

ANALYSIS OF UNSUCCESSFUL CANDIDATE PERFORMANCE ON THE
CERTIFIED NURSE EDUCATOR EXAMINATION

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ABSTRACT

Although the numbers are increasing, there are few academic nurse educators who possess the Certified Nurse Educator (CNE) credential. Addressing ways to facilitate acquiring such a credential would strengthen the pool of nurse educators with demonstrated knowledge and skill related to the role of the academic nurse educator regardless of the educator's educational preparation. This quantitative, descriptive correlational study examined first-time unsuccessful attempts on the CNE examination from September 2005 through September 2011. The purpose of this study was: (a) to describe the characteristics of unsuccessful first-time candidates for the CNE exam; (b) to determine any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) to determine any statistically significant relationship between failure and each content area of the CNE exam. Data analyses revealed that there is a statistically significant relationship between first-time failure on the CNE exam and a candidate's highest degree obtained and institutional affiliation. Results also indicated that there is no statistically significant effect on mean scores in any of the six content areas measured by the CNE exam as related to degree or institutional affiliation. It is anticipated that the results of this study will help academic nursing education leaders understand how to prepare potential candidates for success on the academic nurse educator examination and to equip administrators with necessary information to inform appropriate faculty development and continuing education opportunities.

DEDICATION

I dedicate this dissertation to Chrissy, Anna Cate, Lily, and Caroline. You are four of the most important women in my life. Thank you for your patience, prayers, understanding, and encouragement through this entire process. Your unwavering love and support has sustained me. I love you.

LIST OF ABBREVIATIONS AND SYMBOLS

| | |
|-------|---|
| ABNS | American Board of Nursing Specialties |
| ANECF | Academic Nurse Educator Certification Program |
| APRN | Advanced Practice Registered Nurse |
| CNE | Certified Nurse Educator |
| IOM | Institute of Medicine |
| NLN | National League for Nursing |

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Chapter One

THE PROBLEM

Nursing specialty certification is a mark of distinction and demonstrates to the profession and the public a level of knowledge that exceeds the minimum standard for professional nursing practice (Briggs, Brown, Kesten, & Heath, 2006; Callicutt, Norman, Smith, Nichols, & Kring, 2011; Jones, 2007; Kaplow, 2011; Niebuhr & Biel, 2007; Valente, 2010; Wilkerson, 2011). Certification, as a general term, has been defined by the American Board of Nursing Specialties (ABNS) as “the formalized recognition of specialized knowledge, skills, and experience demonstrated by achievement of standards identified by a nursing specialty to promote optimal health outcomes” (ABNS, 2005, Background section, para. 1). Nurses have multiple options when it comes to choosing which specialty certifications fit individual current practice areas. While there are several agencies which grant certification in multiple clinical nursing specialties (Kaplow, 2011; Shepherd, 2011; Wade, 2009), the National League for Nursing (NLN) is the only nursing specialty organization that bestows certification recognizing the expert, advanced specialty role of the academic nurse educator (Ortelli, 2008, 2012; Shepherd, 2011).

In this chapter, the author presents a discussion of continuing education and the importance of professional development in certification and recertification in the academic nurse educator role. An examination of current challenges in nursing education is discussed along with the role that certified nurse educators play in addressing those challenges and facilitating change. Then follows a discussion of the history of the Certified Nurse Educator (CNE) exam,

development of the exam and oversight, and exam candidate eligibility criteria. These items are followed by the conceptual framework for this study, including the excellence in nursing education model and a discussion of the multiple roles of the member of the professoriate, a definition of select terms used in this study, and a statement of the problem identified by this researcher. The chapter concludes with a discussion of the significance and purpose for this study, followed by the proposed research questions.

Justification for Selection

Certification is one way nurses can demonstrate a commitment to a chosen specialty (Altman, 2011) and to the advancement of the nursing profession as a whole. Specialty certification also provides the community and healthcare stakeholders with evidence that the nurse has demonstrated expertise in that specialty and has been credentialed by an outside organization (Altman, 2011; Briggs et al., 2006; Callicutt et al., 2011; Fleischman, Meyer, & Watson, 2011; Jones, 2007). Academic nurse educators have the option of seeking certification as a way of validating expert knowledge to consumers of nursing education through that certification.

Few studies examining certification within the academic nurse educator role currently exist. This researcher examined the first-time failures of the NLN's CNE examination, specifically. By understanding select characteristics of the unsuccessful candidate and identifying any relationship between failure and any of those select characteristics, candidates might better prepare for potential success on subsequent examination attempts based on individual needs as revealed through initial exam performance (Bolender, 2001). CNE exam preparation course designers might also benefit from this information in that the data could inform the design of specialty review courses according to specific attendee needs. Results of

this study will also help answer a call by the NLN to add to the body of research related to nursing education, and more specifically, the need for data regarding characteristics that foster the success of academic nursing education leaders (NLN, 2012b)

Lifelong Learning and Continuing Education

Lifelong learning is the hallmark of professionals from all disciplines, but it is particularly relevant for those in healthcare and nursing education. Basic knowledge of the sciences and the science of nursing is no longer sufficient to prepare and sustain the nurse for the rapidly evolving and fast-paced environment of the profession (Benner, Sutphen, Leonard, & Day, 2010) which may also apply to nurse educators preparing these nursing graduates. Committee members of the Institute of Medicine's (IOM) Report on the Future of Nursing (2010) recommend that academic nursing faculty administrators require educators to engage in continuing education activities to remain current with the latest advances in nursing education design and delivery.

One way to demonstrate this commitment to continuing education and current best practices is by seeking certification as a professional goal (Rees et al., 2014). To obtain certification in the academic role, the academic nurse educator is expected to engage in continuing education by studying and preparing for the certification exam (Hagler, Poindexter, & Lindell, 2014; NLN, 2012a). Whether successful or unsuccessful on the exam, this process serves as a beneficial tool for development of the individual in the academic educator role by allowing the educator to assess personal areas of weakness or to prioritize future learning opportunities and experiences (Hunzicker, 2011).

The NLN provides the examination candidate with a list of available preparation materials, including the detailed examination blueprint that illustrates how each content area will

be weighted on the exam, a reference list of sources used in the development of examination items, and self-administered, half-length practice exams that are available for purchase through the NLN (NLN, 2013a). A Google search for “CNE prep book” revealed many options of references available for use. A cursory review of these options revealed a number of sources that support enrichment of the academic nurse educator role (Billings & Halstead, 2012; Caputi, 2014; Wittman-Price, Godshall, & Wilson, 2013).

Continuing education in the competencies related to the academic role is also required for recertification as an academic nurse educator, which suggests that the academic nurse educator should engage in continuing education activities and professional activities as a habit of practice (Hagler et al., 2014; Hicks & Butkus, 2011; NLN, 2011b; Rossetti & Fox, 2009). To remain current and relevant and to avoid having to “cram” all of the required continuing education into a short period of time prior to recertification, the educator would be wise to seek out learning opportunities, workshops, or conferences from the beginning of their certification. The activities related to continuing education should occur regularly and with the intention of improving one’s practice as an academic nurse educator as well as maintaining current and relevant knowledge necessary to remain certified in the role (Rossetti & Fox, 2009). By examination of the Core Competencies of Nurse Educators with Task Statements (NLN, 2012c) and comparing them to individual educational practices, the academic nurse educator can determine which areas of practice require attention, updating, or improvement through the perspective of lifelong learning.

The concept of lifelong learning is important in the discussion of certification (Hagler, et al., 2014; Holding & Fraser, 2013; Libman, 2012; Rees et al., 2014; Smolenski, 2005) and a commitment to a nursing specialty as well. By encouraging and committing to continuing education and faculty development activities, academic nursing educators are able to remain

current in academic trends and issues, teaching and learning theories, effective curriculum designs and evaluation measures, and the latest accreditation standards (Benner, Sutphen, Leonard, & Day, 2010; Loeb, Elfers, & Plecki, 2010; NLN, 2001; Rossetti & Fox, 2009; Sato, Wei, & Darling-Hammond, 2008). When focusing continuing education in activities that specifically incorporate all of the NLN Core Competencies of Nurse Educators with Task Statements (Core Competencies [NLN, 2012c]), the educator is able to obtain or enhance the necessary knowledge and skills, in addition to actual teaching experience, in order to be successful on the academic nurse educator certification exam. These Core Competencies are appropriately identified later in this chapter. The process of continuing education in the scope of the academic nurse educator role would also hold true for those with or without formal training in the role. Regardless of prior academic preparation, this commitment to lifelong learning in the academic nurse educator role should assist in role competence (Hagler et al., 2014; Nieminen, Mannevaara, & Fagerström, 2011) and the success of those seeking certification as an academic nurse educator.

Current Nursing Education Challenges

Nursing education has seen many advances since its movement from hospital-based nursing education programs to academic programs within institutions of higher education (Rich & Nugent, 2010). From the introduction of high-fidelity simulation as an integral component of clinical education to the incorporation of evidence-based practice and quality and safety guidelines, academic nursing educators are familiar with advancement and change. This acceptance of current best practices and willingness to change demonstrates to all stakeholders of nursing education and practice that nursing is a true profession and is dedicated to the

advancement of the profession and the education of its members (Benner, Sutphen, Leonard, & Day, 2010).

Due to a demand to increase enrollments and provide education to more students with diverse backgrounds, institutions are being encouraged to consider alternative ways of teaching and delivering course material to students (Conn, 2013; Lei & Gupta, 2010; Mancuso, 2009; Moller, Foshay, & Huett, 2008; Renes & Strange, 2011; Whitmore, 2005). To continue meeting the demands of the newest generation of technologically savvy learners while responding to the growing number of students being turned away from academic nursing programs due to a shortage of quality nurse educators (Grady, 2011; Mancuso, 2009; Mancuso-Murphy, 2007), schools of nursing must also learn to employ new and innovative instructional delivery methods and strategies. Many curricular designs are no longer sufficient to meet these demands and educators must be creative when examining and implementing alternative forms of instructional design and delivery into modern academic nursing education curricula (Gerard, Kazer, Babington, & Quell, 2014; Grady, 2011; Jones & Wolf, 2010; Ryan, Carlton, & Ali, 2004; Spector & Odom, 2012; Stanley & Dougherty, 2010). Certification as an academic nurse educator demonstrates mastery of the knowledge necessary to help affect curricular change and assist in planning and implementing these innovative and alternative forms of instruction (NLN, 2012a).

