grades and GPA and NCLEX success but no consistent formula was revealed.

Standardized test scores. Many nursing programs utilize commercial standardized tests throughout the nursing program. The purposes of using commercial standardized tests are (a) to give students an understanding of their content-based knowledge strengths and weaknesses and how they compare to others across the United States; (b) to establish the likelihood of students passing the NCLEX on the first attempt; and (c) for faculty to make course or curricular changes. Currently, four main vendors provide standardized tests: Assessment Technologies, Inc. (ATI), Health Educational Systems, Inc. (HESI), National League for Nursing (NLN), and Kaplan, Inc (Sanders, 2014). Each of these vendors provides content-specific tests such as pharmacology, medical-surgical, maternal health, pediatrics, and mental health as well as comprehensive NCLEX predictor tests given near the end of the nursing program. Although the test vendors have documented established validity and reliability for their products, many gaps exist in evidence regarding use of these exams in nursing education.

Research investigating the predictive nature of many of the ATI and HESI tests alone or in relation to other variables was plentiful in the literature. However, the NLN's Readiness Test appears to no longer be commonly used as there was nothing in the literature after 2009. Kaplan, Inc. (Sanders, 2014) is a relatively new vendor of

standardized nursing tests and thus, there was very little in the scholarly literature regarding Kaplan tests and NCLEX outcome.

Research that investigated individual content-based mastery tests and NCLEX success resulted in a variety of findings. Ukpabi (2008) found ATI Mental Health, Pharmacology, and Fundamentals exams and NLN's Adult I, Adult II, Pediatric, and Mental Health tests were statistically significant in predicting who passed or failed the NCLEX-RN®. However, a serious limitation of the study was the small sample size of 39. Uyehara et al. (2007) also explored NLN content-based tests and determined the adult health test was predictive of NCLEX success.

In a larger study of 151 participants, Yeom (2012) investigated effective predictors of first-time NCLEX-RN® outcomes among several ATI tests. Yeom found the adult medical-surgical, pharmacology, and community health standardized tests were central in the prediction of both NCLEX-RN® success and failure. However, it was noted that a much lower percentage of NCLEX-RN® failure than success was classified (Yeom, 2012).

In another study of several of ATI content tests with a sample of 794 BSN students, McCarthy et al. (2014) established that the ATI medical-surgical and mental health tests were the strongest predictors of NCLEX success. Whereas, Emory (2012) identified only the ATI pharmacology assessment was predictive of NCLEX success among 167 BSN students. Thus, there was no consistent predictor among the content-based assessments.

In addition to content-based tests, major standardized test vendors also offered comprehensive predictor tests aimed at establishing an individual student's probability of

passing the NCLEX exam. These comprehensive exams are administered near the end of the nursing program. Assessment Technologies, Inc.'s comprehensive exam is the RN Comprehensive Predictor; HESI's comprehensive exam is the Exit Exam (E^2); NLN's comprehensive exam is the NCLEX-RN® Readiness Exam; and Kaplan's comprehensive exam is the Diagnostic Test. Students with less than optimal scores on these predictor tests could remediate to improve their knowledge of nursing, critical thinking, and test-taking skills.

Repeated investigations of the predictive ability of the comprehensive predictor tests supported their reliable predictability of probably passing the NLCEX; however, these tests were not as reliable a predictor of those who would fail the NCLEX (Alameida et al., 2011; Crow et al., 2004; Harding, 2010; Morris & Hancock, 2008; Seldomridge & Dibartolo, 2004; Serembus, 2016; Yeom, 2012). A number of intervening factors might explain the lower reliability in predicting failure such as what students do in the time period between taking the comprehensive exit exam and actually sitting for the NCLEX.

Critical thinking. Critical thinking is considered an essential competency of nurses and activities to promote and measure critical thinking in nursing education have been mandated by the Accreditation Commission for Education in Nursing (2013), the Commission on Collegiate Nursing Education (2013), and the NLN (2016). The lack of a uniform definition of critical thinking made comparison of studies difficult. While some studies found an association between in-program critical thinking scores and NCLEX-RN® success (Giddens & Gloeckner, 2005; Hoffman, 2006; Kaddoura et al., 2017; Lyons, 2008; Romeo, 2013), other studies did not find a statistically significant correlation (Akerson, 2001; Henriques, 2002; Stewart & Dempsey, 2005).

Stewart and Dempsey (2005) conducted a longitudinal descriptive study using the CCTDI to examine nursing students' dispositions toward critical thinking as they progressed in a baccalaureate nursing program. In their study of 55 nursing students, no relationship was found between CCTDI scores and passing the NCLEX-RN®. Henriques (2002) conducted a study using the CCTDI prior to admission to the nursing program and the CCTST during the nursing program to measure critical thinking. In this study of 152 subjects, no predictive values of either the CCTDI or CCTST with passing the NCLEX-RN® exam was found.

Preparation strategies. Strategies used by nursing programs and students to prepare for the NCLEX exam are numerous. Nurse educators employ educational interventions every day, which have no or little empirical basis and thus might be of limited utility. Preparation strategies correlated with success on the NCLEX-RN® as a variable have not been studied extensively. The literature review revealed only a few studies investigating the predictability of preparation strategies and NCLEX-RN® success.

A preparation strategy commonly used to prepare nursing students for the NCLEX-RN® exam is remediation. However, a strong evidence base did not support the use of remediation. It was not clear which remediation interventions had positive effects and which did not (Hyland, 2012; Pennington & Spurlock, 2010).

Crow et al. (2004) conducted a national study that included the investigation of educational interventions used by BSN programs to prepare graduates for success on the NCLEX-RN®. Participants for the study were deans recruited from 513 BSN programs. The final number of participants submitting useable data was 160 (31.2% response rate).

Crow et al. found the interventions to assist in preparing graduates for success on the NCLEX-RN® used most frequently by BSN programs were academic referrals, commercial reviews, social support referrals, computerized reviews, and faculty-led review. The preparation strategy found to have a significant correlation with performance on the NCLEX-RN® exam was the use of a commercial review course.

Monroe and Schweizer (2017) conducted a more recent national study to identify NCLEX-RN® preparation strategies used by BSN programs across the country that correlate with first-time NCLEX-RN® pass rates consistently above the national average. Data collected for this study were aggregate BSN program data from 79 programs in 23 states but no significant correlations were found between the preparation strategies (standardized tests; special remediation assignments; referrals for study, test taking skills, social support, or counseling; individual NCLEX-RN® advising or mentoring; and various types of NCLEX-RN® review courses utilizing various modes of delivery) and NCLEX-RN® success.

Cox-Davenport and Phelan (2015) studied the impact of a shift in NCLEX preparation policy from the use of predictor score thresholds to a more proactive remediation strategy involving an adaptive quizzing system (AQS). In their retrospective, descriptive, correlational study evaluating the impact of an AQS designed to give students ongoing active practice and feedback and exploring the relationship between predictor examinations and NCLEX success, Cox-Davenport and Phelan found a positive correlation between AQS usage and content mastery but no discernable connection between student scores on predictor tests and NCLEX-RN® outcome.

Quinn, Smolinski, and Peters (2018) conducted a literature review to identify effective approaches to strengthen NCLEX-RN® success for pre-licensure nursing students. Following data analysis of the 18 articles meeting the inclusion criteria for the study, five types of interventions implemented to improve NCLEX-RN® success emerged. The most commonly cited intervention was exit examinations.

Non-Academic Variables

Non-academic variables included pre-graduation variables of student demographics and test anxiety and post-graduation variables of the time interval from graduation to NCLEX test date, amount of time studying, employment, and test anxiety. The findings of studies on many of these variables have been mixed.

Pre-graduation variables. Pre-graduation non-academic variables were student demographics such as age, gender, ethnicity/race, and English as an additional language. These variables existed prior to or during the nursing program.

Age and gender. Some research findings indicated non-traditional college age students had a higher percent pass rate than traditional age students (Beeson & Kissling, 2001; Humphreys, 2008; Vandenhouten, 2008). Others documented that age as well as sex were not significantly correlated with NCLEX success (Beeman & Waterhouse, 2001; Kaddoura et al., 2017; Yin & Burger, 2003). Additional researchers concurring that gender did not affect NCLEX success were Beeson and Kissling (2001) and Sayles, Shelton, and Powell (2003). However, Haas et al. (2004) found men failed the examination at a significantly higher rate than women (p = .064).

Ethnicity/race/English as additional language. With regard to ethnicity, Crow et al. (2004) found ethnicity was the only demographic data significantly correlated to

NCLEX success. They found the percentage of Caucasian students was positively correlated with passing NCLEX and the percentage of Hispanic students was negatively correlated. Sayles et al. (2003) also noted graduates who were successful on the NCLEX-RN® were overwhelmingly Caucasian and reported African Americans had a significantly higher failure rate than Caucasians. In addition, Haas et al. (2004) found failure rates for African American and Asian students were significantly higher than those for Caucasian students. For students for whom English was an additional language, Kaddoura et al. (2017) found significantly lower NCLEX-RN® pass rates.

Test anxiety. Test anxiety is more than a little worry about taking an examination but refers to the effects of anxiety on student concentration and performance both while preparing for an examination (Powell, 2004) and while completing an examination (Williams, 2010). In a concept analysis of test anxiety in nursing education, Gibson (2014) defined test anxiety as "an unpleasant feeling or emotional state that has both physiological and behavioral components and that is experienced in formal testing or other evaluative situations" (p. 272).

Quite a bit of literature exists on test anxiety and its causes and consequences in higher education but little on test anxiety specific to nursing education. Only one qualitative study was found that examined test anxiety in nursing education. This study was a descriptive phenomenological study conducted by Edelman and Ficorelli (2005) who examined the lived experiences of eight female nursing students with test anxiety. Three themes emerged from this study: the reality of an anxiety episode, the academic implications of test anxiety, and effective measures of dealing with anxiety (Edelman & Ficorelli, 2005.

Some quantitative studies examining test anxiety in nursing students have been conducted examining different factors with mixed findings. Brewer (2002) and Driscoll, Evans, Ramsey, and Wheeler (2009) examined whether nursing students experience more test anxiety than general university students. These studies used different tools to measure test anxiety. Brewer (2002) used the Anxiety Achievement Test to assess anxiety in 225 students (94 nursing students and 131 general university students) and found no statistically significant difference in the level of debilitative anxiety between nursing students and the general student population. Driscoll et al. (2009) used the Westside Test Anxiety Scale to assess the frequency and severity of test anxiety among nursing students. The findings of this study of 298 nursing students revealed 30% of nursing students had high test anxiety versus 17% of students in the comparison populations.

Howell and Swanson (1989) examined the influence of cognitive interference, self-concept, study and test-taking skills, and cumulative grade point average on test anxiety. They found significant negative relationships among test anxiety and the variables of academic self-concept and GPA ($p < .05$). Neither study skills nor test taking skills contributed significantly to the variance of test anxiety. Waltman (1997) compared test anxiety and factors contributing to it between traditional and non-traditional baccalaureate student nurses and found no significant difference in test anxiety between traditional and non-traditional nursing students. However, the study did reveal significant differences on knowledge of effective test-taking skills; academic self-concept and knowledge of time management; and study organization skills between the two

groups; the strongest variable associated with test anxiety for both groups was cognitive interference (Waltman, 1997).

Two other factors associated with test anxiety that have been studied are academic performance and academic procrastination. In a study of 50 nursing students in Nigeria, Afolayan, Donald, Onasoga, Babefemi, and Juan (2013) found most respondents did not experience anxiety during examinations but 50% believed they performed better when they were not anxious than when they were anxious. This study further revealed no statistically significant difference in anxiety between male and female nursing students. Custer (2018) examined the relationship among test anxiety and academic procrastination among 202 pre-licensure nursing students. The results of this study identified a statistically significant moderate correlation between test anxiety and academic procrastination among pre-licensure students. Associate degree nursing students experienced significantly higher levels of test anxiety than those enrolled in diploma and baccalaureate nursing programs (Custer, 2016).

Thus, the literature identified test anxiety as a multidimensional phenomenon experienced by many nursing students. Contrary to many nursing students' beliefs, students' test-taking and study skills have not been found to be significantly correlated to test anxiety. Rather, nursing students identified as "at-risk" and who reported a lower academic self-concept had a higher incidence of test anxiety. The research findings on nursing students' test anxiety was similar to findings from previous test anxiety research in higher education in general. This suggested the phenomenon of test anxiety is largely cognitive rather than behavioral (Custer, 2018).

Post-graduation variables. Post-graduation, non-academic variables are variables that occur after graduating from a nursing program. These variables include the time between graduation and taking the NCLEX-RN® examination, amount of study and preparation time, taking a review course, employment, and test anxiety. The literature on post-graduation variables was limited.

Time between graduation and National Council Licensure Exam for Registered Nurses. In a review of data collected by the NCSBN over a two-year period, Woo, Wendt, and Liu (2009) identified that on average, RN candidates sat for the NCLEX-RN® exam 34.79 days after becoming eligible. Using a moderated logistic regression, these researchers also identified the number of days between eligibility date and the actual test date (lag time) was inversely related to candidates' pass rate on the NCLEX. Reasons most frequently cited for delaying or not taking the NCLEX-RN® exam were candidates' lack of confidence to pass the exam, general test anxiety, not having enough time to prepare, and expiration of their registration or authority-to-test letter (Woo et al., 2009).