Valiga (2012) contends that schools of nursing must re-examine the way in which nursing education is provided to students. Valiga also states that academic nurse educators must look past the current traditional educational models that center around the educator who is encouraged to deliver the necessary knowledge and material to the learner to a more student-centered model in which students work together with educators to learn more effectively. It is

Valiga's assertion that by allowing the student to guide individual learning and to use healthcare educators and professionals as collaborators in the learning process, nursing education is transformed into a new and more relevant form of study that meets the current needs of the science and the practice of nursing and healthcare. Among several recommendations, Valiga (2012) challenges academic nurse educators to (a) embrace change, (b) design curricula that are both structured and open/flexible, (c) provide opportunities for students and teachers to learn together, (d) base curriculum decisions on evidence rather than on tradition, and (e) ensure that a culture of excellence exists for faculty and students (p. 430). Through credentialing, certified academic nurse educators demonstrate mastery of the knowledge of the role and should be better prepared to address the aforementioned recommendations as leaders in nursing education (NLN, 2012a).

Certified Nurse Educator Exam

The interim director of the Academic Nurse Educator Certification Program (ANECP), Dr. Larry Simmons, stated that since its inception in 2005, the CNE credential has been granted to over 4,300 academic nurse educators across the United States, which represents an overall pass rate of approximately 80% of those who tested from inception through June of 2012 (personal communication, April 17, 2014). According to the leaders of the NLN (2011b), these certified nurse educators demonstrate mastery of the full scope of the academic nurse educator role and dedication to the advancement of the nursing profession. Certified academic nurse educators serve as role models and academic nurse leaders in nursing education programs across the country (Hagler et al., 2014; NLN, 2011b; 2012a). It is the expectation of the NLN that certification as an academic nurse educator will serve to

- distinguish academic nursing education as a specialty area of practice and an advanced practice role within professional nursing;
- recognize the academic nurse educator's specialized knowledge, skills, and abilities and excellence in practice;
- strengthen the use of core competencies of nurse educator practice; and
- contribute to nurse educators' professional development (NLN, 2011b).

The CNE exam test plan is derived from a nationwide practice analysis of the academic nurse educator role. This practice analysis was developed and the results reviewed by a committee of eight academic nurse educators from across the country representing multiple demographics including race, educational program type, and highest degree obtained. The sample for the practice analysis consisted of NLN members in the academic nurse educator role. The survey used for analyses was developed using the Core Competencies (NLN, 2012c). The eight Core Competencies used for survey development are (a) Facilitate Learning, (b) Facilitate Learner Development and Socialization, (c) Use Assessment and Evaluation Strategies, (d) Participate in Curriculum Design and Evaluation of Program Outcomes, (e) Function as a Change Agent and Leader, (f) Pursue Continuous Quality Improvement in the Nurse Educator Role, (g) Engage in Scholarship, and (h) Function Within the Educational Environment (NLN, 2012c). Data from the analyses were used in the development of the exam blueprint to guide item writers in the development of appropriate exam items for inclusion on the CNE exam (Ortelli, 2006).

The ANECP was accredited by the National Commission for Certifying Agencies (NCCA) in 2009 (NLN, 2011) and continues to grant the CNE credential to academic nurse educators who wish to serve as leaders and role models in the academic setting. The NCCA

serves as the accrediting body of the National Organization for Competency Assurance (NOCA) (NLN, 2011b). This accreditation was an important step for the CNE program to demonstrate to the academic community a dedication to excellence and rigor within the program that is recognized by an outside organization not directly associated with the NLN or the ANECP.

Similarly, certification as an academic nurse educator demonstrates to the educational community an excellence and knowledge of the full scope of the academic nurse educator role. This knowledge of the advanced specialty role in nursing can serve as an important leadership characteristic for serving as an educational leader (Adelman-Mullally et al., 2013; Berry, Johnson, & Montgomery, 2005; Loeb et al., 2010). By understanding any known characteristics or deficits in education that may prevent success in certification as an academic nurse educator, academic nursing education leaders can design and implement educational preparation programs or development opportunities that will better prepare potential candidates.

CNE Examination Eligibility Criteria

Effective October 1, 2012, academic nurse educators seeking certification in the academic educator role have two options for certifying eligibility to sit for the exam as outlined in the Certified Nurse Educator 2012-2013 Candidate Handbook (NLN, 2012a). Option A, states that the academic nurse educator must possess a master's or doctoral degree in nursing with either a major emphasis in nursing education or nine or more credit hours of graduate level education courses. Option B, states that the academic nurse educator must possess a master's or doctoral degree in nursing with a major emphasis in a role other than nursing education in addition to two or more years of employment as an academic nurse educator. Both options also require a current, active, and unencumbered registered nursing license for practice in the United States or its territories (NLN, 2012a).

Prior to the current criteria, eligibility for academic nurse educators seeking certification were slightly different. While Option B remained the same, the original Option A required that the academic nurse educator with a master's or doctoral degree in nursing education provide evidence of full-time work experience as an academic nurse educator for at least two consecutive years within the five years immediately prior to the date of testing. Full-time work experience was to be defined by the institution of employment (NLN, 2011a). The update to the criteria options were determined by the results of a second practice analysis conducted by the NLN in 2011 and determined by the members of the TDC. The recommended changes were reviewed and approved by the Certification Commission in the same year. The NLN Board of Governors granted final approval and the changes to the eligibility criteria were implemented in 2012 (L. Simmons, personal communication, August 2, 2012).

Seeking certification as an academic nurse educator is a voluntary process. Academic nurse educators are not currently required to obtain certification in order to demonstrate an expert knowledge of the full scope of the academic nurse educator role. While maintaining certification in one's clinical specialty is a requirement for advanced nursing practice (Cahill, Alexander, & Gross, 2014), this requirement is not currently the case for academic nurse educators. Academic nurse educators who seek to obtain the CNE credential do so voluntarily.

Conceptual Framework

The NLN's excellence in nursing education (ENE) model (2006) served as the framework for this study. The model consists of eight key components necessary for nursing education excellence. These components are (a) clear program standards and hallmarks that raise expectations, (b) well-prepared faculty, (c) qualified students, (d) well-prepared educational administrators, (e) evidence-based programs and teaching/evaluation methods, (f) quality and

adequate resources, (g) student-centered, interactive, innovative programs and curricula, and (h) recognition of expertise. For the purposes of this study, the “Well-prepared Faculty” component was addressed and functioned as the lens through which the significance of academic nurse educator certification is viewed as an indicator of excellence within nursing education.

The Well-prepared Faculty component of the ENE model consists of three primary branches or roles: Expert Researchers, Expert Clinicians, and Academic Leaders. Each of the three branches contains offshoots that further explain how excellence in the roles is measured. For this study, the role of Academic Leader served as the primary focus of the well-prepared faculty member as it applies to certification in the role of academic nurse educator. Characteristics of faculty members who serve as leaders in nursing education are provided in the model and are demonstrated by those academic nurse educators who

- use evidence-based teaching;
- advance the profession;
- are active citizens of the academy;
- participate in curriculum design, implementation, and evaluation;
- provide leadership to transform and re-vision nursing education;
- mentor neophyte educators;
- build the science of nursing education;
- teach skills for diverse groups of learners;
- advise and counsel regarding academic programs and career development; and
- demonstrate skills with evaluation methods for programs and individual learners (NLN, 2006).

Each of these characteristics or activities can be aligned directly to one or more of the Core Competencies that served as the guide for the development of the CNE exam test plan, and it is therefore assumed that success on the exam demonstrates, in some way, these characteristics. It is noted that while other components of the model may certainly pertain to certification of the academic nurse educator and the significance with which it plays in overall excellence in education, those components are beyond the scope of this study and should be considered for future research studies in this area.

Definition of Terms

For the purposes of this study, the following terms were defined:

1. Academic nurse educator – A registered nurse working in an institution of higher learning who reflects the core competencies of nursing faculty and facilitates learning through curriculum design, teaching, evaluation, and advisement (NLN, 2012c).
2. Advanced prepared nurse – A registered nurse who has received training and a graduate degree (master’s or doctoral) in a nursing specialty practice role (practitioner, educator, anesthetist, etc.)
3. Candidate – “An academic nurse educator who meets the CNE examination eligibility requirements and takes the CNE examination” (Ortelli, 2012, p. 27).
4. Candidate institutional affiliation – The type of nursing program (including all degrees represented at that program) where the candidate is employed to teach.
5. CNE test blueprint – A guide for the development of the CNE exam, exam items, and appropriate percentage of items represented on the exam that is developed from a practice analysis of current academic nursing faculty across the country.

6. Content area of the CNE exam – One of the six major content areas assessed by the CNE examination. These content areas reflect the Core Competencies and are developed from the CNE test blueprint.
7. Continuing education – Education activities that allow the academic nurse educator to remain current with the latest advances in nursing education design and delivery.
8. Core Competencies – Set of eight competencies that encompass the standards of practice for which academic nurse educators are held accountable to as outlined by the NLN (NLN, 2012c).
9. Nursing faculty – “A full-time academic nurse educator who teaches in a nursing program” (Ortelli, 2012, p. 28).
10. Specialty certification – “The formalized recognition of specialized knowledge, skills, and experience demonstrated by achievement of standards identified by a nursing specialty to promote optimal health outcomes” (ABNS, 2005, Background section, para. 1).
11. Academic nurse leader – An academic nurse educator who strives to “advance quality nursing care; promote positive change, innovation, and excellence; and enhance the power and influence of the nursing profession” (NLN, 2012c, p. 11).

Problem Statement

The futures of nursing profession and practice are dependent upon effective and knowledgeable academic nurse educators (Conn, 2013). There is currently no requirement for certification or regulation concerning the specific nurse educator preparation of nursing faculty in academic nursing education as a minimum requirement for practice as an educator. Nursing education, at all levels, is provided by advanced prepared nurses of various educational

preparations, including advanced clinical practice, management, and education. Nursing education faculties should consist of a range of nursing experts from multiple specialty roles who know how to teach and have demonstrated preparedness to teach (NLN, 2002, 2006, 2013).