Amount of time studying. Beeman and Waterhouse (2003) found a significant correlation between the total number of hours studying after graduation ($p \leq .022$) and the hours of study the week before taking and passing the NCLEX-RN® exam ($p \leq .045$). However, the sample size in this study was only 12. In studies of the experiences of candidates who failed the NCLEX-RN® examination, inadequate study habits and lack of knowledge about how to prepare for the NCLEX-RN® exam were found to be a common theme (Griffiths, Papastrat, Czekanski, & Hagan, 2004; McFarquhar, 2006; Silva, 2014).

Employment. In Beeman and Waterhouse's (2003) study of 12 participants, the number of hours a candidate worked after graduation while preparing for the NCLEX-RN® exam was not found to be significantly correlated with passing the exam. However, in qualitative studies of candidates who failed the NCLEX-RN® examination, working too many hours was identified as a factor candidates perceived to have contributed to their failure (Griffiths et al., 2004; McFarquhar, 2006; Silva, 2014).

Test anxiety. The literature on test anxiety after graduation was associated with the NCLEX-RN® examination. Test anxiety or the inability to control anxiety was the most frequently reported non-academic factor that influenced NCLEX-RN® outcome (Eddy & Epeneter, 2002; Griffiths et al., 2004; Mills, Wilson, & Bar, 2001; Mullen, 1996; Poorman & Martin, 1991; Silva, 2014; Waltman, 1997).

Variables Summary

Although numerous studies sought to identify predictors and interventions associated with NCLEX success, the findings were mixed. The variables found to be significant in some studies were not significant in others. In addition, a single variable might not have an effect on NCLEX success but when interacting with another variable, it might. Yet, the combination of variables in the studies in the literature review were rarely identical, making comparisons and generalizations difficult. Of note, there was literature on the demographic variable of first-generation college students but no literature specific to first-generation college students in nursing education was found.

While there seemed to be evidence to support the use of end of program exit exams to predict success on NCLEX, they did not seem to predict failure. Many times, students did not meet the established benchmarks on the predictor exit exams and still

passed the NCLEX-RN®. A number of intervening factors might explain the lower reliability in predicting failure, e.g., what students did in the time period between taking the comprehensive exit exam and actually sitting for the NCLEX. Few candidates took the NCLEX-RN® exam immediately after graduation and becoming eligible (Woo et al., 2009). Most studied and did some kind of review yet no studies in the literature examined the use of a standardized test for candidates to use to determine their actual readiness to sit for the NCLEX exam after they had completed their NCLEX preparation. This study was intended to provide new knowledge addressing this gap in the nursing education literature by examining the relationship between the Kaplan Readiness Exam score, a test intended to be taken after completion of a Kaplan NCLEX-RN® Review Course and completion of a candidate's NCLEX-RN® preparation, and the outcome of NCLEX. The relationship between Kaplan's identified benchmark on the Readiness Exam and this study's findings of the score associated with a 95% confidence interval of passing NCLEX were examined.

Since the literature identified test anxiety as the most frequently reported non-academic factor that influenced the NCLEX-RN® outcome, this study examined factors those candidates who met the identified benchmark on the Kaplan RN Readiness exam and yet failed the NCLEX-RN® on the first attempt identified as contributing to their outcome as well as what those candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® exam on their first attempt identified as contributing to their outcome..

The nursing paradigm that guided the development of knowledge in this study was Newman's (1992) interactive-integrative paradigm. Two theoretical frameworks

were also used to frame this study: Bloom's taxonomy (Bloom et al., 1956) and classical test theory.

Paradigm

The interactive-integrative paradigm views phenomenon being studied as interactive (the first word of the paradigm) and change as integrative (the second word of the paradigm; Newman, 1992). The interactive-integrative paradigm adheres to the need for control and predictability in research but views reality as multidimensional and contextual. While it acknowledges the importance of experience and includes both subjective and objective phenomena, it also holds to the objectivity, control, and predictability of the positivist view (Newman, 1992). From this perspective, nursing phenomena are viewed as both objective and subjective in reciprocal interaction.

Using the interactive-integrative paradigm to guide knowledge development in this study (Newman, 1992), readiness for the NCLEX-RN examination was viewed as multidimensional and context dependent. Change in readiness was viewed as a function of multiple antecedents and multiple relationships (GPA, standardized test scores, amount of time studying, test anxiety, etc.) and relationships moved from linear to reciprocal. Furthermore, both objective (GPA, age, gender, test scores, etc.) and subjective (test anxiety) phenomena related to readiness for the NCLEX-RN examination were studied with the emphasis on objectivity, control, and predictability (Fawcett, 1993).

Theoretical Frameworks

Bloom's Taxonomy

Bloom's (Bloom et al., 1956) taxonomy of cognitive domains provided the framework for development and item writing on the NCLEX-RN® examination.

Therefore, NCLEX-RN® predictor tests must not only be consistent with the concepts on the NCLEX-RN® test plan but also congruent with Bloom's taxonomy or they risk a decrease in comparability and predictability of outcome on the NCLEX-RN® examination.

Bloom et al. (1956) first developed Bloom's taxonomy to classify learning outcomes. The original taxonomy consisted of six categories, many with subcategories, of cognitive domains arranged in a cumulative hierarchical framework: knowledge, comprehension, application, analysis, synthesis, and evaluation. Achievement of the next more complex skill or ability required achievement of the prior one. The revised Bloom's taxonomy (Krathwohl, 2002) was a two-dimensional framework: knowledge (resembling the subcategories of the original taxonomy) and cognitive processes (resembling the six categories of the original taxonomy with the knowledge category) were renamed remember; the comprehension category was renamed understand; synthesis was renamed create and made the top category; and the remaining categories were changed to their verb forms: apply, analyze, and evaluate. Although arranged in a hierarchical structure, it was not as rigid as in the original taxonomy (Krathwohl, 2002). The major difference between the original and revised taxonomy lay in the more useful and comprehensive additions of how the taxonomy intersected and acted upon different types and levels of knowledge--factual, conceptual, procedural and metacognitive.

The developers of NCLEX-RN® predictor tests must weave the elements of the revised Bloom's taxonomy into the test plans since the pattern of the actual NCLEX-RN® examination aligns with Bloom's revised taxonomy.

Classical Test Theory

A test score is a number that purportedly reflects a candidate's proficiency in some clearly defined knowledge or skill domain. A test theory model is necessary to understand the relationship that exists between the observed (or actual) score on an examination and the underlying proficiency in the domain, which is generally unobserved (De Champlain, 2010). Making inferences about things not directly observable is an imperfect process and, consequently, the alternatives for unobservable variables are likely to be error-prone to some degree. Charles Spearman (cited in DeVellis, 2006) was among the first theoreticians to recognize this and explicate the relationship between the information gathered from observation and the information truly of interest--the unobservable variable. Spearman's observations laid a foundation for classical test theory (CTT; DeVellis, 2006).

Classical test theory, also known as the true score theory, is a traditional quantitative approach to testing the reliability and validity of a scale based on its items. Although CTT is concerned with certain properties of individual items on a scale, its primary emphasis is on items as a group. It is based on the principle that an observed score (X) is equal to the true score (T) plus some degree of error (E; De Champlain, 2010; Waltz, Strickland, & Lenz, 2010).

$$X = T + E$$

The true score is a score that would be the same every time a person takes the exam (which for humans is impossible). As this never happens in practice, it becomes important to assess the extent to which an observed score reflects true knowledge of the domain(s) presumably being targeted by the test. The error accounts for extraneous

variables the person might experience the day of the exam (i.e., anxiety, headache) that might not have existed on a different exam day. An instrument that has been determined to be valid and reliable based on the statistical analyses associated with CTT that determine content validity, construct validity, and criterion-related validity should be able to predict a person's performance in the future (Kline, 2005; Nibert et al., 2006; Sullivan, 2011).

Theoretically then, if the Kaplan RN Readiness exam and the NCLEX-RN® examination are measuring knowledge of the same domain (the competencies needed to perform safely and effectively as a newly licensed, entry-level registered nurse), the observed score on the Kaplan RN Readiness exam should predict a candidate's outcome (pass/fail) on the NCLEX-RN® examination.

Classical test theory has served as the theoretical framework for several studies examining the validity exams similar to the Kaplan RN Readiness exam (Morrison, Adamson, Nibert, & Hsia, 2004; Nibert et al., 2006; Sullivan, 2011). Classical test theory was a pertinent theoretical framework for this study because it took into consideration a degree of error in the measurement process because when dealing with human beings, there is always an element of uncertainty. The ability to account for the degree of error allowed for improved accuracy on the predictability of an observed score (in this study, an individual's performance on the Kaplan RN Readiness exam [predictor variable]) and their performance in the future on an exam testing the same domain (in this case, the outcome on the NCLEX-RN® examination [the criterion variable]). A discussion of the methodology of this study follows.

CHAPTER III

METHODOLOGY

In this chapter, the methodology used to carry out the study is presented. Included are descriptions of the design, setting, sample, procedure, instruments, analysis and ethical considerations.

Design

An exploratory field study approach was used to conduct this investigation. An exploratory field study is one in which relationships are explored between variables that take place in the real world (not a laboratory) and there is no manipulation of the variables (Remler & Van Ryzin, 2015). Such an approach was appropriate for the purpose of identifying variables associated with passing or failing the NCLEX-RN® examination. This study was retrospective and longitudinal in nature and the data were primarily quantitative although some qualitative data were collected and analyzed. The following quantitative variables were included in the first phase of this study:

- Gender
- Age
- Previous degree
- First generation college student
- Nursing program
- End of program GPA

- Amount of completed, recommended NCLEX® prep
- Average score on recommended NCLEX® prep tests
- Kaplan RN Readiness exam score
- NCLEX-RN® outcome

Setting

The setting for this study was a private, not-for-profit health sciences college in the Midwestern United States that has over a 100-year history of educating nurses. Types of programs offered by the school of nursing include two pre-licensure nursing programs (traditional BSN program and a 15-month BSN program), an RN to BSN program, a Master of Science in Nursing (MSN) in Nursing Education, and an MSN Family Nurse Practitioner. The focus for this study was on the two pre-licensure BSN programs. The typical number of graduates from the two pre-licensure programs combined ranges from 75-90 graduates annually.

This college has a nursing faculty position of NCLEX-RN® Coordinator who supports NCLEX-RN® success within the pre-licensure nursing curricula. The Coordinator is responsible for assisting candidates in preparing for the licensure exam and in assisting faculty in strategies to support licensure success throughout the curriculum. A unique feature of this position is the Coordinator's assistance with seniors in their last semester of the nursing program in developing an individualized plan for NCLEX® preparation for after graduation. Another unique feature is the Coordinator's continued support and advising on NCLEX® preparation to NCLEX® candidates after graduation until successfully passing the NCLEX-RN® examination.

Sample

The sample was pre-licensure BSN graduates from May 2016 to May 2018 from a private, not-for-profit college in the Midwestern United States. The participants were over the age of 18 and formed a convenience sample. Consent was obtained for only the participants involved in the qualitative methods portion of this study (see Appendices A and B). Consent was not sought for the quantitative methods data collection as these data are normally collected by the researcher's college or the researcher in her role as the NCLEX-RN® Coordinator at the college. This study examined the data for relationships and passing the NCLEX-RN examination. No individual names or identifiers were used in any reports. Permission to share the findings of this study was obtained from the Dean of Nursing at the college (see Appendix C).

Procedure for Data Collection

Data collected for the first phase of the study consisted of participants' age, gender, previous degree, first generation college student, nursing program (traditional or 15-month BSN), end of nursing program GPA, score on the Kaplan RN Readiness exam, and first-time NCLEX-RN® examination outcome (pass/fail). Participants' demographic data and nursing program data were stored in a cloud-based academic enterprise resource planning solution designed primarily for higher education institutes and obtained through the college's Registrar. Participants' completion of the recommended NCLEX® preparation plan and score on the Kaplan RN Readiness exam were obtained through the Kaplan administrator/faculty login on the Kaplan website.

Data on the candidates' outcome of the NCLEX-RN® exam were obtained from board of nursing websites. If a board of nursing website showed a candidate had been

issued a registered nurse license, that indicated they passed the NCLEX-RN® examination. If a candidate who applied for licensure in the state of the setting for this study failed the NCLEX-RN® examination, that state's board of nursing posted a comment on the candidate's online application status that the NCLEX® results had been emailed to the candidate. Determining failure of candidates in other states consisted of checking the appropriate state's registered nurse license lookup to see if a candidate had been issued a license. If no license had been issued within a week of a candidate testing, that indicate they failed the NCLEX-RN® examination.

Data collected from the college were both nominal and ordinal and included student age, gender, previous degree, first generation college student, nursing program (traditional or 15-month BSN), and end of nursing program GPA. Data collected from the Kaplan RN Readiness Exam were the candidate's score on the test or ordinal data. Data collected from the state boards of nursing were whether or not a candidate was issued a registered nurse license or nominal data. These data were entered into an Excel spreadsheet (see Appendix D) and transferred into Statistical Package for Social Sciences (SPSS) version 22 for analysis.

Data collection for the second phase of the study involved face-to-face or phone interviews using an interview script with primarily open-ended conversational questions, with the researcher acting as the data collection tool (see Appendices E and F). Interviews are thought to be the most respected qualitative data collection method and face-to-face interviews are viewed as the "best method of collecting survey data because of the quality of information they yield" (Polit & Beck, 2017, p. 243). Thus, face-to-face interviews were conducted whenever possible.