Recently, the NLN issued a vision statement strongly urging all doctoral nursing programs to prepare graduates to teach. In it, the members of the NLN Board of Governors emphasize the growing need for doctorally prepared nurse educators who can teach, serve as educational leaders, and conduct or translate nursing education research (NLN, 2013b). While it may not be feasible to think that all academic nursing faculty members must have formal training in nursing education, there is reason to assume that all academic nurse educators, regardless of professional training, should be required to provide evidence of a working knowledge of the full scope of the academic nurse educator role. Although the numbers are increasing, there are few academic nurse educators who possess the CNE credential. Addressing ways to facilitate acquiring such a credential could strengthen the pool of nurse educators with demonstrated knowledge and skill related to the role of the academic nurse educator regardless of the educator's educational preparation.

Significance of the Study

Nursing practice has been enhanced with the recent inclusion of evidence-based practice research and guidelines to provide the practitioner with rationales for performing skills and providing care in the best and most effective ways possible (Leufer & Cleary-Holdforth, 2009). The nursing profession is growing from a culture of, "that's the way it has always been done," to a culture of, "this is the best way to do this and here is the evidence to support it." This shift in thinking is enhancing patient outcomes and helping elevate the science of nursing among other professions in the medical community (Leufer & Cleary-Holdforth, 2009). This idea of using

research and evidence to support nursing practice is not limited to clinical practice, but touches every aspect of nursing.

In 2002, the members of the NLN Board of Governors released a position statement urging graduate programs of nursing to produce graduates specifically trained in the faculty role. The leaders asserted that the preparation of a qualified nursing education faculty was dependent upon the specialized education in the academic nursing educator role and that every academic nursing program should consist of faculty members prepared for the role. NLN board members presented academic nursing education programs with a list of recommendations in order to meet the growing need for academically trained nursing educators and success of the academic nurse educator role in particular. Some recommendations included: promoting careers in nursing education, partnering with other disciplines to expand and improve the pedagogical foundation of nursing education, designing graduate education tracks to prepare graduates for multiple educational roles, providing incentives for expert educators, and encouraging deans and directors to support and accommodate participation in education-focused conferences (NLN, 2002).

The NLN's recommendations (2002) and the call for more nurse educators prepared at the doctoral level (AACN, 2008; Bartels, 2007; Nickitas & Feeg, 2011) are significant and would elevate the academic nursing education profession among its peers in academe. This discussion is important for universities because master's prepared nurse educators are typically prepared to function as faculty at the associate's degree or community college level, while doctoral education is directed toward work at the university and graduate levels (AACN, 2008; Bartels, 2007; Poindexter, 2013). Even with a call by nursing education leaders to produce more graduates with doctoral degrees who are prepared to teach, academic nursing education appears

to trail in comparison to other academic disciplines (Duffy, 2012; Leners, Wilson, & Sitzman, 2007).

A new focus on expanding the research and evidence base for nursing education practice has been encouraged by the NLN in addition to clinical nursing research. While nurse educators are not new to nursing, the idea of nursing education as an advanced specialty role is. Even newer to nursing is the concept of certification in the academic nurse educator role and the way in which the knowledge, experience, and skills necessary for certification in the role might foster leadership in academic nursing education (Conn, 2013). This study served to provide needed information to help answer the NLN's call to identify the personal and professional characteristics most essential to fostering the success of academic nursing education leaders (NLN, 2012b). Achieving certification in the role of the academic nurse educator serves as evidence of commitment to achieving goals and pursuing excellence and may demonstrate one professional characteristic which has the potential to foster success in academic nursing education program and curriculum leadership (Adelman-Mullally et al., 2013; Conn, 2013; Kalb, 2008; NLN, 2012a).

Certification as an academic nurse educator does not ensure success as a nursing education leader, however certification does demonstrate mastery of the knowledge and commitment the role requires; certification serves as one of several attributes that foster success for academic nursing education leaders (Hagler et al., 2014; Kalb, 2008; NLN, 2007). Several sources suggest, however, that those educators who have demonstrated a mastery of the knowledge of the full scope of the academic nurse educator role by becoming certified might be better prepared to function as academic nurse leaders within nursing education programs (Adelman-Mullally et al., 2013; Conn, 2013; Kalb, 2008; NLN, 2007).

The authors of the IOM Report on the Future of Nursing committee (2010) recommend that all academic nursing education programs that provide advanced practice registered nurse (APRN) specialty degrees should produce graduates who can successfully complete certification and licensure exams following graduation (Alleman & Houle, 2013; Hickey et al., 2014). Academic nurse educators, however, are not formally recognized by most professional nursing organizations as an advanced practice nurse role (Cahill et al., 2014; NLN, 2005; Ortelli, 2006), and this has been a struggle for the academic nursing education profession (NLN, 2013b). The Consensus Model for APRN Regulation (APRN Consensus Model Work Group, 2008) indicates that graduates with advanced practice specialty degrees include those from graduate tracks in nurse practitioner, nurse midwifery, clinical nurse specialist, and nurse anesthesia (Alleman & Houle, 2013; Cahill et al., 2014; MacDonald, Herbert, & Thibeault, 2006; Stanley, 2007). This designation as an advanced practice nurse is due, in large part, to the understanding that these graduates engage in direct patient care as a required part of professional practice, whereas academic nurse educators often do not (APRN Consensus Model Work Group, 2008). This recommendation or requirement by the members of the IOM committee for certification in a specialty practice does not apply to the nurse faculty member responsible for producing the advanced practice graduates, as well as graduates from pre-licensure programs.

It is imperative that academic nursing education programs begin to require that its faculty members be trained as academic nurse educators or be able to provide evidence of a thorough understanding and working knowledge of the academic nurse educator role (Bosold & Darnell, 2012; Hagler et al., 2014; NLN, 2012c, 2013; Ortelli, 2006; Poindexter, 2013), be it through academic preparation, certification, or continuing education credits in the area of academic nursing education. Certification provides the most consistent measure of this knowledge (Briggs

et al., 2006; Hagler et al., 2014; Jones, 2007). However, there is a lack of available evidence to assist nurse educators in understanding those factors which best support success on the certification exam. Further research, both quantitative and qualitative, should be conducted on the subject (Hagler et al., 2014; Hickey et al., 2014).

The limited number of studies and reports that have been disseminated on the topic of academic nurse educator certification focus primarily on the discussion of the development of the CNE program, the CNE exam, or candidate demographic specifics within the first few years of exam administration. Data indicate that academic nurse educators teaching in practical/vocational, diploma, and associate degree nursing programs demonstrate pass rates lower than those who teach in baccalaureate, master's and doctoral programs (Nick, Sharts-Hopko, & Leners, 2013; Orтели, 2006, 2008). Additionally, a significant difference exists between overall pass rates of those with a master's degree and those with a doctoral degree (Orтели, 2012). Information regarding the characteristics of those who are unsuccessful on the first attempt of the CNE exam could provide beneficial data to any potential candidate and could also provide much needed data to program directors in the support for decisions regarding faculty development needs.

Purpose of the Study

The purpose of this study was three-fold: (a) to describe select characteristics of the unsuccessful first-time candidates for the CNE exam; (b) to determine any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) to determine any statistically significant relationship between failure and each content area of the CNE exam.

Data from this study may inform the development and delivery of future CNE review courses. By identifying any potential links to failure and highest degree held or institutional affiliation, these data will also provide evidence for any areas of need for faculty development and continuing education among all levels of academic nursing education. Data may also serve to guide remediation development for the unsuccessful candidates in an effort to improve chances of success on future examination attempts.

Research Questions

Results from this study answered the following research questions:

1. What are the demographic characteristics of the unsuccessful CNE first time candidates related to highest degree obtained and institutional affiliation?
2. Is there a statistically significant relationship between failure on the CNE exam and either highest degree obtained or institutional affiliation?
3. Is there a statistically significant difference in mean scores in each content area among unsuccessful candidate's highest degree obtained or institutional affiliation?

These research questions were selected based on data from the literature as well as the availability of information provided by the database of unsuccessful candidates used in this study. It was anticipated that the answer to research question one would provide a better picture of the unsuccessful candidate and reveal percentages of those who were unsuccessful in the areas of highest degree earned and institutional affiliation that the candidate taught in at the time of writing the exam. These data could benefit future candidates who seek information about which candidates are most likely to be successful on the exam, whether that be related to a degree earned or the level of program of teaching activities. The answer to research question two served to provide nursing education researchers and potential candidates with data regarding which

factors result in the highest rate of failure on the CNE exam and which individuals might be more likely to be unsuccessful on the exam. It was anticipated that the answer to research question three would provide data regarding which content areas on the exam result in the highest rates of failure among the different educational levels and institutional affiliations of the candidates. These data might inform program leaders or administrators in determining appropriate professional development opportunities for faculty in order to be successful on future exam attempts.

Chapter Summary

Nurse specialty certification demonstrates a dedication to the chosen practice and an advanced knowledge of the role. Achieving nurse educator certification indicates mastery of the academic nurse educator's knowledge, skills, and abilities in nursing education, as well as engagement in continuing education. While nurse educators are required to hold advanced degrees in nursing, there is no requirement that the educator be trained or certified in the academic role in order to teach. It was anticipated that the results of this study would help academic nursing education leaders better understand how to prepare potential candidates for success on the academic nurse educator examination and to equip academic nursing education administrators with the needed information to inform faculty development and continuing education opportunities. After examining select characteristics of previous unsuccessful first-time candidates, this researcher determined the correlations between failure on the exam to those characteristics as well as the content areas assessed by the exam.

Chapter Two

REVIEW OF LITERATURE

The purpose of this study was to (a) describe select characteristics of the unsuccessful first-time candidates for the CNE exam; (b) determine any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) determine any statistically significant relationship between failure and each content area of the CNE exam. To provide a foundation for the study, a review of current literature for this study was conducted using Academic Search Premier, ERIC, CINAHL Plus with Full Text, Science Direct, and MedLine online databases. The searches consisted of multiple search terms, including certification, value of certification, nursing education, nurse educator role, preparation, nursing specialty certification, academic nurse educator, nurse educator, teacher effectiveness, certified nurse educator, and combinations of these terms. All searches were limited to English language, peer-reviewed journal articles and texts with a publication date of 2005 or later.