Participants in the second phase were those who had either met the benchmark on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® exam on their first attempt or scored below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® exam on their first attempt. These participants were first asked to sign a consent form (see Appendices A and B) to help ensure they understood the purpose of the study and that they would remain anonymous. Participants chose pseudonyms before interviews began. Next, the participants participated in an audio-recorded, semi-structured, informal interview (see Appendices E and F).

Measurement

The following subsections address how each of the variables was measured.

Kaplan Registered Nurse Readiness Exam

A candidate's score on the Kaplan RN Readiness exam was calculated as a percentage. It was measured by dividing the number of questions a candidate got correct on the exam by the total number of exam questions for a total of 180. Scores could range from 0-100%.

National Council Licensure Exam for Registered Nurses Examination Outcome

The NCLEX-RN® examination outcome is measured as either pass or fail. The examination is computer adaptive; the computer decides whether a candidate passes or fails based on one of three rules.

Ninety-five percent confidence interval rule. This rule is the most common for NCLEX® candidates. The computer stops giving items when it is 95% certain a candidate's ability is clearly above or clearly below the passing standard.

Maximum-length exam rule. When a candidate's ability is very close to the passing standard, the computer continues to give the candidate items until the maximum number of items is reached. At this point, the computer disregards the 95% confidence rule and decides whether a candidate passes or fails by their final ability estimate. If their final ability estimate is above the passing standard, a candidate passes and if his/her final ability is at or below the passing standard, the candidate fails.

Run-out-of-time rule. When a candidate runs out of time before reaching the maximum amount of items, the computer was not been able to decide whether he/she passed or failed with 95% certainty and has to use an alternate rule. If a candidate has not answered the minimum amount of items (75), he/she fails. If a candidate has at least answered the minimum amount of items, the computer reviews his/her last 60 ability estimates. If his/her last 60 ability estimates were above the passing standard, he/she passed. If his/her ability dropped below the passing standard even once during their last 60 items, he/she failed. This does not mean a candidate must answer the last 60 items correctly but each of the last 60 items was above the passing standard.

Gender, Age, and First-Generation College Student

A candidate's gender was measured as either male or female, age as a numerical number, and first-generation college student as yes or no. These data were gathered from self-reports on admission to the nursing program.

Previous Degree

The presence of a previous degree was measured as yes or no and was determined by a review of submitted transcripts that stated whether or not a degree was conferred.

Nursing Program Type

The nursing program type was measured as either traditional program or a 15-month program. The traditional program requires a total of 120 credits consisting of general education and nursing credits. The 15-month program is a fast-track program designed for students who have completed the required 56 general education credits and requires 64 credits of specific nursing courses.

End of Program Grade Point Average

The end of program grade point average (GPA) is a quantitative measure of academic achievement and is computed on the basis of credits earned and grades achieved for courses taken at the college in this study. The GPA is based on a 4.0 scale in which an A is equal to 4.0, AB is equal to 3.5, B is equal to 3.0, BC is equal to 2.5, C is equal to 2.0, D is equal to 1.0, and F is equal to 0. The GPA is calculated by multiplying the numeric grade value (e.g., 4.0 for an A) for each course by the number of credits the course is worth, adding these numbers together, and dividing by the total number of credits taken.

Amount of Recommended Preparation for National Council Licensure Exam for Registered Nurses Completed

The amount of recommended NCLEX® preparation completed was measured as a percentage. The percentage was calculated by dividing the number of recommended NCLEX preparation test questions a participant completed divided by the number of questions on the college's NCLEX-RN® Coordinator's recommended preparation plan. Scores could range from 0 - >100% if participants completed more questions than was recommended.

Participants' average score on the completed recommended NCLEX® preparation tests was calculated as a percentage. The score was determined by adding the scores of all recommended NCLEX prep tests, a minimum of 25 questions, and dividing the sum by the number of tests. Scores could range from 0-100%.

Analysis

The following subsections address quantitative data analysis procedures, qualitative data analysis procedures, management of subject attrition, and missing data and calculations planned.

Quantitative Data Analysis Procedures

The quantitative data were analyzed in three stages. The first stage was analysis and computation of the descriptive statistics and the distribution of the data for each variable. The second stage of the data analysis was to describe the association of each variable to the Kaplan RN Readiness exam score. The third stage of the data analysis was an exploration of the associations among study variables.

Data were analyzed using the Statistical Package for the Social Sciences computer program. A Type 1 error of 5% percent was used for all tests of statistical significance and a posteriori comparisons unless otherwise indicated. Normality of the residuals was assessed as appropriate by the Shapiro-Wilk statistic (*W*; Shapiro & Wilk, 1965) with a conservative alpha level of $p \geq .01$. When non-normality of the residuals was indicated and the data met the criteria set by Hair, Black, Babin, Anderson, and Tatham (2005) of mean/standard deviation < 4, transformations were performed as indicated by the Box and Cox (1964) method for estimating the best transformation to normality.

The primary goals of the analysis were to identify trends and associations among the variables through intra-and inter-subject comparisons. Choice of the parametric or nonparametric statistical test employed was based on the level of measurement (i.e., nominal, ordinal, interval, or ratio) and the normality of the distribution of the data.

Qualitative Data Analysis Procedures

The data analysis for the qualitative data proceeded using an inductive thematic analysis approach. Interview notes and recordings of the interview were transcribed verbatim to identify themes that emerged (Creswell, 2014). The data were formulated into descriptive narratives and hand coded for themes that could be used to reflect a deeper understanding of factors other than predictive test scores that influenced the NCLEX-RN® outcome. After analyzing the qualitative data, the researcher then specified how the qualitative results could aid in the identification of interventions to better prepare NCLEX-RN® candidates and promote NCLEX-RN® success. The sample size for the qualitative part of the study was guided by the quantitative findings (met the benchmark on the Kaplan RN Readiness exam yet failed the NCLEX-RN® examination or scored below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® exam on their first attempt) with a final sample size of seven.

Because of the complexity of steps in mixed methods studies, Creswell and Plano Clark (2011), Bazely (2017), and others recommended the use of diagrams to clearly convey the research design. Thus, a diagram of the design for this study is provided in Figure 1. This diagram provides a visualization of the flow of data gathering and analysis steps and how the quantitative data informed the participants to be purposefully selected for the qualitative phase.

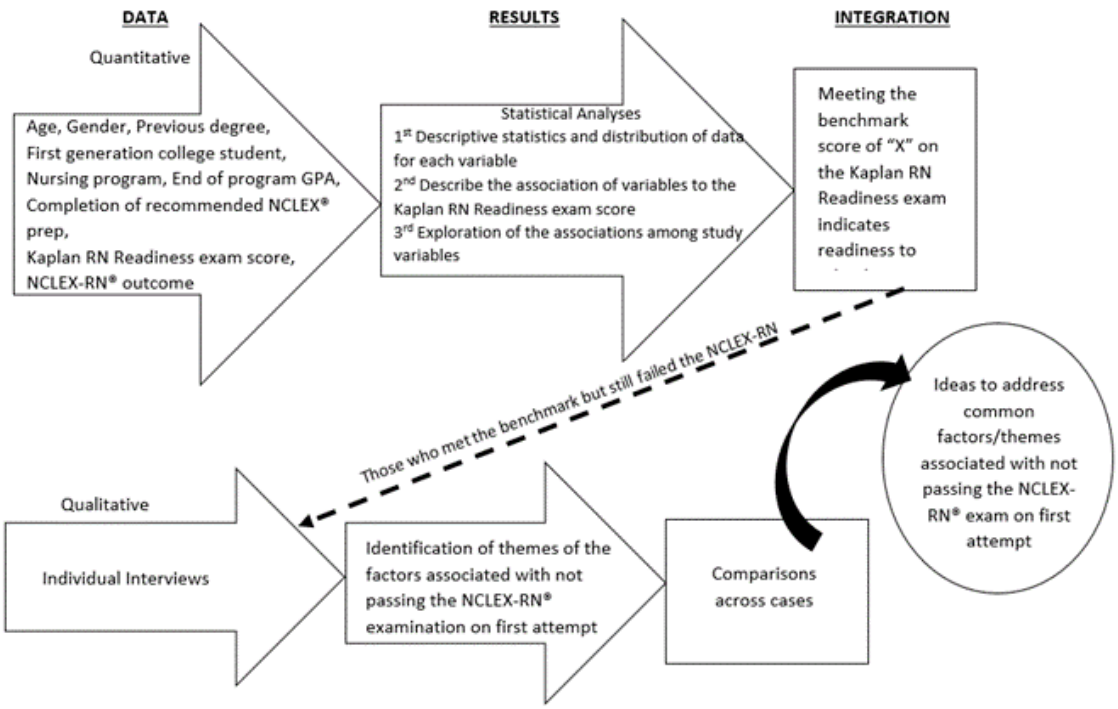

Figure 1. Design diagram for determining readiness to take the National Council Licensure Exam for Registered Nurses.

Management of Attrition and Missing Data

This retrospective study used primarily existing data; thus, attrition only posed an issue in the latter, qualitative, part of the study. In an attempt to avoid attrition, participants in the qualitative portion of the study were offered a gift card for completing the interview. However, participants were informed they were able to drop out of the study at any time. If participants in the qualitative part of the exam dropped out of the study, any information obtained from that part of the study was destroyed.

Only data on graduates who took the NCLEX-RN® examination were collected. Those who did not take the NCLEX-RN® examination were excluded from the study. If data were missing from those who had taken the NCLEX-RN® examination, attempts

were made to find the data and if unable to find it, those individuals were removed from the sample.

Duration of the Study

Data for this study were collected on graduates of the pre-licensure BSN programs from May 2016 to May 2018.

Data Handling Plan

Data were collected from the college's archived data, Kaplan administrator/ faculty website, state boards of nursing websites, and interviews. Only the researcher involved in this study had access to the Excel spreadsheet with this data, although administrators at the college had access to all students' archived data; scores on the Kaplan website and information on licensure are public information. All data and information were stored on a locked password protected computer behind a locked door.

Ethical Considerations

This study was approved by the University of Northern Colorado Institutional Review Board (see Appendices G and H) and by the Institutional Review Board for the college in this study (see Appendix I). Precautions and safeguards were taken to assure the safety of all data obtained for this study and the identity of the subjects. All data for each subject were filed under a separate identifying number. Only the researcher and her advisor had access to the documents that linked the subject with his/her identifying information used in this study. All data and information were stored on a locked password protected computer behind a locked door. At the completion of the study and when no longer needed, all records linking names and data will be destroyed.

CHAPTER IV

DATA ANALYSIS AND RESULTS

The findings of this exploratory field study are presented in this chapter. The findings are presented in two sections beginning with a description of the sample for each phase of the study followed by the data analysis and results as related to each research question and hypothesis.

Description of Sample

Phase One

All students who graduated from the pre-licensure baccalaureate nursing programs from a private, not-for-profit college in the Midwestern United States between May 2016 and May 2018 were included in the sample. The total sample size for the first, or quantitative, part of the study was 284. The following descriptive statistics were calculated using Statistical Packages for the Social Sciences (SPSS) software version 25.

Non-academic demographics. The ages of participants ranged from 21 to 56 years with the mean age of 24.5 years. The median and mode ages were both 23 years. Of the 284 participants, 257 (90.5%) were female and 27 (9.5%) were male. Seventy-one (25%) of participants had a previous degree and 213 (75%) did not have a previous degree. One hundred ten (38.7%) of participants were first generation college students.

Academic demographics. Of the 284 participants 154 were in a traditional BSN program and 130 were in the 15-month BSN program. Participants' GPAs at the end of

the nursing programs ranged from 2.36 to 4.00 with a mean of 3.35. The median GPA was 3.37 and the mode GPA was 4.00. The amount of recommended NCLEX® preparation tests participants completed ranged from 0-133.9% with an average of 79.9%, a median of 84.2%, and a mode of 87.4%.

Participants' average scores on the recommended NCLEX® preparation tests ranged from 46.4% to 71% with a mean score of 57.9%, a median of 57.9%, and a mode of 56.2%. Participants' scores on the Kaplan RN Readiness exam ranged from 53% to 88% with a mean of 67.9% and median and mode of 67%.

National Council Licensure Examination-Registered Nurse® outcome. Of the 284 participants, 269 (94.7%) passed the NCLEX-RN® examination on their first attempt. Fifteen (5.3%) failed the NCLEX-RN® examination on their first attempt.

Phase Two

The population of interest for the second, or qualitative, phase of the study were the participants in phase one who either met the benchmark score on the Kaplan RN Readiness Exam but did not pass the NCLEX-RN® examination on the first attempt or scored 4% percent or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt. The number of phase one participants meeting this criterion was six and four, respectively, with an actual sample size of seven. Four of the seven in the sample met the benchmark score on the Kaplan RN Readiness Exam but did not pass the NCLEX-RN® examination on the first attempt and three of the seven in the sample scored below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt. The

following descriptive statistics of the sample were calculated using Statistical Packages for the Social Sciences (SPSS) software version 25.

Met benchmark yet failed National Council Licensure Examination-Registered Nurse®. Below is a description of both the non-academic and academic variables of the six phase one participants who met the Kaplan RN Readiness Exam benchmark score but failed the NCLEX-RN® examination on their first attempt.

Non-academic demographics. The ages of participants ranged from 22 to 25 years with a mean age of 23.8 years. The median and mode ages were both 24 years. All six participants were female. One was a first-generation college student and none had a previous degree.

Academic demographics. Four participants were graduates of the traditional BSN program and two were graduates of the 15-month BSN program. Participants' GPAs at the end of the nursing programs ranged from 2.50 to 3.49 with a mean of 3.04 and median of 3.11. There was no mode as no single GPA occurred more than once. The amount of recommended NCLEX® prep participants completed ranged from 50.7-110.5% with an average of 88.7% and median of 92.1%. Participants' average scores on the recommended NCLEX® preparation tests ranged from 51% to 62.5% with a mean score of 55.1% and median of 53.5%. The average score of participants on the Kaplan RN Readiness Exam was 72%. The scores ranged from 64% to 87% with a median of 67.5 and mode of 67%.

Scored below benchmark and passed National Council Licensure Examination-Registered Nurse®. Below is a description of both the non-academic and academic variables of the four phase one participants who scored 4% or more below the

Kaplan RN Readiness Exam benchmark and passed the NCLEX-RN® examination on their first attempt.

Non-academic demographics. The ages of participants ranged from 23 to 24 years and all four were female. One of the four was a first-generation college student and two of the four had a previous degree.

Academic demographics. Two participants were in the traditional BSN program and two were in the 15-month BSN program. Participants' GPAs at the end of the nursing programs ranged from 2.85 to 3.38 with a mean of 3.17 and median and mode both of 3.23. The amount of recommended NCLEX® preparation tests participants completed ranged from 73-111.3% with an average of 92% and median of 91.8%. Participants' average scores on the recommended NCLEX® preparation tests ranged from 54.3% to 58.2% with a mean score of 55.6% and median of 54.9%. The average score of participants on the Kaplan RN Readiness exam was 55.3%. The scores ranged from 54% to 56%.

Data Analysis

The dependent variable for this study was the outcome of the first attempt on the NCLEX-RN® examination. The independent variables were graduates' gender, age previous degree, first-generation college student, type of nursing program, end of program GPA, amount of recommended NCLEX® prep completed, the average score on the recommended NCLEX® preparation tests, and the Kaplan RN Readiness Exam score. Several different statistical procedures were conducted to evaluate the relationships between the dependent and independent variables using Statistical Packages for the Social Sciences (SPSS) software version 25.

The method used to analyze the data from interviews in the second, qualitative, phase was Moustakas' (1994) qualitative method. According to Moustakas' method, analyzing phenomenological data involved following a systematic procedure. For this study, this procedure included the researcher reflecting upon her experiences preparing for and taking the NCLEX-RN® examination (epoche), conducting semi-structured interviews for consistency in the data collected, identifying significant statements in the database from participants' interviews, and clustering these statements into meaningful themes. The researcher synthesized the themes into a description of the experiences of the study participants (textual and structural descriptions), and then constructed a composite description of the factors contributing to the outcome on the NCLEX-RN® examination. As recommended by Creswell (2014), it was important to evaluate the trustworthiness of a study and determine its validity. Different methods to establish trustworthiness were used. First was to consciously be aware of not trying to influence participants' descriptions. Secondly, all interviews were listened to at least twice to ensure accuracy in transcription.

Research Questions, Hypotheses, and Results

Research Question 1

Q1 Is there is a correlation between the college's BSN candidates' scores on the Kaplan RN Readiness Exam and their outcome on the NCLEX-RN® examination?

This question was examined by evaluation of the study data as applied toward Null Hypothesis 1 and Hypothesis 1.

H_O1 The distribution of the Kaplan RN Readiness Exam score is the same for both outcomes on the NCLEX-RN® examination (pass/fail).

H1 The distribution of the Kaplan RN Readiness Exam score varies for each outcomes on the NCLEX-RN® examination (pass/fail).

Since the data did not fit the normal distribution, the nonparametric Mann-Whitney *U*-test was used to determine whether a relationship existed between the score on the Kaplan RN Readiness Exam and the outcome on the NCLEX-RN® examination. This nonparametric test was used to determine whether a relationship existed between the two groups when one variable was dichotomous (NCLEX-RN® outcome) and the other variable was at least ordinal (Kaplan RN Readiness Exam score; Kellar & Kelvin, 2013, p. 111). Two hundred fifty-seven of the 284 participants completed the Kaplan RN Readiness Exam (Sanders, 2014). The median score on the Kaplan RN Readiness exam for participants who passed the NCLEX-RN® examination on their first attempt was 68% and 61% for those that failed. The *p*-value for the Mann-Whitney *U*-test was analyzed at .024, which is below the α-level of .05. Therefore, the null hypothesis was rejected as a significant positive relationship was found to exist between the Kaplan RN Readiness Exam score and the outcome on the NCLEX-RN® examination. It could be concluded the participants who passed the NCLEX-RN® examination scored significantly higher on the Kaplan RN Readiness Exam than those who failed. This finding was consistent with the classical test theory in which the observed score (Kaplan RN Readiness Exam score) was predictive of an individual's performance in the future on an exam testing the same domain (passing the NCLEX-RN® examination).

Research Question 2

Q2 What is the score on the Kaplan RN Readiness Exam that predicts with at least 95% certainty the college's students passing the NCLEX-RN® examination on the first attempt?

There were very few first-time failures; 15 of the total 284 or 5% failed and of the 257 who completed the Kaplan RN Readiness Exam, 12 or 4.6% failed the NCLEX-RN® examination on the first attempt. This low percentage of failures skewed the results; thus, no score on the Kaplan RN Readiness Exam for this study's sample was found to correlate with 95% certainty of passing the NCLEX-RN® examination on the first attempt. Therefore, the Kaplan RN Readiness Exam score that Kaplan, Inc. (Sanders, 2014) identified in their statistical analysis as correlated with 95% certainty of passing the NCLEX-RN® examination on the first attempt was used as the benchmark score for analysis in this study. The sample in the Kaplan, Inc. (Sanders, 2014) study was larger and more diverse and consisted of 735 nursing school graduates from baccalaureate, associate, diploma, and master's programs who voluntarily self-reported their first-time NCLEX-RN® pass/fail decision. The benchmark score from Kaplan, Inc. was 61.7% (Sanders, 2014). This score was rounded to the nearest whole number (62%) for this study as the results for individuals' Kaplan tests were provided in whole numbers (see Table 1).

Table 1

Outcome on First Attempt on the National Council Licensure Examination-Registered Nurse® Examination

	Passed	Failed
All Participants (*n* = 284)	269	15
Completed Kaplan RN Readiness exam (*n* = 257)	245	12
Met Benchmark	227	6
Below Benchmark	18	6

Research Question 3

Q3 Are there significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, GPA, first generation college student, previous degree, program (traditional or 15 month), the amount of recommended NCLEX-RN® preparation completed, and the average score on the recommended NCLEX-RN® preparation tests?

This question was examined by evaluating the study data as applied toward Null Hypothesis 2 and Hypothesis 2.

H_O2 There are no significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, GPA, first generation college student, previous degree, program (traditional or 15 month), the amount of recommended NCLEX-RN® preparation completed, and the average score on the recommended NCLEX-RN® preparation tests.

H2 There are significant differences in the Kaplan RN Readiness Exam score associated with the variables of gender, age, GPA, first generation college student, previous degree, program (traditional or 15 month), the amount of recommended NCLEX-RN® preparation completed, and the average score on the recommended NCLEX-RN® preparation tests.

Since the data did not fit the normal distribution, the nonparametric Mann-Whitney *U*-test and Spearman correlation coefficient statistical tests were used to determine whether a relationship existed between the score on the Kaplan RN Readiness

Exam and the variables of gender, age, previous degree, first generation college student, nursing program, end of program GPA, amount of recommended preparation completed, and average score on the recommend preparation tests. The Mann-Whitney *U*-test was used to determine whether a relationship existed between the dichotomous variables of gender, previous degree, first generation college student, and nursing program and the ordinal variable of the Kaplan RN Readiness exam score. The Spearman correlation coefficient test was used to determine whether a relationship existed between the ordinal variables of age, end of program GPA, amount of completed recommended NCLEX-RN® preparation, and average score on recommended NCLEX-RN® preparation tests and the ordinal variable of the Kaplan RN Readiness exam score.

Gender, previous degree, first generation college student, and nursing program. The average score for females (n = 237) on the Kaplan RN Readiness Exam was 68.2% with a median of 68% and mode of 67%. Males (n = 20) had an average score of 64.4% on the Kaplan RN Readiness Exam and 64% for both the median and mode. The p-value of the Mann-Whitney *U*-test for the relationship between gender and Kaplan RN Readiness Exam score was calculated at .002, which was below the α-level of .05. Thus, there was a significant relationship between gender and the Kaplan RN Readiness Exam score with females scoring significantly higher than males on the Kaplan RN Readiness Exam.

Those participants with a previous degree (n = 64) had an average score on the Kaplan RN Readiness Exam of 68.1% with a median of 67.5% and mode of 66%. Those with no previous degree (n = 193) had an average score of 67.8% with a score of 67% for both the median and mode. The p-value of the Mann-Whitney *U*-test was calculated at

.868. This value was above the α-level of .05. Thus, there was no significant relationship between previous degree and the Kaplan RN Readiness Exam score so it could be concluded that the distribution of scores on the Kaplan RN Readiness Exam was the same for those with a previous degree and those without a previous degree.

First generation college students (n = 97) were found to have an average Kaplan RN Readiness Exam score of 68.9%, a median of 68%, and mode of 67%. Those who were not first-generation college students (n = 160) had an average score on the Kaplan RN Readiness Exam of 67.3% with a median of 67% and mode of 66%. The p-value for the Mann-Whitney U-test was computed as .043. This was below the α-level of .05 and indicated the difference in the distribution of scores on the Kaplan RN Readiness Exam scores between first-generation college students and non-first-generation college students was statistically significant. Thus, it could be concluded that first generation college students scored higher on the Kaplan RN Readiness Exam than those who are not first-generation college students. This finding is discussed further in Chapter V.

Traditional nursing program students had an average score on the Kaplan RN Readiness Exam of 67.5% with a median and mode of 67%. Fifteen-month nursing program students had an average score on the Kaplan RN Readiness Exam of 68.4% with a median of 68% and mode of 64%. The p-value for the Mann-Whitney U-test for these variables was analyzed at .297 and thus not statistically significant. It was concluded that the distribution of Kaplan RN Readiness Exam scores was the same for students in both nursing programs (see Table 2).

Table 2

Relationship of Gender, Previous Degree, First Generation College, Nursing Program and Kaplan Registered Nurse Readiness Exams Score

		Kaplan RN Readiness Exam Score				
		N	*M*	Median	Mode	*p*-value
Gender						
	Female	237	68.2	68.0	67	
	Male	20	64.4	64.0	64	.002
	Total	257				
Previous Degree						
	Yes	64	68.1	67.5	66	
	No	193	67.8	67.0	67	.868
	Total	257				
First Generation						
	Yes	97	68.9	68.0	67	
	No	160	67.3	67.0	66	.043
	Total	257				
Nursing Program						
	Traditional	141	67.5	67.0	67	
	15 Month	116	68.4	68.0	64	.297
	Total	257				

Age, end of program grade point average, amount of completed recommended National Council Licensure Examination-Registered Nurse® preparation and average score on recommended National Council Licensure Examination-Registered Nurse® preparation tests. No statistically significant association was identified between age and scores on the Kaplan RN Readiness Exam (*n* = 257). The Spearman correlation coefficient was identified as -.007 with a *p*-value of .917. This *p*-value was greater than the .05 α-level and thus not statistically significant. It was concluded there was no significant correlation between student age and score on the Kaplan RN Readiness Exam.

The Spearman correlation coefficient test was used to examine the association between the end of program GPA and Kaplan RN Readiness Exam score (n = 257). The computed Spearman correlation coefficient was computed to be .480 and a p-value of .000. Because .000 was smaller than the established α-level of .05 (and α-level of .01), it was concluded the correlation coefficient was statistically significant. Thus, there was a strong positive relationship (as one increased or decreased, the other moved in the same direction) between the end of program GPA and the Kaplan RN Readiness Exam score.

A statistically significant positive correlation at the .01 α-level was found between scores on the Kaplan RN Readiness Exam and both the amount of recommended NCLEX-RN® preparation completed and the average score on the recommended NCLEX-RN® preparation tests (n = 257). The Spearman correlation coefficient for the relationship between the amount of recommended NCLEX-RN® preparation completed and the Kaplan RN Readiness exam score was analyzed at .213 and a p-value of .001. The Spearman correlation coefficient for the correlation between the average score on the recommended NCLEX-RN® preparation tests and Kaplan RN Readiness Exam score was analyzed at .581 and a p-value of .000 (see Table 3).

Table 3

Relationship of Age, Grade Point Average, Amount of Completed Preparation, Average Score on Preparation Tests, and Kaplan Registered Nurse Readiness Exam Score

Spearman Correlation Coefficient with α .05		
	Kaplan RN Readiness Score	
	Spearman *p*	*p*-value
Age	-.007	.917
End of Program GPA	.480**	.000
Amount of Recommended NCLEX-RN® Prep Completed	.213**	.001
Average Score on NCLEX-RN® Prep Tests	.581**	.000

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

Research Question 4

Q4 How does the college's Kaplan RN Readiness Exam score that predicts with at least 95% certainty passing the NCLEX-RN® examination on the first (benchmark) compare to the benchmark identified by Kaplan, Inc.?

As mentioned in the results for research question 2, the data analysis in this study was skewed due to the low number (4.6%) of first-time failures on the NCLEX-RN® examination (n = 257) and no score on the Kaplan RN Readiness Exam was found to correlate with 95% certainty of passing the NCLEX-RN® examination on the first attempt. Therefore, the score on the Kaplan RN Readiness Exam that Kaplan, Inc. (Sanders, 2014) identified as correlated with 95% certainty of passing the NCLEX-RN® examination on the first attempt (61.7% rounded to 62%) was used as the benchmark score in this study.