This chapter begins with a description of the history of the preparation for the academic nurse educator role, followed by an examination of the modern professoriate in the current American higher education system. This section of the review of literature will allow the reader to more fully conceptualize the role of the academic nurse educator within higher education today before examining studies regarding certification, the value of specialty certification, and teaching effectiveness. The resulting synthesis of data will be presented in this chapter as (1) the

academic nurse educator, (2) the modern professoriate, (3) certification and teacher effectiveness, (4) value of nursing specialty certification, (5) factors affecting certification exam performance, (6) preparation for the academic nurse educator role, and (7) performance on the CNE examination in an effort to better articulate what nursing specialty certification is and how certification in the academic nurse educator role might be used to influence and enhance the teaching, service, and scholarship requirements of the academic nurse educator and, ultimately, the outcomes of the students.

The Academic Nurse Educator

The initiation of formal preparation of academic nursing educators can be traced back as far as 1873 (Ortelli, 2012). It was at this time that administrators in training schools of nursing realized a critical need for educating graduates who could effectively teach future generations of nursing professionals as well as hold administrative positions in future schools of nursing. These pioneers of formalized nursing education desired a universal standard for the training of all nurses (Ortelli, 2012; Robb, 2005).

The preparation of the nurse educator has historically occurred through mentoring and individual clinical experience leading to advanced knowledge sufficient to teach future nurses (NLN, 2012c). The call for professional nurses to be trained at the baccalaureate level in colleges and universities by the American Nurses Association (ANA) in 1965 (Donley & Flaherty, 2002; Ortelli, 2012) led to a demand for more nurse educators trained at the master's level. Prior to formalized graduate education in nursing, though, nurse educators who sought graduate level education often were educated in theory and practice in disciplines other than nursing (Ortelli, 2012). Currently, nursing faculty members are educated in multiple specialties in nursing at the

master's level. The master's degree serves as the minimum degree required to teach nursing at the undergraduate level.

To address the need for more academic nurse educators trained in the practice of teaching, nursing education pioneers in Teachers College at Columbia University created the first doctoral program for nurses in the early 1900s (Carpenter & Hudacek, 1996; Dreher, 2011; Ortelli, 2012; Robb, 2005). Graduates of the program were awarded the Doctor of Education (EdD) in Nursing and would become the first to be trained specifically for the academic nurse educator role and leadership positions in nursing. Students enrolled in the EdD program at Teachers College focused on studies related to issues in nursing education and leadership, rather than clinical practice (Carpenter & Hudacek, 1996; Ortelli, 2012; Robb, 2005).

Understanding a need for a more research-intensive education and the dissemination of nursing-specific clinical research, nursing education leaders established the first Doctor of Philosophy (PhD) program in nursing in 1934 at New York University. The University of Pittsburg followed suit and began offering a PhD in Maternal and Child Nursing in the 1950s with a distinct focus on clinical research in the area. In 1960, a third research doctorate education model, the Doctor of Nursing Science (DNSc), was established at Boston University in an effort to showcase the significance of the nurse as a professional, clinical practitioner (Dreher, 2011; Ortelli, 2012; Robb, 2005).

The first Doctor of Science in Nursing (DSN) program was established at the University of Alabama at Birmingham in 1975 followed by the first Doctor of Nursing Science (DNS) program at Indiana University in 1976 (Dreher, 2011; Ortelli, 2012; Robb, 2005). These degrees focused on the preparation of advanced clinical practitioners with the addition of scholarly research projects (Ortelli, 2012; Robb, 2005). In some cases, however, this was an attempt to

circumvent educational institution criteria regarding restrictions on degree offerings in which research doctorates could not be awarded due to institutional classification, but knowledge of conducting research was desired (Carpenter & Hudacek, 1996; Robb, 2005). The research rigor of the DNSc, DNS, and DSN programs has been compared to that of nursing PhD programs and since the 1970s, most programs have been converted to PhD programs (AACN, 2001). Several institutions are now beginning to convert the earned DNSc, DNS, and DSN credentials to a PhD (Ortelli, 2012).

The Modern Professoriate

While the title of educator implies a teaching role, an educator in an institution of higher education is required to perform other necessary duties in order to build upon and promote the science of nursing and academic nursing education. These additional duties include research and service and are often incorporated into the faculty member's workload (Finke, 2012; Kirschling, 2008). Boyer (1990) recommends that institutions of higher learning look at the professoriate in terms of four distinct functions: (a) the scholarship of discovery (research), (b) the scholarship of integration (interdisciplinary research activities), (c) the scholarship of application (service), and (d) the scholarship of teaching. Thus, the role of the academic nurse educator actually consists of a tripartite role (teaching, research, and service) encompassing the four areas of scholarship. In a research institution, the focus is usually more on research activities and teaching rather than service. Faculty in those institutions tend to focus on excelling in the scholarship of discovery or integration by demonstrating proficiency in performing and disseminating research of their chosen interest (Boyer, 1990; Sauter et al., 2012). Although each institution of higher education is unique and requires a different expectation of its faculty members in the development of a professional work portfolio, faculty are expected to contribute to all three aspects of the tripartite

role to some degree (Bosold & Darnell, 2012; Boyer, 1990; Finke, 2012) based on the mission and type of institution.

Teaching is a fundamental requirement for faculty in institutions of higher learning. Regardless of the type of institution (research versus liberal arts), students come to learn and faculty members serve to provide that necessary component to any education. The ways in which one teaches, however, may vary drastically among institutions and individual faculty members (Rowles, 2012). Effective educators understand that there are different needs and learning styles or preferences within the different domains of learning (cognitive, psychomotor, and affective) of the students in the classroom (Scheckel, 2012). Some prefer to see charts and diagrams, others enjoy hearing the lectures and learn best that way, while others need to actually use hands or entire bodies to better understand material being taught. Assessing and meeting these needs allows the educator to tailor teaching strategies to best meet the needs of the entire group of students (Burruss & Popkess, 2012).

Educators in research institutions are strongly encouraged to conduct research in areas of individual interest and to disseminate the findings in scholarly and peer-reviewed journals or textbooks, depending on the academic field or institution and tenure and promotion guidelines (Anderson, 2008; Boyer, 1990; Sauter et al., 2012). Academic nursing programs and faculty in research institutions of higher learning are not exempt from this expectation. As a component of the tripartite role of the academic nurse educator, academic nursing faculty should conduct research that contributes to the scientific knowledge base and evidence of clinical nursing practice (Finke, 2012). Recently, a new focus on expanding the research and evidence base for academic nursing education practice has been encouraged by the NLN in addition to clinical nursing research (NLN, 2012b).

The third aspect of the academic nurse educator role is service to the college, university, profession, and community. Community service efforts should relate to the faculty's research interests or clinical practice in order to apply nursing knowledge to the community effectively. Service in all areas should be balanced and should supplement other faculty responsibilities, not outweigh them (Finke, 2012; Kirschling, 2008).

The faculty member should understand the emphasis that is placed on the area of service at the institution where one is employed. Although a component of the tripartite role of the academic nurse educator and a required expectation of faculty, not all institutions will look for heavy emphasis in service for tenure and promotion decisions. Decisions regarding the amount and types of service, then, are left to the faculty member to appropriately balance a professional portfolio that best aligns with the mission and philosophy of the academic institution (Bosold & Darnell, 2012; May, 2008).

This understanding of the academic nurse educator role is important in that it provides a basis for the component of the excellence in nursing education (ENE) model that serves as the conceptual framework for this study. Boyer's (1990) role of teaching is evidenced in the model through all three of the elements within the component of Well-prepared Faculty. Components from the elements align with the role of teaching and include teaching skills, evidence-based teaching, curriculum design, and skills with evaluation methods. Activities most congruent with the role of service can be evidenced in the model as practice skills, advisement and counseling skills, mentoring neophyte educators, and advancing the profession. The role of scholarship is demonstrated in the model through activities such as research skills, building the science of nursing education, being actively engaged in the responsibilities of academia, and participating in curriculum design and implementation. It should be noted that while some institutions expect

faculty to declare an area of focus and excellence, other institutions prefer their faculty to develop a balanced portfolio of professional work in teaching, research, and service (Bosold & Darnell, 2012; Sauter, Gillespie, & Knepp, 2012; Worrall, 2008).

Certification and Teacher Effectiveness

Due to the lack of available research on the topic of certification in the academic nurse educator role, a search of the current literature regarding teacher certification and teaching in secondary education was conducted using the Education Resources Information Center (ERIC) online database of education-related literature. Initial search terms were *teacher* and *certification* with results limited to peer-reviewed journal articles. This search returned 2,747 matches, and the results were then limited to publication dates after 2005 and only full-text matches.

The resulting 736 matches were further limited using an additional search term of *effectiveness*. This limiting of the results was done in an effort to discover literature relating to overall performance of the certified educator to reveal any known correlation between certification and teacher performance or effectiveness. Of the 222 matching results, 42 were chosen for further review and possible inclusion in this review because of their relevance to this study. Additional inclusion criteria consisted of studies focusing on reading, math, and science education because of their relevance to nursing and the importance of a solid understanding of these subjects to student success in nursing education (Sayles, Shelton, & Powell, 2003; Wolkowitz & Kelley, 2010). Additionally, National Board Certification (NBC) of teachers was examined because of the similarities between NBC and the CNE regarding measurement of teacher knowledge and skills as well as certification at the national level (Billings & Kowalski, 2008; Holding & Fraser, 2012; Kalb, 2008; Ortelli, 2006; Sato et al., 2008; Stronge et al., 2007).

A synthesis of the resulting literature search materials indicated that the research regarding a possible link between teacher certification and teaching effectiveness is conflicting. Effectiveness was indicated by a number of variables such as student outcomes (Boyd, Goldhaber, Lankford, & Wyckoff, 2007; Darling-Hammond, Holtzman, Gatlin, & Heilig, 2005; Kane, Rockoff, & Staiger, 2007; Marszalek, Odom, LaNasa, & Adler, 2010; Stronge et al., 2007), student attitudes (Helding & Fraser, 2013; Stronge, et al., 2007), and classroom environment (Marszalek et al., 2010; Stronge et al., 2007) in this review. While some researchers claim that certification demonstrates an effect on the outcomes of students, particularly in the areas of reading, math, and science (Boyd et al., 2007; Darling-Hammond et al., 2005; Helding & Fraser, 2013; Marszalek et al., 2010), others fail to recognize that link and claim that there is little to no correlation between certification and teaching effectiveness (Kane et al., 2007, 2008; Stronge et al., 2007). Still, others state that many factors could influence student outcomes, attitudes, and classroom environments and that certification may or may not impact teaching effectiveness. It is suggested that the available data are not significant enough to draw substantial conclusions regarding certification and teacher effectiveness (Goldhaber & Anthony, 2007; Libman, 2012; Moyer-Packenham, Bolyard, Kitsantas, & Oh, 2008; Smith & Gorard, 2007).