Research Question 5

Q5 What factors do NCLEX-RN® candidates who met the benchmark on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® examination on their first attempt attribute to the outcome?

This question was posed because although a significant relationship was found to exist between the score on the Kaplan RN Readiness Exam and the outcome on the NCLEX-RN® examination, there were some outliers who met the benchmark score on the Kaplan RN Readiness Exam but failed the NCLEX-RN® examination. This suggested some degree of error for which the Kaplan RN Readiness Exam was not able to accurately account for to predict the outcome on the NCLEX-RN® examination.

The answer to this question was sought by interviewing participants who had met the benchmark on the Kaplan RN Readiness Exam (62%) but failed the NCLEX-RN® examination on their first attempt on their experiences preparing for and taking the NCLEX-RN® examination. In the first phase of the study, 257 of the 284 participants took the Kaplan RN Readiness Exam. Six of the 257 participants met the criteria of having met the benchmark score of 62% on the Kaplan RN Readiness Exam but failed the NCLEX-RN® examination on the first attempt; four agreed to an interview for this study. Interviews were conducted outside of the college at a location of the participant's choice.

A pragmatic interpretive framework was used to analyze the data from these interviews and focused on perceived factors contributing to their NCLEX-RN® outcome and ideas to minimize these factors (Creswell, 2014). The findings are presented by first describing some demographic data of the sample followed by some of their responses to questions about their first attempt taking the NCLEX-RN® examination, things that

could have been done differently with some verbatim quotations, and concluding with a discussion of the themes identified. Each of the participants was given a pseudonym.

Demographic data. The four participants reported having taken the NCLEX-RN® examination for the first time between 19 and 32 months prior to their interview for this study and all four reported taking the NCLEX-RN® examination about a month after graduation and taking the Kaplan NCLEX-RN® Review Course. All four participants reported working while preparing for the NCLEX-RN® examination. Two were working 30-40 hours per week in non-nursing related jobs and the other two were working 8-16 hours per week--one in a non-nursing related job and the other as a nurse tech while preparing for the NCLEX-RN® examination.

Academic data. The end of nursing program GPA for the four participants ranged from 2.5 to 3.49 with a mean of 3.05. The amount of recommended NCLEX® preparation for these participants ranged from 86.3 to 110.5% with a mean of 98.95%. The average score on the recommended NCLEX® preparation tests for these participants ranged from 51.8 to 58.2% with a mean of 54.53%.

First time taking the National Council Licensure Examination-Registered Nurse® examination. Participants were asked several questions about their experience preparing for and taking the NCLEX-RN® examination for the first time. Below are some of their responses. Mary stated:

> Um, I know when I was first there I was, you know, it's an unfamiliar environment to start and I'm already a nervous Nelly as it is, so kind of just getting over that hump in itself is a big portion of it. Um, you can do as much preparation as you want but you don't know what's to come. So I think just that

> anticipation is something that I struggled with. I remember signing in and the whole let's finger print you and spin around in a circle make sure you're not hiding anything and all that stuff kind of adds up to make the experience not just a test. But yet you have to approach it as just a test. That's what I've figured out… You know I felt prepared going in, I did not feel unprepared because I had done well on the testing prior but I was very uneasy, the whole entire time I was there, very uneasy. I was not sure what was happening I was, you know there's 10 other people in the room I was just very anxious.

Taylor, the one participant who denied having test anxiety in nursing school, described her experience taking the NCLEX-RN® examination for that first time saying:

> Ahh, yea, I was very nervous. Ah, I had to schedule my exam in a city a couple of hours away so everything was already thrown off. I had to stay overnight in a hotel … I was nervous all night. I didn't sleep, tossed and turned in a hotel bedroom, was nervous when I woke up already and then you go to the testing center and you have no idea what to expect. Um, the whole vein palm scanning thing was scary. My heart was pounding before I got into the room… I truly believe that I was just so nervous it threw my whole entire everything off. I was seconding guessing all of my questions, and then I started getting a whole bunch of questions on stuff I didn't study very much for which then that threw me off… and then once I passed 75 questions and it kept going then I got like scared because I'm like oh god, it didn't shut off' and I'm nervous and then I got to like 130 and I'm like oh my gosh, I'm going to fail and then by the time it got to 200 I wasn't even, I was just like answering questions I think.

Nancy had a similar experience and stated:

> Um, I felt very anxious and overwhelmed. There was a lot of motion going on in the room around me that was very distracting… and as more people were getting up and leaving my anxiety got higher and higher and higher. So, it was very high anxiety… It distracted me where I wasn't really looking at the questions and all the answers in depth. I was just kind of overlooking what some of the words were saying, too… I would say it affected my thinking and my focus.

Phebe was the one participant who did not think the actual testing center environment contributed to her anxiety. When asked to recall her experience taking the NCLEX-RN® examination for the first time and what she was thinking or feeling, Phebe replied:

> I think I was really, really stressed out. Um, I definitely just like I had so much like preparation, I feel like you know and everything but like um, I think I was just you know, really… I just really wanted to pass and like have it done with and you know move on. So I think it was kind of, that was kind of running through my head that day of just Ok, like this is a big day… I definitely like questioned whether or not I was getting questions right or wrong and then I think my first test I took was 265. I had the full amount of questions and so I think as it kept going I was like when's it going to stop and you know did I get that right, or I would see things that. I think I like blacked out most of the questions. Like not intentionally, I think it's just they're gone. But I remember like sometimes seeing a question and being so thrown off like what in the world? ...Just like so many

random things that like weird questions I would just think what in the heck does that mean? So, there were a lot of other things going through my mind.

Things that could have been done differently. When participants were asked about other things they thought they, or someone else such as nursing faculty, could have done to have changed their outcome on their first attempt taking the NCLEX-RN® examination or anything else they would like to say about their experience, the one common theme amongst all four was managing their anxiety. None of the four felt they should have studied more; in fact, one participant felt she studied too much for the exam the first time. Three of the four mentioned the testing environment had contributed to their anxiety and that knowing what to expect, not letting the environment affect them, and having a more normal routine the day of the exam (i.e., sleep in own bed, normal morning routine) helped lessen their anxiety on their next attempt (third attempt for one participant) on the NCLEX-RN® examination when they passed it. All four participants mentioned the importance of positive thinking or not going in to take the exam thinking they were going to fail.

Below are some comments participants made regarding things they thought they, or someone else such as nursing faculty, could have done to have changed their outcome on their first attempt taking the NCLEX-RN® examination or anything else they would like to say about their experiences.

Mary stated:

Something I will tell people, and do not do this. The first time I took the test, I studied the day before and going like into the test. That's a "no." That is not

good. It wasn't like a lot of studying but like looking over things I had looked over a hundred times already, but I think that kind of also gets you worked up.

Taylor said:

I seriously believe I studied too much the first time, or didn't study correctly. I guess, I wish I would've liked studied for an hour, take an hour break, study for an hour, take an hour break as opposed to studying for 8 hours straight… Like when I look back I seriously, like I walked in there thinking I was going to fail, you know what I mean. And the third time I walked in there telling myself like "No, you can't fail this. This is your third attempt."

Nancy stated:

I do beat myself up a lot about letting the environment and how much commotion was going on affect me. So, I think if I would've just sat down and pretended no one else was in the room and, I don't know why I got so anxious… I think it was just the environment, like I was in a town I didn't really know, and I spent the night in a place I didn't really know, so it was just one thing after another just kind of added up. My mom came down with me for the second attempt and it was more of a relaxing night. The first time I was alone where I didn't really know. So, she was able to keep me calm. The second time I knew people would be getting up and I just didn't let that bother me and hearing them clicking on their mouse, and kind of was just able to eliminate all the noises.

Phebe commented:

I definitely think I just needed to calm down a lot. You know, I just needed to identify that I was a lot more anxious and worked up about this than I thought I

was. So just like being more self- aware that anxiety, whether or not I wanted to realize that I was having an issue with testing anxiety is something that you really need to identify. That you might be having this major problem that you don't want to think you're having with testing anxiety but the sooner you do realize it, and the sooner I did, it was amazing how much better my scores were doing. I got super lucky when I took that Kaplan Review online course. My instructor was like, changed everything. Like, I mean she was phenomenal. It was like, literally everything about her. She was so confident and she put so much confidence in me and she gave me so many strategies of changing the way you're thinking. Like developing a mantra, writing a mantra out on your test. Positive thinking…She told me about an app and relaxing and meditating. Um, and so like those were some relaxation things to help soothe my anxiety, but she gave me so many good tips of advice…she basically changed my way of thinking about this test… It's so easy to get frustrated because some of these practice questions are ridiculous… the more you get fed up with those questions, and it's so easy to, you get worked up and you just have to change your way of thinking. Meditating and relaxation helped me with that. I also think, just like it helps maybe to like tell future people to have a game plan of how your day is going to go. And the few things you have control over like taking breaks and getting up and moving around you can do it whenever you want to. So just making a plan of stuff.

Themes. The prominently common theme all four participants identified regarding their experience taking the NCLEX-RN® examination for the first time was anxiety or nervousness. All four participants felt their anxiety was the primary factor that

contributed to their being unsuccessful on their first attempt on the NCLEX-RN® examination. Three of the four participants also reported having test anxiety in nursing school. All participants mentioned their anxiety caused them to have other thoughts not related to the test questions running through their heads, which distracted them and prevented them from being able to focus on the test questions. A factor contributing to the anxiety of three of the four participants was the testing environment itself. Unfamiliarity with the environment, the procedure for checking in to take the NCLEX-RN® examination and distractions such as other people getting up and clicking on the computers in the testing environment contributed to their anxiety.

Research Question 6

Q6 What factors do NCLEX-RN® candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on their first attempt attribute to the outcome?

This question was posed because although a significant relationship was found to exist between the score on the Kaplan RN Readiness Exam and the outcome on the NCLEX-RN® examination, some outliers scored below the benchmark score on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination. This suggested some degree of error for which the Kaplan RN Readiness Exam was not able to accurately account for to predict the outcome on the NCLEX-RN® examination.

The answer to this question was sought by interviewing participants who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on their first attempt on their experiences preparing for and taking the NCLEX-RN® examination. A score of 4% or more below the benchmark was chosen as Kaplan, Inc.'s (Sanders, 2014) data indicated that anything less than that still

had at least a 93.7% probability of passing the NCLEX-RN® examination. In the first phase of the study, 257 of the 284 participants took the Kaplan RN Readiness Exam. Four of those participants met the criteria of scoring 4% or more below the benchmark score of 62% on the Kaplan RN Readiness Exam and passing the NCLEX-RN® examination on the first attempt. Three of the four agreed to an interview for this study. A pragmatic, interpretive framework was used to analyze the data from these interviews and focused on perceived factors contributing to their NCLEX-RN® outcome (Creswell, 2014). The findings are presented by first describing some demographic data of the sample followed by some of their responses to questions about the Kaplan RN Readiness Exam, the NCLEX-RN® examination, factors associated with NCLEX-RN® success with some verbatim quotations, and concluding with a discussion of the themes identified. Each of the participants was given a pseudonym.

Demographic data. The three participants reported having taken the NCLEX-RN® examination between 14 and 32 months prior to their interview for this study; all three reported taking the NCLEX-RN® examination about a month after graduation and taking the Kaplan NCLEX-RN® Review Course. One of the participants was working full time (40 hours/week) as a graduate nurse, one was working 20 hours per week in a previous job not related to nursing, and one was not working while preparing for the NCLEX-RN® examination.

Academic data. The end of nursing program GPA for the three participants ranged from 3.23 to 3.38 with a mean of 3.23. The amount of recommended NCLEX® preparation for these participants ranged from 73.1 to 111.28% with a mean of 99.5%.

The average score on the recommended NCLEX® preparation tests for these participants ranged from 54.4 to 58.2% with a mean of 54.05%.

Kaplan Registered Nurse Readiness Exam. Participants were asked about their experience taking the Kaplan RN Readiness Exam prior to taking the NCLEX-RN® examination, what they thought contributed to the score on the test, and how not meeting the benchmark score affected them. Below are some of their responses.

Bobbie stated:

> I took it in the college library, um, which, still I felt like I was little bit distracted with people coming in and out. Um, I should've taken it in one of those rooms, but they weren't available to me. So, um, a lot of it had to do with probably distraction...nervousness and distraction. When I didn't meet the benchmark score…I was really down on myself… I was like oh my goodness, should I reschedule this exam? Like what do I do? I had some other people tell me like no, just do it, you can always take it again. It's ok if you don't pass. And that kind of lifted a weight off my shoulders like knowing that I do have another chance but let's try to knock this out the first time.

Keri commented:

> I remember being very nervous because it was like if I don't pass this then I won't pass the NCLEX kind of thing. I did study before hand. Um, because I know we always took the practice tests and I never did well on them. So I was just very nervous. I believe I did take it in the computer lab at the college in like a simulated test setting. Um, I think just like nerves and I didn't know what to expect from it affected my score… When I didn't meet the benchmark score I

guess I was very nervous again. I felt like I wasn't prepared enough to take NCLEX. That's kind of why I waited a while to take it so I could study a little bit more.

When Sam reflected back on her experience taking the Kaplan RN Readiness Exam, she said:

Yea, like looking back it was really set up really well, like similar to how the NCLEX was… I mean it was still stressful and I was nervous but probably not as nervous as I was for the actual NCLEX but it was definitely a good practice to see what to expect. I took the Readiness test at home but I didn't eat or drink or anything like that. I had headphones on just like I knew I would for the actual test, like just those big ones. I wasn't too upset when I didn't meet the benchmark because I think I had took every single practice Kaplan test that was on the thing (prep plan) so I mean I was satisfied with my score. I mean I still did some reviewing of stuff but I knew I was close to the benchmark.

National Council Licensure Examination-Registered Nurse®. Participants were also asked about their experience preparing for and taking the NCLEX-RN® examination; whether they had any anxiety, or test anxiety, taking the NCLEX- RN® examination or while in nursing school and how they managed it; and whether the check in process for the NCLEX-RN® examination had any effect on their anxiety. Below are some of their responses.

Bobbie reported having a lot of text anxiety in nursing school and managed it by trying to study as hard as possible and then do other things that took her away from school and school work. To deal with anxiety while taking tests in nursing school,

Bobbie said she would sit in the back of the class and do some deep breathing, which she said helped her anxiety so she was able to focus and concentrate while taking tests. With regard to the check in process for the NCLEX-RN examination, Bobbie stated, "Walking in there and getting the noise cancelling headphones and putting all your stuff in a locker and their saying you can't take anything out kind of increases anxiety a little bit before…but I've taken tests like that before so I expected it." She also reported "lots of anxiety" while taking the NCLEX-RN® examination and said she managed it by

> just deep breathing and thinking this is the test that I need to take. This is very important. You just gotta do it. Get over with it. Focus on all the questions. And like I said again, the decision tree and making sure I dissect every single little thing helped.

Keri also reported having test anxiety in nursing school and had a "lucky pencil" she used on tests: "I don't know why but I feel like that helped me. Me and a couple other girls always had the same pencils and every time I passed a test, it was just kind of like a mental thing. Like I need my lucky pencil to take the test." When asked how she managed her anxiety on the NCLEX-RN® examination (because she couldn't take her lucky pencil for that exam) Keri said:

> I went with two other girls so I think knowing that they were there with me and that I could talk with them after, like talk things through really helped with my anxiety. Because like even just the beginning part, like going in to it, I didn't know what to do so we're all there kind of together.

Keri also stated her anxiety did not prevent her from being able to focus while taking the NCLEX-RN® examination and that the headphones provided helped with that.

Sam reported having a lot of anxiety the night before she took the NCLEX-RN® examination and that the check in process for the exam was "stressful." But once she got in to take the exam, her anxiety resolved and she "was in my own little space and had my headphones on and was in my own little zone," which she attributed to her being able to focus and not be distracted. To manage her anxiety the night before the test, Sam stated, "I was so nervous, but I went to bed early, I didn't look at my notes before like was suggested. I just went in and took it and tried to eat a good breakfast and then, yea…"

Factors contributing to National Council Licensure Examination-Registered Nurse® success. Lastly, the participants were asked about what they thought contributed to their being successful on their first attempt on the NCLEX-RN® examination, whether there was anything that they or nursing faculty could have done to better prepare them for the NCLEX-RN® examination, and if they had anything else that they wanted to say about their experience taking the NCLEX-RN® examination. Below are some of their responses.

Bobbie said:

> Honestly, I felt like the questions were easier. I don't know why. I felt like they were easier than a lot of the questions I received on the Kaplan Readiness test… Probably the most helpful thing was the five steps (referring to the Kaplan Decision Tree). I was filling out every single question on the dry erase board and dissecting the five steps… that's what helped me and helped me stay focused.

Keri thought that "all the prep and extra studying" was what contributed to her success on the NCLEX-RN® examination. She reported spending about four to five hours a day, almost every day, preparing for the NCLEX-RN® examination. Keri stated,

"It's not as bad as it seemed, like looking back at it now. I don't know why I was so nervous about it. I think that the NCLEX® was a little bit easier than the Kaplan tests."

Sam contributed her success on the NCLEX-RN® examination to the Kaplan RN Readiness Exam and her taking so many Kaplan practice tests. She stated, "I think what really helped was that the college kind of like forced us to go to that Kaplan Review Course. As much as some of us really didn't want to go to it, I think it really did help."

Themes. The common theme all three participants identified regarding their experience with the Kaplan RN Readiness Exam and the NCLEX-RN® examination was anxiety or nervousness. All three participants felt their nervousness/anxiety contributed to their score (below the benchmark) on the Kaplan RN Readiness Exam, while one also identified environmental distractions as an additional contributing factor. Two of the three participants reported having some test anxiety in nursing school as well but all three participants reported a great deal of anxiety preparing for and just prior to the NCLEX-RN® examination. However, the three participants indicated that although they had anxiety leading up to the NCLEX-RN® examination, they did not experience much anxiety while taking the exam. All three reported being able to focus on the questions while taking the NCLEX-RN® examination and denied having other thoughts running through their head and distracting them while taking the exam. These three participants all mentioned using noise cancelling headphones and being able to focus on the exam. One also mentioned using deep breathing to help keep her focused and taking a break and doing jumping jacks in the bathroom to help with her nervousness.

Summary

Data for this study did not fit the normal distribution so nonparametric tests were used to analyze the quantitative data. When examining the association between the Kaplan RN Readiness Exam score and the outcome on the NCLEX-RN® examination, a statistically significant relationship was found. Therefore, according to the classical test theory wherein the observed score is predictive of an individual's performance in the future on an exam testing the same domain, the Kaplan RN Readiness Exam score was predictive of passing the NCLEX-RN® examination. However, due to very few first time NCLEX-RN® examination failures, a specific Kaplan RN Readiness Exam score that correlated with 95% certainty of passing the NCLEX-RN examination was not able to be identified for this sample. Therefore, the Kaplan RN Readiness Exam score that Kaplan, Inc. (Sanders, 2014) identified in their larger study as correlated with 95% certainty of passing the NCLEX-RN® examination on the first attempt (62%) was used as the benchmark score for analysis in this study.

A significant correlation was found to exist among the Kaplan RN Readiness Exam score and gender, first generation college student, end of nursing program GPA, amount of recommended NCLEX-RN® preparation completed, and the average score on the recommended NCLEX-RN® preparation tests. This inferred that taking more NCLEX-RN® preparation tests after graduation and achieving higher scores on these tests were associated with higher Kaplan RN Readiness Exam scores and thus, passing the NCLEX-RN® examination. No significant association was found to exist among the Kaplan RN Readiness Exam score and age, previous degree, or the nursing program (traditional or 15-month).

When examining the data in the second phase of the study, the participants in both groups (those who met the Kaplan RN Readiness Exam benchmark yet failed the NCLEX-RN® examination on the first attempt and those who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt) all took the NCLEX-RN® examination for the first time about a month after graduation and took the Kaplan RN Readiness Exam. All of them completed over 70% of the recommended NCLEX-RN® preparation and the average score on the NCLEX-RN® preparation tests was similar in both groups (54.2% average for those who met the Kaplan RN Readiness Exam benchmark score yet failed the NCLEX-RN examination and 56% average for those who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN examination). In addition, there appeared to be little difference regarding whether participants were working or not and the number of hours worked while preparing for the NCLEX-RN® examination between the two groups.

One prominent theme identified in the interviews with every participant was anxiety or nervousness. Those participants who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt reported anxiety/nervousness as contributing to their score on the Kaplan RN Readiness Exam. Participants in both groups reported anxiety prior to taking the NCLEX-RN® examination--in particular, the night before and morning of the exam. However, those participants who passed the NCLEX-RN® examination on the first attempt, even though they had scored 4% or more below the benchmark score on the Kaplan RN Readiness Exam, all reported that although they had anxiety leading up to the

exam and during the exam itself, they were not distracted and were able to focus. Those participants who failed the NCLEX-RN® examination on the first attempt even though they had met the benchmark score on the Kaplan RN Readiness Exam reported anxiety/nervousness prior to and during the NCLEX-RN® examination. These participants reported being distracted by people getting up and down or clicking on computer keyboards or by thoughts running through their heads while taking the examination, which inhibited their ability to focus. These findings suggested adequate post-graduation preparation taking NCLEX-RN® style tests and managing anxiety were important factors contributing to passing the NCLEX-RN® examination on the first attempt.

CHAPTER V

DISCUSSION

The purpose of this exploratory field study was twofold. The first aspect was to identify the benchmark score on the Kaplan RN Readiness Exam (Sanders, 2014) that was correlated with 95% confidence of passing the NCLEX-RN® examination. The second aspect of the study was to explore factors that candidates who met the benchmark score on the Kaplan RN Readiness Exam yet failed the NCLEX-RN® examination on the first attempt and candidates who scored 4% or more below the benchmark on the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination on the first attempt identified as contributing to their outcome. Exploration of these individuals' experiences might provide beneficial information that could be used by nurse educators to prepare future nursing students and NCLEX-RN® candidates. This research would fill a gap to advance knowledge of post-graduation readiness for the NCLEX-RN® examination and might provide new insight on non-academic, post-graduation factors associated with failing the NCLEX-RN® examination. Other studies have generally only addressed pre-admission and/or during the nursing program variables associated with passing the NCLEX-RN® examination. Furthermore, nursing programs might use this information in future curriculum development or NCLEX-RN® examination preparation of students.

The findings provided a better understanding of the variables of gender, age, previous degree, first generation college student, nursing program, end of program GPA,

amount of completed recommended NCLEX® prep, the average score on the recommended NCLEX-RN® prep tests, and Kaplan RN Readiness Exam score associated with the outcome on the first attempt on the NCLEX-RN® examination. In this chapter, a brief discussion of the sample and setting characteristics, the major findings, and conclusions are presented. Discussion of the strengths and limitations of the study, implications for practice (teaching), and recommendations for future research follow.

Sample Characteristics

The sample for the first phase of the study consisted of 284 pre-licensure baccalaureate nursing program graduates between May 2016 and May 2018. The ages of participants ranged from 21 to 56 years. Two hundred fifty-seven (90.5%) were female and 27 (9.5%) were male. Seventy-one (25%) of participants had a previous degree and 213 (75%) did not have a previous degree. One hundred ten (38.7%) of participants were first generation college students. Of the 284, 257 participants completed the Kaplan RN Readiness Exam.

The sample for the second phase of the study consisted of 7 of the 257 participants in the first phase who completed the Kaplan RN Readiness Exam. The ages of participants ranged from 22 to 25 years. All seven were female. Two of the seven had a previous degree and two were first-generation college students.

Setting Characteristics

The setting for this study was a private, not-for-profit health sciences college in the Midwestern United States that has over a 100-year history of educating nurses. Types of programs offered by the school of nursing include two pre-licensure nursing programs

(traditional BSN program and a 15-month BSN program), an RN to BSN program, an MSN in Nursing Education, and an MSN in Family Nurse Practitioner. The focus for this study was on the two pre-licensure BSN programs. The typical number of graduates from the two pre-licensure programs combined ranged from 75-90 graduates annually.

Major Findings

To organize and discuss the major findings of this study, it was necessary to address the variables interactively. Significant findings related to determining readiness for the NCLEX-RN® examination are presented grouped under four sections.

Kaplan Registered Nurse Readiness Exam Score and National Council Licensure Examination-Registered Nurse® Outcome

A significant relationship was found between scores on the Kaplan RN Readiness Exam and the outcome on the NCLEX-RN® examination. Thus, it was concluded the Kaplan RN Readiness Exam measured the same domains as the NCLEX-RN® examination and was an accurate predictor of passing the NCLEX-RN® examination. This finding was consistent with the classical test theory wherein an observed score (Kaplan RN Readiness Exam score) was predictive of an individual's performance in the future on an exam testing the same domain (passing the NCLEX-RN® examination). Since most studies only examined pre-admission and/or during the nursing program variables associated with passing the NCLEX-RN® examination, the identification of a post-graduation exam that accurately predicted success on the NCLEX-RN® examination was valuable. Nursing graduates could use the Kaplan RN Readiness Exam to determine their post-graduation readiness to take the NCLEX-RN® examination.

Predictive Kaplan Registered Nurse Readiness Exam Score

Due to the low number of failures on the NCLEX-RN® examination, the data for this study were skewed. Thus, a specific and unique benchmark score for this college/sample on the Kaplan RN Readiness Exam that was associated with at least 95% certainty of passing the NCLEX-RN® examination on the first attempt was not found. The score used as the benchmark for this study was the score identified in Kaplan, Inc.'s (Sanders, 2014) study.

Variables Associated with Kaplan Registered Nurse Readiness Exam Score

Variables identified as being associated with the score on the Kaplan RN Readiness Exam and, thus, the NCLEX-RN® outcome were gender, first-generation college student, end of nursing program GPA, amount of recommended NCLEX® prep completed, and the average score on the NCLEX® prep tests. The findings found females scored higher than males on the Kaplan RN Readiness Exam; first- generation college students scored higher than non-first-generation college students on the Kaplan RN Readiness Exam, although the relationship was weak (p = .043); those with a higher end of nursing program GPA scored higher on the Kaplan RN Readiness Exam; those who completed more on the recommended NCLEX® prep score higher on the Kaplan RN Readiness Exam; and those with a higher average score on NCLEX® prep tests scored higher on the Kaplan RN Readiness Exam.