Helding and Fraser (2013) examined the relationship between NBC teachers' and non-certified teachers' classroom environments, student attitudes, and student achievement. The sample consisted of 927 students in high school science courses from 13 schools in Florida. Of the sample, 443 students were taught by NBC teachers and 484 were taught by non-certified teachers. A modified version of the "What is Happening in this Class?" (WIHIC) questionnaire was used to collect data regarding student perceptions of the science course and teacher in seven areas: (a) student cohesiveness, (b) teacher support, (c) involvement, (d) investigation, (e) task

orientation, (f) cooperation, and (g) equity. Reliability of the WIHIC questionnaire was assessed using the Cronbach alpha reliability coefficient and demonstrated a range of 0.82 to 0.92 for the individual student as the unit of analysis and a range of 0.69 to 0.97 for the class mean.

Discriminant validity among the scales was also assessed using the mean correlation of one scale with the other scales and demonstrated a range of 0.41 to 0.50 among the students and a range of 0.56 to 0.71 among the classes. The attitude of the students regarding science education was measured using the Enjoyment of Science Lessons from the Test of Science-Related Attitudes (TORSAs). A Cronbach alpha reliability coefficient of 0.81 for the individual student and 0.93 for the class means demonstrated reasonable reliability for the TORSAs scale. Data from the TORSAs scale were compared against student scores on the Florida Comprehensive Assessment Test (FCAT) in order to determine any relationships that might exist.

Simple correlation and multiple regression analyses revealed a more positive relationship among the overall classroom environment, student attitudes regarding science education, and student outcomes when taught by NBC teachers. When the two groups were compared, a statistically significant difference was revealed among all areas of the WIHIC except for Investigation and Cooperation in favor of the NBC teacher and classroom, indicating a better perception of and attitude toward science education than those who were taught by non-certified teachers. There is demonstration of a need to better understand any potential correlation between teacher certification and student outcomes and attitudes toward science. The researchers recommend further research comparing certified and non-certified teachers and student outcomes but suggest that more control for extraneous variables, such as type of learning institution or years of teaching experience, be implemented (Helding & Fraser, 2013).

Similarly, Darling-Hammond et al. (2005) replicated and expounded upon an earlier study examining, among several variables, teacher certification status on student achievement in math and reading scores from three standardized tests in grades 3 through 5 in Houston, Texas, from 1996-2002. Data analysis revealed that those teachers with no certification were less effective in raising exam scores and had a negative effect on student achievement. Certification was also found to have a more positive effect on student progress, even more so than years of teaching experience. The researchers suggest that future studies in this area consist of hierarchical linear modeling in a longitudinal framework tracking teacher effectiveness over a period of years to assess whether or not education and experience affect teacher effectiveness, any difference between certification or experience and attrition of weaker teachers, and the cumulative effects for students with different kinds of teachers with different experiences and educational experiences (Darling-Hammond et al., 2005).

Kane et al. (2007) examined a very similar population of students in grades 3 through 8 in the New York City school system to assess student achievement in math and reading scores according to the certification status of teachers. Contrary to the findings reported by Darling-Hammond et al. (2005), Kane et al. (2007) reported that while non-certified teachers might be less effective as new teachers than their certified counterparts initially, the non-certified teacher makes up for the lack of effectiveness over time. As mentioned by Darling-Hammond et al. (2005), though, it is suggested that attrition of weaker, non-certified teachers could skew the average performance of the sample as compared to certified teachers over time. However, the researchers reported no difference between certified and non-certified teachers and student achievement. Kane et al. (2007) go on to say the following:

The advantage of being the student of a teacher in the top quarter of effectiveness rather than the bottom quarter is roughly three times the advantage of being taught by an experienced teacher rather than by a novice, and more than ten times any advantage created by teacher certification (p. 66)!

It is suggested that assessment of teaching effectiveness be performed during the first few years of experience and efforts be made to retain those teachers, certified or not, who are most effective during that timeframe (Kane et al., 2007).

Likewise, Stronge et al. (2007) examined the relationship between NCB and non-NBC teacher effectiveness among 307 fifth grade teachers and student achievement in math and reading test scores in three North Carolina school districts. Data analysis revealed no statistically significant relationship between teacher achievement indices (estimate of teacher impact on achievement) among NBC and non-NBC teachers. Additional analysis regarding the observation of 15 in-classroom variables indicated that teachers in the top quartile of the sample (including some NBC teachers) had higher mean scores than only NBC teachers in all 15 dimensions. The researchers suggest that those teachers who are more effective in the classroom “have some particular set of attitudes, approaches, strategies, or connections with students that manifest themselves in non-academic ways . . . and, thus, indirectly, if not directly, lead to higher achievement” (p. 206). The researchers recommend that more extensive research be conducted to determine the relationship between NBC and student achievement (Stronge et al., 2007).

Still, others contend that the data are not sufficient to make a claim regarding student achievement or teacher effectiveness based on teacher certification. Goldhaber and Anthony (2007) examined the relationship between National Board for Professional Teaching Standards (NBPTS) certification and teaching effectiveness to determine if certification revealed any significance over basic teacher licensing exams. Teacher and student data from 1996 to 1999

from schools in North Carolina were used in the analyses, including pre- and end-of-year math and reading scores from students in grades 3 through 5 as well as select teacher variables, including certification status.

Data analyses revealed several findings. It was reported that NBC teachers did produce more gains in student achievement than that of the non-NBC teachers. Additionally, analysis revealed that certification above the basic licensure exam did demonstrate a level of quality above what is learned from licensure test performance. However, it was also revealed that those teachers who obtained certification the year following data collection and analyses (coded as “future NBCT”) were more effective just prior to receiving certification than they were in the year of application. It was suggested that the exam preparation process, which occurs the year prior to the announcement of actual certification, adversely affects the individual’s effectiveness, thereby resulting in decreased effectiveness for this study. The researchers also reported that those teachers who attempt certification successfully are more effective than those who are unsuccessful and those who attempt certification and are unsuccessful are actually less effective than those teachers who do not attempt certification at all (Goldhaber & Anthony, 2007).

In addition to the influence of the certification preparation process, Goldhaber and Anthony (2007) suggest that the rationales for the findings in this study could be related to two factors. First, the “future NBCT”, who may be performing at peak performance at a given time, is encouraged to seek certification by administration and then falls into a less-effective routine following certification. Second, it could be assumed that NBC teachers are assigned to higher-performing groups of students with high pre-test scores, thereby skewing the results of end-of-year performance and teacher effectiveness comparisons. The researchers also indicate that the process of preparing for and obtaining certification does not increase teacher effectiveness. It is

recommended that future studies examine the effect that NBC has on the teacher's career path as well as teaching assignment and retention (Goldhaber & Anthony, 2007).

The findings in this section may be related to academic nursing education because the common ground between nursing and the fields included in the studies are reading, math, and science education. Specifically, a solid understanding of the material in these subjects serves as strong predictors of success in nursing school (Sayles et al., 2003; Wolkowitz & Kelley, 2010). Further research is needed to better understand how certification affects teachers' future career paths (Darling-Hammond et al., 2005; Goldhaber & Anthony, 2007; Holding & Fraser, 2013), to track teacher effectiveness across years (Darling-Hammond et al., 2005; Holding & Fraser, 2013), to determine the need for in-service training needs (Moyer-Packenham et al., 2008; Sato et al., 2008), to more closely examine student outcomes based on teaching practices and teacher certification status (Boyd et al., 2007; Sato et al., 2008; Stronge et al., 2007), and to develop additional valid and reliable instruments to measure teacher effectiveness (Kane, Rockoff, & Staiger, 2008; Libman, 2012; Moyer-Packenham et al., 2008). Understanding how certification might affect each of these factors as they apply to the academic nurse educator role will support the well-prepared faculty member component of the conceptual framework for this study.

The ENE model also includes elements which pertain directly to these data, specifically academic leaders and expert clinicians who provide evidence-based teaching; are knowledgeable in curriculum design, implementation, and evaluation; are able to practice nursing using current best practices; and who are skillful with evaluation methods. According to Holding and Fraser (2013), the classroom environment was positively affected when expert, certified teachers were responsible for the teaching. This information can be transferred into academic nursing education

outcomes using the ENE model and the criteria for certification in the academic nurse educator role.

Value of Nursing Specialty Certification

While the research base has grown in the area of certification within the clinical nursing specialties, the availability of research focused on the value of the certified academic nurse educator is limited. A review of the current nursing specialty certification literature indicates a strong perceived value of certification among nurses and nurse administrators as well as the role that certification has on patient outcomes and satisfaction (Byrne, Valentine, & Carter, 2004; Cramer et al., 2014; Haskins, Hnatiuk, & Yoder, 2011; Kaplow, 2011; Niebuhr & Biel, 2007; Rees et al., 2014; Wade, 2009; Weeks, Ross, & Roberts, 2006; Wilkerson, 2011). In a search of the current literature, no published studies addressing perceptions of the value of certification as an academic nurse educator or the impact of certification in the academic nurse educator role on student outcomes were found. While it appears that there is value in certification among nurses in the clinical setting (Byrne et al., 2004; Cramer, et al., 2014; Haskins et al., 2011; Kaplow, 2011; Niebuhr & Biel, 2007; Rees et al., 2014; Wade, 2009; Weeks et al., 2006; Wilkerson, 2011), supporting data were not found in order to draw the same conclusion for nurse educators in the academic setting. This gap in the literature indicates a need for more research in this area. This section of the review will discuss the perception of the value of certification among those in clinical specialty nursing practices while illuminating the need for data in the academic nurse educator setting.

Perception Among Nurses and Nurse Administrators

In 2002, Stromborg and colleagues (2005) surveyed 139 nurse managers attending a nursing management conference in an effort to ascertain their perceptions regarding certification

among staff nurses as well as how the managers' institutions recognized nurses with certification. Results from the survey showed that 86% of the respondents preferred certified nurses to those with no specialty certification. The respondents indicated that the main reasons for wanting to hire certified nurses were that they have demonstrated a mastery of and experience in a specialty area of practice as well as a dedication to professional development and lifelong learning. It was also revealed that almost 60% of the respondents reported a positive difference in the work performance of those nurses with specialty certification versus those who lacked certification. The value of nurse specialty certification was also strongly supported with 74% of the respondents' affiliated institutions providing at least one incentive for documented certification in a nursing specialty (Stromborg et al., 2005). These findings have relevance for academic nursing administrators.

Academic nursing education administrators might consider the effects that certification in the academic nurse educator role would have on faculty. With a documented shortage in the qualified nurse educator workforce (Grady, 2011; Mancuso, 2009; Mancuso-Murphy, 2007), the results of the Stromborg et al. (2005) study could translate into academic nursing education as faculty members who are dedicated to the academic nurse educator role, who are eager to enhance individual performance through faculty development opportunities in addition to supporting documentation of an expert knowledge in the field for which they have been hired. The study also provides support for providing incentives for obtaining specialty certification in the practice environment. A similar benefit might be useful in the academic environment, an idea that is also supported by the NLN (2002).

If academic nurse educators are rewarded for seeking out and obtaining certification in the role, the reward might encourage those faculty members to remain in their position as well as

encourage others to become certified. This system of rewards might serve in helping to alleviate the nurse faculty shortage by enticing practicing nurses to become academic educators and to pursue certification as a personal goal. Stromborg et al. (2005) recommend that future research examine the effect of nursing specialty certification on patient care, patient assignments, and hiring practices of managers based on certification status.

Similarly, Haskins et al. (2011) used the Perceived Value of Certification Tool (PVCT) to replicate a study conducted by Niebuhr and Biel (2007) examining multiple factors related to certification in an effort to determine nurses' perceptions, values, and behaviors related to specialty certification. The original study (2007) consisted of 11,427 certified and non-certified medical-surgical nurses and nurse managers from 20 different member organizations within the American Board of Nursing Specialties (ABNS). The replicated study (2011) consisted of a random sample of 1,748 certified and non-certified medical-surgical nurses and nurse managers from the Medical-Surgical Nursing Certification Board (MSNCB) and the Academy of Medical-Surgical Nurses (AMSN) databases.

The resulting data from the Haskins et al. (2011) study agreed with the Niebuhr and Biel (2007) study findings and indicated a positive perception and perceived value of certification among all participants. Among the factors assessed, it was reported that the intrinsic rewards were more highly valued related to obtaining certification, yet extrinsic rewards were more strongly associated with the decision to become certified. The data from both studies suggest that specialty certification is internally rewarding, but managers who value a certified workforce should offer some external incentives for becoming certified. Rees et al. (2014) suggest that nurse managers seek out and obtain certification as a professional goal in order to model the

importance and value of holding specialty certification. Haskins et al. (2011) recommend that future research examine the effects that specialty certification plays on patient outcomes.

Job Satisfaction and Personal Empowerment

Wyatt and Harrison (2010) examined the perception of job satisfaction among certified pediatric nurses (CPN) as well as factors that contribute to seeking certification by pediatric nurses. Following a survey of 1,354 CPNs from across the country, it was revealed that 88% of the sample reported “good” or “excellent” levels of job satisfaction, while only 1.4% reported “poor” job satisfaction. Additional analysis revealed that 93.5% of the sample indicated that a personal sense of achievement was a factor for seeking certification, followed by professional recognition (63.4%) and validation of clinical competency (57.1%). The researchers suggest that future researchers examine the impact that certification has on patient satisfaction (Wyatt & Harrison, 2010).

In a closely related study, Schroeter, Byrne, Klink, Beier, and McAndrew (2012) conducted a descriptive qualitative study to describe the perceptions of the impact of certification on professional practice and on a personal level among certified perioperative nurses. The sample consisted of 149 certified perioperative nurses attending the Association of periOperative Registered Nurses (AORN) annual Congress. Thematic analysis of the responses to a two-item survey revealed overlapping themes related to certification among the personal and professional factors: (a) knowledge enhancement, (b) confidence, (c) opportunity, and (d) the role of mentor. The researchers acknowledge that many studies examining the value of certification have been conducted, suggesting that future studies regarding specialty certification focus on how certification impacts nursing practice and patient outcomes (Schroeter et al., 2012).

Specialty certification has also been shown to increase nurse empowerment (Cramer, et al., 2014; Krapohl, Manojlovich, Redman, & Zhang, 2010; Niebuhr & Biel, 2007; Piazza, Donahue, Dykes, Griffin, & Fitzpatrick, 2006; Wilkerson, 2011) while decreasing the intent to leave the nursing staff position or even the nursing profession as a whole among nurses (Kaplow, 2011). In a study examining the difference in perceptions of empowerment between certified and non-certified nurses, Piazza et al. (2006) surveyed 259 staff nurses (72.2%), advanced-practice nurses (3.5%), and nurse administrators (12%) in one community hospital in Connecticut using the Conditions of Work Effectiveness Questionnaire (CWEQ-II). Approximately 40% of the sample indicated national certification of some type. Data indicated a significant difference ($p = < .008$) in perceptions of empowerment among certified nurses. More specifically, those nurses with national certification indicated higher perceptions of empowerment than non-certified nurses. The authors recommend that the study be replicated with a larger sample and between specialty units and certification status. Further, more research on patient outcomes and patient satisfaction should be examined as it relates to nursing certification and empowerment (Piazza et al., 2006).

In a related study to determine the influence and value of specialty certification in critical care nursing units, Fitzpatrick, Campo, Graham, and Lavandero (2010) surveyed 6,589 nurses who were current members of the American Association of Critical Care Nurses (AACN). The sample of nurses self-reported certification status and were classified into four groups for data analysis; specifically, whether or not they were certified at all, were credentialed through an AACN certification, credentialed through another certification organization, or held both an AACN certification and another certification. Intent to leave their current position or the nursing

profession was also self-reported. To assess the nurses' perceptions of empowerment, the CWEQ-II was used.

Data analysis revealed that nurses with AACN certification or those with AACN plus another certification felt significantly more empowered in the workplace and within the profession than did nurses from the other groups. While those who held an AACN certification differed significantly than those with no AACN credential with regard to intent to leave the current nursing staff position, there was no significant difference among the four groups in the same category. The results of this study demonstrate that certification, regardless of the credentialing organization, may positively influence retention and empowerment of nurses in other specialty areas, which might include academic nursing education. It is recommended that future researchers explore the relationships between nurse certification and patient outcomes as well as nurse empowerment and retention. Further, it is suggested that more research regarding both nurse empowerment and retention related to ethnicity be conducted in order to determine any differences and reasons for any potential differences among the groups (Fitzpatrick et al., 2010).

The data from this study suggest that if faculty are certified in the role of academic nurse educator, then those faculty members may be more likely to remain in position and feel more empowered to make influential change with regard to nursing education curricula and overall student outcomes (Fitzpatrick et al., 2010). Educators who hold the CNE credential from the NLN have demonstrated a mastery of the knowledge of the core competencies of the academic nurse educator (NLN, 2012a), which might foster a feeling of empowerment, an intent to remain in position, and an ability to affect positive change in academe as it relates to academic nursing

education. With the current nursing faculty shortage, the intent to remain in position could play a valuable role in the retention of existing nursing faculty.

Effect on Patient Outcomes

In concert with perceptions of empowerment and the recommendations for research related to certification and patient outcomes, Krapohl et al. (2010) sought to determine whether the proportion of certified nurses on an intensive care unit was associated with the rate of select adverse patient outcomes among 450 nurses from 25 units in eight hospitals in Michigan. The mean rate for specialty certification among the units was 17%. While perception of empowerment among certified nurses was found to be statistically significant ($r = .397, P = .05$), there was no statistically significant relationship found between the proportion of certified nurses and the select adverse patient outcomes.

The researchers recommend that future research on this topic focus on specialty certification and patient populations related to the specific certification, rather than a general patient population. The researchers contend that more research in the area of nursing certification and patient outcomes is imperative so that evidence might be provided to demonstrate the effect of certification on positive patient outcomes as well as economic savings for institutions (Krapohl et al., 2010). Interpreted for nursing education, data from this type of study might reveal insight into faculty turnover issues related to feelings of empowerment and overall student outcomes (Krapohl et al., 2010).

In a study by Kendall-Gallagher, Aiken, Sloane, and Cimiotti (2011) of 30-day mortality and failure to rescue rates for surgical patients in 652 hospitals in California, Florida, New Jersey, and Pennsylvania, results of a bivariate analysis of the percentage of specialty certified nurses, regardless of educational level, revealed no significant effect regarding patient mortality

or failure to rescue. It was revealed in a multivariate analysis measuring certified nurses with a BSN (or higher) and certified nurses with an associate degree or diploma, that higher percentages of baccalaureate-prepared (or higher) nurses with specialty certification resulted in significantly ($p < .01$) decreased rates of inpatient mortality and failure to rescue. The researchers suggest that for every 10% increase in baccalaureate-prepared nurses on staff who are certified in a specialty, there is a 2% decrease in both inpatient mortality and failure to rescue rates (Kendall-Gallagher et al., 2011).

These data support that favorable and significant ($p < .001$) patient outcomes are increased when hospitals employ a higher percentage of baccalaureate-prepared (or higher) nurses (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Kendall-Gallagher et al., 2011). The results in this study further suggest the importance of adding specialty certification to advanced nursing degrees. Based on the data that reveal certified nurses with higher degrees result in significantly better patient outcomes, the researchers suggest that hospitals might benefit from a more focused effort to advance the educational level of the nursing staff educated at levels below the BSN initially, rather than on becoming certified in one's specialty area. While certification in one's specialty nursing role is noted to be important, the researchers suggest that the nurse's level of education, in addition to specialty certification, appears to contribute to the overall success in the role and individual performance (Kendall-Gallagher et al., 2011).

Clinical Performance

In a related geriatric patient care study, Cramer et al. (2014) examined the effects that continuing education and certification played on empowerment, job satisfaction, intent to turnover, and clinical competence. The study was conducted in response to the 2008 and 2011 calls by the IOM to recruit and retain more qualified and better-prepared geriatric healthcare

providers. The sample consisted of 84 registered nurses from 63 mid-western, long-term care (LTC) facilities who had completed an educational course for LTC RNs.