These findings provided useful information for both nursing faculty and graduates. Nursing faculty could use this information to educate senior nursing students or graduates that males tended to score lower on the Kaplan RN Readiness Exam and

thus should be encouraged to simulate a testing environment and treat this exam as a "practice NCLEX-RN® exam." In addition, nursing faculty could provide additional support and guidance regarding preparation for the NCLEX-RN® examination to those senior students with lower GPAs. Lastly, nursing faculty could inform graduates that the more recommended NCLEX® prep they completed, the higher their average score on the NCLEX® prep tests, and the higher their score on the Kaplan RN Readiness Exam, the more likely they were to pass the NCLEX-RN® examination. Graduates could then use this information to make decisions regarding how much prep to complete, when to take the Kaplan RN Readiness Exam, and, ultimately, determine whether they were ready to take the NCLEX-RN® examination. The association that first-generation college students scored higher than non-first-generation college students on the Kaplan RN Readiness exam was weak. Further study of this relationship is warranted before implementing any activities to address it.

Factors Influencing Failing and Passing the National Council Licensure Examination-Registered Nurse®

While the score on the Kaplan Readiness Exam was found to be predictive of passing the NCLEX-RN® examination, there were still some outliers (those who met the benchmark score yet failed and those who scored 4% or more below the benchmark score and passed). The common theme amongst all these participants was anxiety. Those participants who met the benchmark score on the Kaplan RN Readiness Exam but failed the NCLEX-RN® examination on the first attempt reported anxiety prior to and during the NCLEX-RN® examination. All reported being distracted while taking the NCLEX-RN® examination, either by movement and noises in their surroundings or by thoughts

running through their heads, so they were not able to focus on the test questions. A few of these participants also reported the "check in" process for the NCLEX-RN® examination contributed to their anxiety.

Those participants who had scored below the benchmark on the Kaplan RN Readiness Exam and still passed the NCLEX-RN® examination on the first attempt identified anxiety or nervousness while taking the Kaplan RN Readiness exam and felt that contributed to their lower score on the test. They also identified having anxiety leading up to taking the NCLEX-RN® examination. However, the difference between these participants and those who met the Kaplan RN Readiness Exam benchmark and failed was their anxiety subsided while taking the NCLEX-RN® examination and they were able to focus on the test questions and were not distracted by their surroundings or thoughts running through their heads.

These findings provided valuable information both nursing faculty and graduates could use. Nursing faculty could educate senior nursing students or graduates about the "check in" process for the NCLEX-RN® examination so graduates know what to expect. They could also inform senior nursing students or graduates that anxiety is common factor in failing the NCLEX-RN® examination and thus the importance of identifying methods to control their anxiety. Faculty could investigate evidence-based methods for decreasing anxiety or calming techniques and educate graduates about these methods.

Strengths and Limitations

A strength of this study included accounting for several individual differences among the participants: gender, age, previous degree, first-generation college student,

nursing program, end of nursing program GPA, amount of completed recommended NCLEX® prep, and average score on recommended NCLEX® prep tests.

There were several limitations of this study. The study had a nonrandomized sample. The data were limited to BSN graduates from one college in the Midwestern United States, all of whom had attended the college under the same student support system. There was a lack of diversity in the study sample as there are other types of nursing programs, in addition to baccalaureate programs, that prepare graduates to take the NCLEX-RN examination and each nursing program has a different curriculum, student support programs, and other aspects that affect students' outcomes on standardized tests such as the Kaplan RN Readiness Exam and the NCLEX-RN® examination. Another limitation was the number of participants who passed the NCLEX-RN® examination was much larger than the number who failed in the sample group of this study. Having unequal group sizes was difficult to compare statistically. Therefore, as was expected, these factors limited the generalizability of the findings of this study to other nursing programs across the United States.

Implications

Passing the NCLEX-RN® examination is required for a graduate nurse to become an RN and practice nursing; passing on the first attempt is not only important to decrease the current shortage of nurses but is important to the test-taker and nursing program. First-time NCLEX-RN® pass rates are considered by many to be the gold standard of nursing education program quality and success (Davenport, 2007; Sayles & Shelton, 2005). Poor NCLEX-RN® first time pass rates could pose a threat to accreditation of nursing programs, funding of nursing programs, and to enrollment (Carrick, 2011;

Giddens, 2009; Simon et al., 2013). Consequently, all pre-licensure nursing programs are concerned with the NCLEX-RN® pass rate for their programs and identifying variables that predict first-time NCLEX-RN® success is imperative for both test-takers and nursing programs. Based on the research findings from this study, a number of implications arose.

First, this study revealed post-graduation performance on the Kaplan RN Readiness Exam was significant in predicting first-time success on the NCLEX-RN® examination. Graduates should be counseled on the significance of the Kaplan RN Readiness Exam score. They should be advised to treat the Kaplan RN Readiness Exam as a "practice" NCLEX-RN® and to use the results to determine their readiness for taking the NCLEX-RN® examination.

Second, there was a significant relationship among gender (females scoring significantly higher than males) and end of nursing program GPA and the Kaplan RN Readiness Exam score. Therefore, ongoing assessment of students' GPAs should be conducted by nursing programs and nursing students with lower cumulative GPAs, particularly male students, should be identified as "at risk." These students could be placed in a remediation program and provided academic support such as sessions on testing-taking strategies, mentoring, tutoring, and anxiety management.

Third, there was a significant positive correlation among the amount of recommended NCLEX® preparation completed and the average score on the recommended NCLEX® preparation tests and the Kaplan RN Readiness Exam score. Graduates should be counseled regarding the significance of the amount of recommended NCLEX-RN® preparation completed, the average score on the completed recommended

NCLEX-RN® prep tests, and the score on the Kaplan RN Readiness Exam. Nursing programs should consider following up with students after graduation, inquire about their NCLEX-RN® preparation, and provide support and encouragement.

Recommendations for Research

The results of this exploratory study indicated the Kaplan RN Readiness Exam was an accurate post-graduation predictor of NCLEX-RN® success for the sample in this study. However, duplicating this study with a larger, more diverse sample that included participants from several different colleges and types of nursing programs and with a larger percentage of first-time NCLEX-RN® failures would provide more generalizable results.

The results of this study were in agreement with the literature regarding anxiety as a factor in a graduate's outcome on the NCLEX-RN® examination. Research examining effective methods of reducing graduates' anxiety while taking the NCLEX-RN® examination is needed. This might involve examining whether providing graduates with more information about the "check in" process for the NCLEX-RN® examination so graduates knew what to expect or if anxiety reducing techniques such as meditation or specific phone apps were beneficial.

There was very little literature on variables that accurately predicted failing the NCLEX-RN® examination. A study on the validity or accuracy of the Kaplan RN Readiness Exam (or other predictor tests) to predict first-time NCLEX-RN® failure would be valuable. Since failing the NCLEX-RN® examination is often traumatic for graduates, studying the effect that failing has on a graduate's confidence and their nursing career would also provide important data.

Another gap in the literature was the ability of the Kaplan RN Readiness Exam (or other predictor exams) to predict a successful career as a registered nurse. A longitudinal study on the Kaplan RN Readiness Exam and a nurse's patient care outcomes would provide insight into the exam's ability to determine readiness for practice and not just readiness for the NCLEX-RN® examination. Such a study would require collaboration between the nursing school and the facilities where graduates are employed as registered nurses.

Conclusion

Although numerous studies have been conducted attempting to identify predictors associated with success on the NCLEX-RN® examination, few have proven reliable over time and the majority of these studies have examined pre-nursing school admission or during nursing school variables. However, rarely does a nursing graduate take the NCLEX-RN® examination immediately after graduation. Instead, nursing graduates usually complete some post-graduation preparation for the NCLEX-RN® examination. Identifying a post-graduation "readiness" test that graduates could take after completing their studying/review for the NCLEX-RN® examination that accurately predicts (with 95% confidence) passing the NCLEX-RN® examination would provide valuable information graduates could use to make a decision as to whether they should take the NCLEX-RN® examination within a few days or delay taking it and do more review. The findings of this study identified the Kaplan RN Readiness Exam as a test that accurately (with 95% confidence) predicted passing the NCLEX-RN examination. Yet, there were some outliers: those who met the benchmark Kaplan RN Readiness Exam score and yet failed the NCLEX-RN® examination and those who scored 4% or more

below the Kaplan RN Readiness Exam and passed the NCLEX-RN® examination. The common factor for these outliers was anxiety. All the outliers reported anxiety leading up to the NCLEX-RN® examination and some identified the "check in" process for the licensure examination increased their anxiety. However, those who had scored 4% or more below the benchmark on the Kaplan RN Readiness Exam reported their anxiety subsided while taking the NCLEX-RN® examination and they were able to stay focused while taking the licensure examination. Whereas, those who had met the benchmark score on the Kaplan RN Readiness Exam reported they continued to have anxiety and were distracted by either movement or noises in the testing environment or by thoughts in their head while taking the NCLEX-RN® examination, which prevented them from being able to focus while taking the licensure examination.

This study provided rich data about determining post-graduation readiness to take the NCLEX-RN® examination. Very little publicly available published data exist regarding post-graduation factors associated with NCLEX® success so much of the data were new and enlightening with implications for both nurse educators and graduates. The results of this study could lay the groundwork for further research on preparing nursing graduates to be successful on their first-attempt on the NCLEX-RN® examination.

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APPENDIX A

ORIGINAL CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Determining Readiness to Take the NCLEX-RN Examination®
Researcher: Heidi Monroe, MSN, RN-BC, CAPA; School of Nursing
Phone Number:
E-mail: monr7569@bears.unco.edu
Research Advisor: Dr. Kathleen Dunemn **Email:** kathleen.dunemn@unco.edu

Purpose and Description: The purpose of this exploratory field study is twofold. The first aspect is to identify the benchmark score on the Kaplan Readiness Exam that is correlated with 95% confidence of passing the NCLEX-RN® examination. The second aspect is to explore the factors that candidates who met the benchmark score on the Kaplan Readiness Exam yet did not pass the NCLEX-RN® examination on the first attempt, identify as contributing to their outcome. Exploration of these individuals' experiences through a semi-structured interview process may provide beneficial information that can be used by nurse educators to prepare future nursing students and NCLEX-RN® candidates.

Participants in the latter part of the study will consent to the investigator comparing their demographic (age, gender, previous degree, first generation college student), academic (nursing program [traditional or 15 month BSN], end of nursing program GPA), scores on and completion of Kaplan NCLEX-RN prep resource data, and NCLEX-RN examination outcome; as well as an interview, preferably in person, or else by phone, with the investigator. The interview should take approximately 30-45 minutes. The investigator will audio record and take notes of the interview in order to ensure accuracy of the data collected, find common themes and discrepancies, and make recommendations for interventions to ensure candidate readiness for and/or success on the NCLEX-RN® examination.

To protect the confidentiality of your participation, pseudonyms will be assigned. Participants who complete the interview will receive a $40 gift card as compensation for participating. The foreseeable risks of participation are not greater than those that might be encountered in a conversation with a colleague about one's experiences with not passing the NCLEX-RN® examination. It is possible that any discussion of one's experiences with the NCLEX-RN® examination may cause discomfort or distress and the participant may want to further explore their feelings after the interview. If this should occur, participants are advised to contact Bellin Health's employee assistance program (EAP) to seek counseling. This counseling is provided free of charge for participants in this study.

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The Employee Assistance Program is completely confidential. Telephone calls and appointments are handled in a private and confidential manner. No information is shared with the investigator or any other individual unless the participant gives specific and written permission to do so, including the type of information and to whom it is to be sent. Participants can access EAP by calling Bellin Psychiatric Center's EAP Helpline at 920-433-7483 to schedule an appointment. Participants need to indicate during the phone call to schedule an appointment that it is an "EAP" appointment.

The benefits to participants include a $40 Amazon gift card as compensation to those that complete the interview as well as gaining insight on factors contributing to not passing the NCLEX-RN® examination and ideas for interventions to ensure readiness for and/or success on the NCLEX-RN® examination for future candidates.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

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Participant Signature Date

_____

Researcher Signature Date

In addition to the previous consent form for Human Participation in Research through the University of Northern Colorado, there is a local organization listed below that you may also contact should you have any issues or concerns with this research study.

If you have questions about your rights as a research participant or want to report any problems or complaints, you can call Human Subjects Administrator, Bellin Health Institutional Review Board, 744 S. Webster Ave., P.O. Box 23400, Green Bay, WI 54305-3400, phone 920-433-7911

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Participant Signature Date

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Researcher Signature Date

APPENDIX B

AMENDED CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Determining Readiness to Take the NCLEX-RN Examination®
Researcher: Heidi Monroe, MSN, RN-BC, CAPA; School of Nursing
Phone Number:
E-mail: monr7569@bears.unco.edu
Research Advisor: Dr. Kathleen Dunemn **Email**: kathleen.dunemn@unco.edu

Purpose and Description: The purpose of this exploratory field study is twofold. The first aspect is to identify the benchmark score on the Kaplan Readiness Exam that is correlated with 95% confidence of passing the NCLEX-RN® examination. The second aspect is to explore the factors that candidates who either met the benchmark score on the Kaplan Readiness Exam yet did not pass the NCLEX-RN® examination on the first attempt or scored below the benchmark on the Kaplan Readiness Exam yet passed the NCLEX-RN® examination on the first attempt identify as contributing to their outcome. Exploration of these individuals' experiences through a semi-structured interview process may provide beneficial information that can be used by nurse educators to prepare future nursing students and NCLEX-RN® candidates.