Several survey scales were used to assess the key outcomes being measured in the study. Results from the data analyses revealed that RNs who engaged in geriatric certification education demonstrated statistically significant improvements in clinical competency as well as an increased chance of success on the certification exam (98.5% pass rate). It was also revealed that certification education increased RN empowerment and job satisfaction. The results of this study suggest that certification is a key factor in clinical competency, empowerment in the job, and a decreased intent to leave a job. Although the authors did not provide any specific recommendations for future research, data indicating an increased chance of success on the geriatric certification exam related to exam preparation suggest that certification education is important for success on certification exams (Cramer et al., 2014). When applying this study to academic nurse educators seeking certification, though a specific study has not been completed, it is possible that there might be benefits from seeking further education in the role of the academic nurse educator, rather than depending on personal experience and the knowledge gained from that experience alone.

The data in this section indicate that nursing specialty certification is valued among nurses and nursing administrators alike. Specialty certification appears to enhance patient outcomes, feelings of empowerment, job satisfaction, while decreasing intent to leave, among other positive things. Further, intrinsic rewards serve as a more powerful motivator for obtaining specialty certification. These data might be translatable to nursing education faculty and program deans and directors as well. It could be assumed that the same favorable outcomes and

motivators described for the clinical nurse would apply to the nurse in the academic nurse educator specialty role.

Factors Affecting Certification Exam Performance

Very little documented literature regarding performance on the academic nurse educator certification exam is available. Because certification is deemed valuable to the performance of nurse educators in the academic nurse educator role, factors that influence success in becoming certified were considered. To provide a foundation, a search for performance on other professional organizational certification exams was conducted. Multiple searches were conducted in using a combination of terms including *teacher certification, success, nurse educator exam, exam performance, and higher education*. Results were limited to English language, peer reviewed material after 2005. Those studies focusing primarily on medical professional certification success as well as teacher certification success were used for this literature review. A review of the resulting literature revealed a number of studies related to the multiple factors that might predict success on licensing or certification exams and will be presented here.

Teacher Education

Many teacher education programs have begun to elevate admission requirements in an effort to increase their graduates' success on teacher certification exams. Schools that choose not to change and decide to maintain current admission policies in order to appeal to more minority students, for example, are often left with the task of helping their graduates to become successful on certification exams. This task of promoting success in the graduates is challenged further by the suggestion that minority students are often unable or unwilling to seek appropriate help when needed (White, 2011).

White (2011) sought to determine whether individual help-seeking behaviors might affect the overall performance of at risk candidates for New York's state exam, the Liberal Arts and Sciences Test (LAST). Participants consisted of 50 freshmen and sophomore pre-service teacher candidates from a private college in New York City. The sample resulted in a majority of students referred to as a minority group members with 52% Hispanic or Latino, 38% Black or African American, 6% Asian or Pacific Islander, and 4% White Non-Hispanic. Female students represented the majority of the sample (76%). The Preservice Teachers Help Seeking Scales (PTHSS), the Direct Observation of Help Seeking Behavior (DOHSB), and the Instructor Help Seeking Scales (IHSS) were used to assess the help-seeking behaviors of the participants. The subscales of the PTHSS and the IHSS demonstrated acceptable internal consistency reliability of a Cronbach's alpha ranging between 0.81 and 0.99. Inter-rater reliability of the observational measures in the DOHSB resulted in a Cohen's kappa of 1.

Data from White's (2011) study revealed that individual combined results from the subscales significantly predicted performance on the LAST. Furthermore, the study demonstrated that help-seeking behavior in preservice teacher candidates resulted in better performance on the LAST. Among several recommendations, White suggests that future research be conducted regarding other tasks measured by the LAST, such as reading and writing comprehension of the candidates. It is also recommended that researchers examine how gender and ethnicity might influence help-seeking behavior in students. It was implied that those minority teachers who demonstrate effective help-seeking behaviors and become certified teachers would serve as positive role models for future minority students.

In a related study, Jones, McDonald, Maddox, and McDonald (2011) examined 196 undergraduate teacher candidates at a major university in Virginia to determine any potential

relationship between undergraduate grade point average (GPA) and performance on the Virginia Reading Assessment (VRA) and the Virginia Communication Literacy Assessment (VCLA). A passing score on each of these exams is required in order to teach, in addition to several other requirements. It is interesting to note that Virginia is one of only three states that requires teacher candidates to successfully complete an exam demonstrating proficiency in teaching science reading instruction. The sample for the study was found to be representative of a typical teacher education program with the majority being female (96.4%) and self-identifying as white (91.8%).

For statistical purposes, an alpha level of 0.05 was established. Following analyses, it was revealed that a statistically significant relationship exists between GPA and mean score on the VRA ($n = 196$, $df = 4$, $F = 11.382$, $p = 0.000$) and between GPA and mean score on the VCLA ($n = 194$, $df = 4$, $F = 8.507$, $p = 0.000$). The data indicate that high classroom performance produces higher mean scores on the professional exams. This information might be beneficial in that students can be encouraged to work hard from the beginning, rather than only “getting through” the classes in order to finish. The authors recommend that further studies examining curricular designs in relation to professional assessment scores be conducted (Jones et al., 2011). As academic nurse educator curricula vary across the country, these data might assist the nursing profession in identifying which educator curricular designs best promote success on the CNE exam.

Paramedic Certification

Program curricula consist of several different factors that may promote success on certification or licensing exams. With the knowledge that researchers from multiple medical fields have used multivariable regression techniques in order to determine the probability of

passing licensing exams, Fernandez, Studnek, and Margolis (2008) sought to develop a statistical model to determine the probability of success on the cognitive portion of the national paramedic certification exam. The sample used in their study consisted of 5,208 individuals who attempted the exam between January 1 and December 31, 2002. Of those, 3,454 (66.3%) were successful on the cognitive portion of the exam. The 10 variables examined in the study were grouped according to specific characteristic types that included program graduate characteristics, graduate educational characteristics, and program characteristics.

Following data analysis and model diagnostics, the researchers discovered that there are actually nine variables that affect the probability of passing the paramedic certification exam. These variables are (a) instructor qualification (level of education), (b) program accreditation, (c) years of student education, (d) student gender, (e) program is a job requirement, (f) student race, (g) elapsed time from course completion, (h) student age, and (i) student high school class rank. Most notably, accredited programs with highly qualified lead instructors result in the greatest chance of candidate success on the exam. Interestingly, accredited programs with registered nurses serving as the lead instructor were found to be the most ideal programs, followed closely by lead instructors who held a research doctoral degree (Fernandez et al., 2008). When applied to the related field of nursing, it could be assumed that this model and resulting data would suggest that certified academic nurse educators with doctoral degrees (i.e., “highly qualified lead instructors”) might produce graduates who will be successful on nursing specialty certification exams.

It was revealed that those students with 16 to 17 years of education are significantly more likely to be successful than those with just 12 to 13 years of education. The authors also report that gender and race are associated with a decreased chance of success on the cognitive portion

of the exam. Additionally, those candidates who reported a rank in the lower 10% of their high school class were significantly less likely to be successful than those in the top 10% of their class. These data coincide with other closely related studies regarding the effect of help-seeking behavior (White, 2011) and GPA (Jones et al., 2011) on exam performance. The researchers recommend that future studies differentiate more fully the instructor qualifications in order to more accurately assess which teacher qualifications might serve to promote candidate success (Fernandez et al., 2008).

Anesthesiology Certification

To determine the predictors of success on the American Board of Anesthesiology (ABA) Part 1 (Written) board certification exam, Kim, Wallace, Allbritton, and Altose (2012) performed a retrospective analysis of 97 academic files of anesthesiology residents who had graduated from a selected mid-western residency program between 1995 and 2007. The scaled scores were used as the dependent variable, which resulted in a final study sample of 88 files. Demographic data obtained as possible predictors included gender, under-represented minority (URM) status, and type of medical degree completed. Academic variables obtained as possible predictors included first-attempt scores on the United States Medical Licensing Examination (USMLE) Steps 1 and 2, the annual ABA – American Society of Anesthesiologists In-Training Exam (ASA ITE), and the biannual Basic Science Examination (BSE).

Data analysis revealed that academic, rather than demographic, variables served as better indicators of performance. Specifically, the first-attempt score on the USMLE Step 2 exam was the best predictor of performance on the ABA Part 1 exam. Scores on the ABA-ASA ITE were found to positively correlate to scores on the ABA Part 1. The BSE was also found to be a reliable predictor of ABA Part 1 scores when administered two months prior to the certification

exam. The researchers recommend that other factors such as lecture attendance, study methods, teaching methods, moonlighting, and fatigue should be analyzed in order to more accurately identify those who might be at risk of failing the ABA Part 1 exam. It is also suggested that further studies assessing the effects of implementation of the aforementioned interventions on a larger, multi-center sample might help to reliably identify those at risk (Kim et al., 2012). As these data and recommendations relate to medical education and certification, academic nurse educators might apply the information to assess the potential for success on nursing specialty certification exams.

Nurse Practitioner Certification

In 2001, Bolender investigated whether personality traits, previous academic performance, and selected demographic variables contributed to success on the family nurse practitioner (FNP) certification exam. Although the focus of Bolender's (2001) study was related to the success of candidates on an advanced practice certification exam and the current study is not, the data should be considered relevant as it applies to nursing specialty certification success. While this study might be considered dated in terms of relevance to this current study, it was the study most closely related to specialty nursing certification found in the search for literature, and, therefore, included in this review of the literature.

The study sample consisted of a convenience sampling of 83 current FNP students or recent graduates of one of the nine participating universities from Wisconsin and Illinois. Data collection instruments consisted of (a) a personality measurement tool measuring neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness; (b) a demographic and academic questionnaire collecting data regarding age, gender, ethnicity, years in clinical nursing practice before entering the FNP program, the university in which the participant

attended or was attending, undergraduate grade point average (UGPA), and pharmacotherapeutics and pathophysiology grades; and (c) national certification exam aggregate score as reported by the American Nurses Credentialing Center (ANCC) or by the participants themselves. The NEO Five-Factor Inventory (NEO-FFI) was used as the personality measurement tool and Bolender (2001) reported acceptable reliability and validity of the instrument.

Descriptive statistics indicated that a majority of the sample was white (97.6%) and female (85.5%). The mean age of participants was 39 with an average of 12 years of nursing clinical practice prior to entering the FNP program. The mean UGPA was 3.62. The mean score on the nurse practitioner certification exam was 118.5, with pass rate among the sample of 94%. Standard multiple regression analysis revealed a prediction model indicating that approximately 30% of the variance in exam scores was explained by pharmacotherapeutics grade (18.7%), years of clinical nursing experience prior to entering the FNP program (7.1%), agreeableness (5.4%), and UGPA (4.0%). Although not a component of the regression model, the pathophysiology grade was also found to be significantly correlated with certification exam score in a bivariate analysis (Bolender, 2001).