Participants in the latter part of the study will consent to the investigator comparing their demographic (age, gender, previous degree, first generation college student), academic (nursing program [traditional or 15 month BSN], end of nursing program GPA), scores on and completion of Kaplan NCLEX-RN prep resource data, and NCLEX-RN examination outcome; as well as an interview, preferably in person, or else by phone, with the investigator. The interview should take approximately 30-45 minutes. The investigator will audio record and take notes of the interview in order to ensure accuracy of the data collected, find common themes and discrepancies, and make recommendations for interventions to ensure candidate readiness for and/or success on the NCLEX-RN® examination.

To protect the confidentiality of your participation, pseudonyms will be assigned. Participants who complete the interview will receive a $40 gift card as compensation for participating. The foreseeable risks of participation are not greater than those that might be encountered in a conversation with a colleague about one's experiences with not passing the NCLEX-RN® examination. It is possible that any discussion of one's

Page 1-2 _____
Participant Initials

experiences with the NCLEX-RN® examination may cause discomfort or distress and the participant may want to further explore their feelings after the interview. If this should occur, participants are advised to contact Bellin Health's employee assistance program (EAP) to seek counseling. This counseling is provided free of charge for participants in this study.

The Employee Assistance Program is completely confidential. Telephone calls and appointments are handled in a private and confidential manner. No information is shared with the investigator or any other individual unless the participant gives specific and written permission to do so, including the type of information and to whom it is to be sent. Participants can access EAP by calling Bellin Psychiatric Center's EAP Helpline at 920-433-7483 to schedule an appointment. Participants need to indicate during the phone call to schedule an appointment that it is an "EAP" appointment.

The benefits to participants include a $40 Amazon gift card as compensation to those that complete the interview as well as gaining insight on factors contributing to not passing the NCLEX-RN® examination and ideas for interventions to ensure readiness for and/or success on the NCLEX-RN® examination for future candidates.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

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Participant Signature Date

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Researcher Signature Date

In addition to the previous consent form for Human Participation in Research through the University of Northern Colorado, there is a local organization listed below that you may also contact should you have any issues or concerns with this research study.

If you have questions about your rights as a research participant or want to report any problems or complaints, you can call Human Subjects Administrator, Bellin Health Institutional Review Board, 744 S. Webster Ave., P.O. Box 23400, Green Bay, WI 54305-3400, phone 920-433-7911

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Participant Signature Date

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Researcher Signature Date

APPENDIX C

PERMISSION TO SHARE FINDINGS

UNIVERSITY OF
NORTHERN COLORADO

Stephanie Stewart, PhD, RN; Dean of Nursing
Connie Boerst, EdD, RN; President/CEO
Bellin College
3201 Eaton Rd.
Green Bay, WI 54311

RE: Permission to Conduct Research Study
~~June 5, 2018~~ May 21, 2018

Dear Professors Stewart and Boerst:

I am writing to request permission to conduct a research study using data from Bellin College. In addition to being the NCLEX-RN Coordinator at Bellin College, I am also currently enrolled in the PhD in Nursing Education program at the University of Northern Colorado. For my dissertation I am planning to conduct a study on determining readiness to take the NCLEX-RN examination.

I hope that the college administration will grant me permission to gather data on the gender, age, GPA, first generation college student, previous degree, and program type (traditional or 15 month) from CAMS and/or the Registrar and on scores on Kaplan NCLEX-RN preparation resources (for which I already have access to in my role as the NCLEX-RN® Coordinator) for graduates of the pre-licensure nursing programs between May 2016 through May 2018. My intent is to analyze this data to determine predictability of the Kaplan RN Readiness Exam and success on the NCLEX-RN exam and to explore factors contributing to failure on the NCLEX-RN® examination.

No graduate names or identifying information will be shared in any reports, only aggregate data will be reported and no costs will be incurred by either your school or the individual participants. Once my dissertation proposal is approved, IRB approval from both UNCO and Bellin Health will be sought.

Your approval to gather and analyze the data will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you

may have at that time. You may contact me at my email address monr7569@bears.unco.edu or by phone at 920-412-0002.

If you agree, kindly check and sign below and return the signed form to me via email.

Sincerely,

Heidi Monroe, PhD©, MSN, RN-BC, CAPA
PhD student at the University of Northern Colorado

✓ I grant permission to Heidi E. Monroe to use Bellin College pre-licensure BSN 2016-2018 cohort data as identified above for her dissertation at the University of Northern Colorado as long as no identifying individual student data is disclosed.

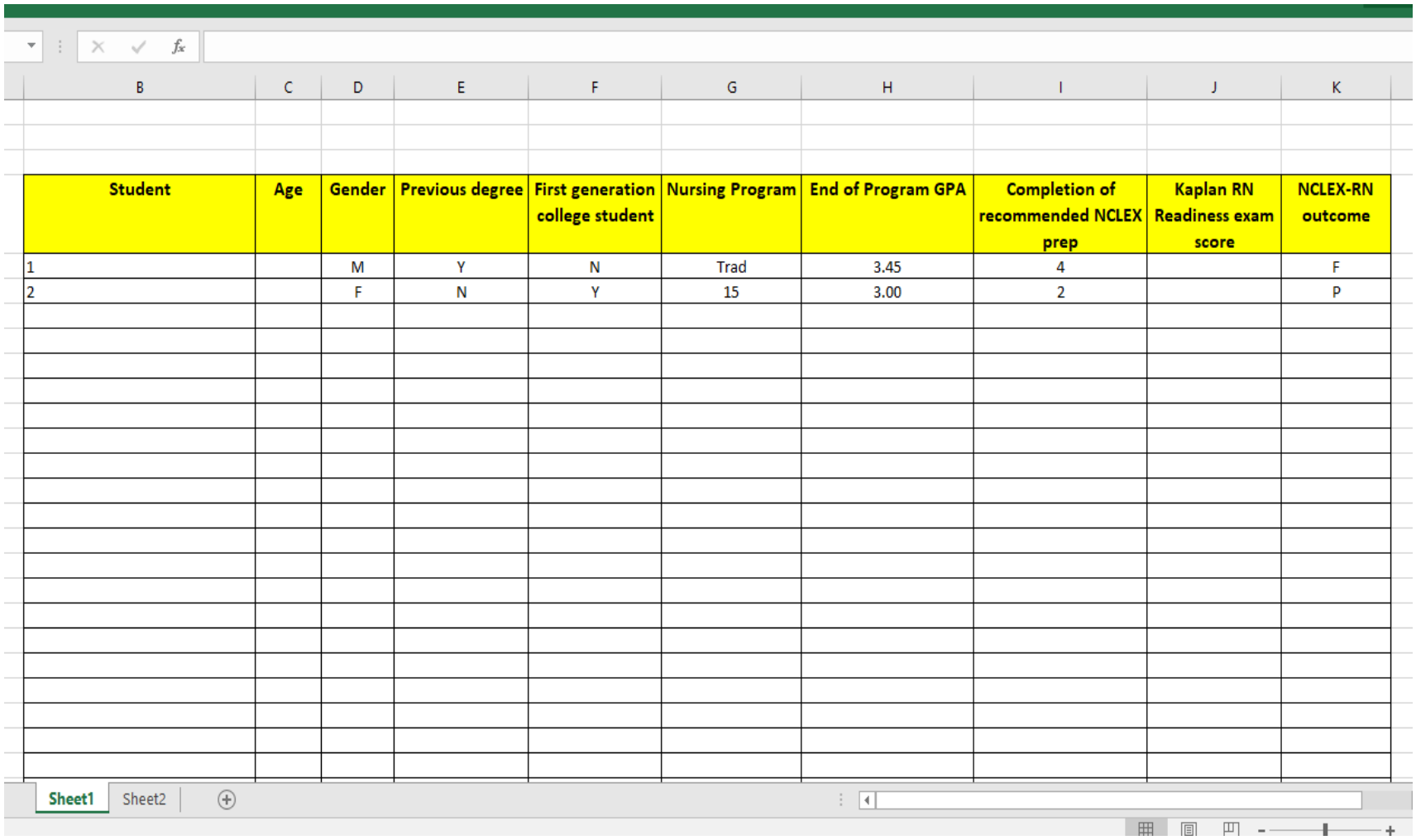
Signature _____ Date 5/21/18
Dean of Nursing

X I grant permission to Heidi E. Monroe to use Bellin College pre-licensure BSN 2016-2018 cohort data as identified above for her dissertation at the University of Northern Colorado as long as no identifying individual student data is disclosed.

Signature _____ Date 5/21/18
President/CEO

APPENDIX D

DATA COLLECTED FOR ANALYSIS



Student	Age	Gender	Previous degree	First generation college student	Nursing Program	End of Program GPA	Completion of recommended NCLEX prep	Kaplan RN Readiness exam score	NCLEX-RN outcome
1		M	Y	N	Trad	3.45	4		F
2		F	N	Y	15	3.00	2		P

APPENDIX E

FIRST INTERVIEW QUESTIONS

UNIVERSITY OF NORTHERN COLORADO

Determining Readiness to Take the NCLEX-RN Examination®
Interview Questions for participants that met the Kaplan RN Readiness Exam score yet failed the NCLEX-RN® on first attempt

1. "How long ago was it that you first took the NCLEX-RN® examination?"

2. "Picture in your mind your experience taking the NCLEX-RN® examination for the first time. Can you tell me about that experience and what you were thinking or feeling?"

3. Reflecting back, what do you think contributed to your being unsuccessful on your first attempt of the NCLEX-RN® examination?"

   If participant does not bring up anxiety, then ask "Do you think test anxiety, or general anxiety played a factor?

   If yes, ask "How did it affect you?" and "Did you have test anxiety or anxiety in nursing school and how did you deal with or manage it?"

4. "Do you recall how long after graduation and after taking the Kaplan NCLEX-RN® Review Course that you took the NCLEX-RN® examination for the first time?"

5. "Were you working while you were studying/preparing for your first attempt taking the NCLEX-RN® examination?"

   If yes: Was it a "new" job or an existing job you had while in nursing school? What type of job?

   How many hours/week were you working while preparing for the NCLEX-RN® examination?

6. "What do you think could have been done (either by you or someone else such as nursing faculty) that would have changed your outcome on your first attempt at the NCLEX-RN® examination?"

7. What else, if anything, would you like to say about your experience with taking the NCLEX-RN® examination the first time that hasn't been asked about so far?

APPENDIX F

SECOND INTERVIEW QUESTIONS

Determining Readiness to Take the NCLEX-RN Examination®
Interview Questions for participants that scored below the benchmark on the Kaplan RN Readiness Exam score and passed the NCLEX-RN® on first attempt

1. "How long ago was it that you took the NCLEX-RN® examination?"
2. "Try to recall your experience taking the Kaplan RN Readiness exam prior to taking the NCLEX-RN® examination. Can you tell me about that experience and what you were thinking or feeling?"
3. "What do you think contributed or influenced the score you received on the Kaplan RN Readiness exam?
4. Reflecting back on taking the NCLEX-RN examination, what do you think contributed to your being successful on your first attempt?"

   If participant does not bring up anxiety, then ask "Did you feel any anxiety while taking the examination?

   If yes, ask "How did you deal with or manage it?" and "Did you have test anxiety or anxiety in nursing school and how did you deal with or manage it?"
5. "Do you recall how long after graduation and after taking the Kaplan NCLEX-RN® Review Course that you took the NCLEX-RN® examination?"
6. "Were you working while you were studying/preparing for your first attempt taking the NCLEX-RN® examination?"

   If yes: Was it a "new" job or an existing job you had while in nursing school?

   What type of job?

   How many hours/week were you working while preparing for the NCLEX-RN® examination?
7. What else, if anything, would you like to say about your experience with taking the NCLEX-RN® examination the first time that hasn't been asked about so far?

APPENDIX G

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE:	October 2, 2018
TO:	Heidi Monroe
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[1231432-3] Determining Readiness to Take the NCLEX-RN® Examination
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVED
APPROVAL DATE:	October 2, 2018
EXPIRATION DATE:	October 1, 2019
REVIEW TYPE:	Expedited Review

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of October 1, 2019.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu. Please include your project title and reference number in all correspondence with this committee.

Ms. Monroe -

Thank you for your patience with the UNC IRB process. Your amendments/modifications have been reviewed and approval has been recommended by both the first reviewer, Dr. Clukey and myself. Be sure to use all amended and updated protocols and materials developed through this review process in your actual data collection and research process.

Best wishes with your study.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX H

AMENDMENT TO INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE:	January 17, 2019
TO:	Heidi Monroe
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[1231432-4] Determining Readiness to Take the NCLEX-RN® Examination
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVED
APPROVAL DATE:	January 17, 2019
EXPIRATION DATE:	October 1, 2019
REVIEW TYPE:	Expedited Review

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

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Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu. Please include your project title and reference number in all correspondence with this committee.

The amendments/modifications submitted are approved and you may proceed using these revised protocols and materials.

Best wishes with your study.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX I

COLLEGE APPROVAL FOR STUDY

bellinhealth

Bellin Health IRB — **Protocol Exemption Notification**

To: Heidi Monroe
From: Mary Sallenbach, IRB Coordinator
Subject: Protocol #90
Date: 11/08/2018

The protocol **90. Determining Readiness to Take the NCLEX-RN Examination** has been verified by the Institutional Review Board as **Exempt** according to 45CFR46.101(b)(2): Surveys on 11/08/2018.

Please use the attached stamped consent.

Please note that changes to your protocol may affect its exempt status. Please contact me directly to discuss any changes you may contemplate.

Thanks,

Colleen O'Brien, DNP, MSMI, RN
Chairperson
Bellin Health System Institutional Review Board

Attachments:
- Revised Consent Form_Bellin Health Addendum.pdf