It was reported that these findings suggest that FNP program directors should closely examine students' pharmacotherapeutics and pathophysiology grades prior to graduation and refer those students with low grades in these areas for counseling or remediation. Program directors should also consider requiring a minimum UGPA and minimum years of clinical experience prior to application to the FNP program. Potential students might also benefit from a personality assessment identifying, specifically, the score on agreeableness as a predictor of future success on certification examination. Additionally, FNP programs should encourage

practicing nurses of all ages to enroll in FNP programs, as age was not a significant factor in certification exam performance and should not be a determining factor for program admission (Bolender, 2001).

The data from Bolender's (2001) study can be applied to the education of the nurse educator role and success on the CNE exam. Specifically, the results from this study indicate that years of experience and specific specialty courses were predictive of success on the FNP certification exam. Academic nurse educators might consider years of teaching experience and select nurse educator courses as predictors of success on the CNE exam. Data regarding possible predictive factors for performance on the CNE exam were not found in a search of the current literature, illuminating the need for further research in the area.

Among several recommendations, Bolender (2001) suggests that researchers replicate the study using additional course grades as independent variables. Further, due to the possibility of grade inflation, studies using pharmacotherapeutics and pathophysiology final exam grades as independent variables, as opposed to overall course grade, should be pursued. Another recommendation suggests that two groups, traditional face-to-face and distance learning students, be compared to determine any significant difference in predictors among the methods of instructional delivery (Bolender, 2001). These recommendations might also be applied to the education of academic nurse educators and specific nurse educator courses as well.

Many factors have been examined to determine success on licensure and certification exams. Data in this section suggest that experience in a specific role, agreeableness as a personality trait, and performance in foundational courses specific to the degree are strong predictors of success on certification exams. This information is beneficial for the academic nurse educator considering certification in the academic nurse educator role. Additionally, nurse

educator program faculty and directors might benefit from this knowledge in order to direct and advise potential candidates in development opportunities that might strengthen future performance on certification attempts.

Preparation for the Academic Nurse Educator Role

Throughout the years, the formal preparation of academic nurse educators has seen many advancements and some nursing leaders now seek the requirement of advanced training at the doctoral level, at a minimum for university faculty members (AACN, 2008), through any one of multiple nursing disciplines in order to teach (Bartels, 2007; Nickitas & Feeg, 2011). A longstanding concern in academic nursing education, however, is the number of faculty trained primarily for advanced practice roles with little to no preparation in the teaching role (Oermann, 2005; Ortelli, 2012; Schoening, 2013). A review of the literature regarding nurse educator preparation revealed the need for more academic nurse educators with doctoral degrees as well as the importance of support and guidance from experienced faculty in the transition from staff nurse (Bartels, 2007; Cangelosi, Crocker, & Sorrell, 2009; Leners et al., 2007; Nikitas & Feeg, 2011; NLN, 2013b; Poindexter, 2013; Schoening, 2013).

Kaufman (2007) reported that researchers from the NLN, along with researchers from the Carnegie Foundation Preparation for the Professions Program, led by Dr. Patricia Benner, illuminate this disparity of academic preparation among faculty members in a joint study conducted in 2006. Invitations were distributed to academic nursing faculty members, both NLN members and non-members, across the country to request participation in a survey for the study. A response rate of approximately 25% ($n = 8,498$) of the representative academic nursing faculty workforce of approximately 32,000 academic nurse educators provided several results. In addition to findings related to nurse faculty diversity, employment characteristics, and workload,

the researchers found that only just over 30% of academic nursing faculty members nationwide held a doctoral degree, compared to 60% of all postsecondary level faculty. In baccalaureate programs alone, the rate of academic nurse educators with a doctoral degree was found to be two thirds that of faculty at the same level nationwide. No similar data exist for certification.

In a qualitative study conducted to develop a theoretical model describing the social process that occurs in the transition from staff nurse to academic nurse educator, Schoening (2013) interviewed 20 nurse educators with varying levels of nursing experience teaching in baccalaureate nursing programs. Years of experience varied widely among the participants and nine held a doctoral degree. Thematic analysis of the audio-recorded, face-to-face interviews revealed data which led to the development of four different phases related to the transition from nurse to nurse educator. These phases form the basis of Schoening's model, the nurse educator transition (NET) model.

Of the four phases, the Disorientation Phase revealed data most relevant to academic nurse educator preparation. This phase is the second phase of the NET model and starts when the nurse begins the teaching role. Although three of the participants had received a master's degree in nursing education, all participants discussed a lack of orientation to the role of academic nurse educator and expressed a feeling of not being ready or being lost in their new role. This lack of guidance and support was also noted in a qualitative study by Cangelosi et al. (2009), in which participants expressed frustration at the lack of structured mentoring in their new role as educators. These qualitative data provide support for the need for formal training and mentoring in the role of the academic nurse educator. The researcher recommends that more studies be conducted using the NET model on larger samples from different institutional affiliations, practice areas, and levels of experience (Schoening, 2013).

While there is concern regarding the amount of faculty formally prepared for the academic nurse educator role (Oermann, 2005; Ortelli, 2012), Goodrich's (2013) research reveals that the trend might be increasing in favor of those nurse educators with at least some graduate education for the role of academic nurse educator. Goodrich surveyed full-time academic nurse educators from 739 institutions granting at least a baccalaureate degree in nursing to describe the transition from nurse to academic nurse educator, among other things. Of the 880 returned surveys, 541 were used in the data analyses due to completeness of the survey. Several tools were used in data analyses, but the Demographic Data Questionnaire (DDQ) developed by Goodrich is of particular relevance to this researcher's study. Data analysis revealed that 76.3% of the sample indicated completion of graduate-level coursework specific to the academic nurse educator role. Goodrich (2013) recommends that repeat studies consist of more diversity in gender and ethnicity in order to determine more accurate differences among the groups. It is also suggested that future researchers examine career transitions within the academic setting.

Performance on the Certified Nurse Educator Examination

In one of the first-known studies related specifically to the CNE examination, Ortelli (2012) analyzed the performance of all first-time certification exam candidates between September 28, 2005, and September 30, 2011. The study also identified several characteristics of the exam candidates, both successful and unsuccessful, who attempted the exam in that timeframe. Among the characteristics studied and of most significance to this researcher's current study, it was revealed that of the first-time certification exam candidates used in the data analyses ($n = 2,673$), 66.3% reported a master's degree as the highest degree obtained at the time of application, while 26.8% reported a doctoral degree as the highest degree obtained. These data

were compared against national faculty census data and revealed similar statistics with 67% of national faculty reporting a master's degree as the highest degree held and 25% of national faculty reporting a doctorate as the highest degree obtained.

Ortelli (2012) examined the highest degree earned by analyzing candidates within both options of the eligibility criteria at the time, or educational preparation. Candidates who self-reported eligibility within Option A ($n = 1,645$), those academic nurse educators with formal training in the academic nurse educator role, consisted of those with a master's degree as the highest degree obtained (69.7%) and those with a doctorate as the highest degree obtained (30.3%). Candidates who self-reported eligibility within Option B ($n = 1,028$), those academic nurse educators with no formal training in the academic nurse educator role, consisted of those with a master's degree as the highest degree obtained (73.7%) and those with a doctorate as the highest degree obtained (26.3%).

An additional characteristic examined in the study included the candidates' employment setting by program type, or institutional affiliation, at the time of application. It was revealed that 38.9% of the sample self-reported teaching in an associate degree nursing program, 34.2% in a baccalaureate program, 7.1% in a diploma program, 6.6% in a master's program, and 0.7% in a doctoral program. When the candidates' institutional affiliation within the two eligibility options was compared, the findings were reported to be similar. Within Option A, specifically, 41% self-reported teaching in an associate degree nursing program, 36% in a baccalaureate program, 9% in a master's or doctoral program, and 7% in both practical/vocational programs and diploma programs. It was also reported that national data identifying the percentages of faculty teaching among the available nursing program types were not available, so no comparison among the CNE candidates and the larger nurse educator population could be made (Ortelli, 2012).

The overall pass rate for first-time candidates across both options in the study was 83.1%. Data analyses revealed statistical significance ($r = .08$, $p = .00$, $\alpha = .01$) among pass rates between those with a master's degree (81.9%) and those with a doctoral degree (88.1%), suggesting that an earned doctorate increases the candidate's chance of success. Pass rates, according to institutional affiliation, demonstrated a higher chance of success among those teaching in baccalaureate (86.2%), master's (91.0%), and doctoral (90.0%) nursing programs, as compared to practical/vocational (69.0%), diploma (81.2%), and associate degree (82.5%) nursing programs. It was suggested that because of the intentional focus on teaching rather than scholarship, service, and leadership in these institutions, candidates from these types of institutions are less experienced in the full scope of the academic nurse educator role, thereby limiting their chance of first-time success on the CNE exam (Ortelli, 2012).

Ortelli (2012) recommends that future research be conducted to examine CNE performance as it relates to the candidates' institutional affiliation and related expectations of the faculty in those institutions. Additionally, it is recommended that researchers seek to determine any possible relationships between the CNE and nursing program outcomes as well as faculty and student retention. The author also suggests that by investigating and understanding the professional performance of those who hold the CNE, the nursing faculty shortage might be alleviated through effective strategic planning and academic nurse educator preparation.

Chapter Summary

The purpose of this review of literature was to provide a sense of the state of the science regarding certification and its relationship to the role of the nurse educator and to provide support for the need for research in the area of relationships among failure on the CNE exam, candidate highest degree obtained, and institutional affiliation. Themes that emerged as a result

of this literature review include the effect that teacher certification plays on the outcomes of students, the value of certification within a specialty area of nursing practice, the importance of preparation for and transition to the educator role, and the significance of experience in the nurse faculty role among institutional levels on success rates on the CNE exam. A lack of existing data regarding the CNE exam also helps to support a need for further research in this area. To increase the potential for candidates to be successful on the CNE exam, it is important to identify the factors that may contribute to failure on the exam. It is clear that there is a paucity of information in the literature specifically related to what these factors might be.

Studies by researchers examining the characteristics of nurse educator certification candidates are just beginning to emerge (Ortelli, 2012), but there are still few studies specifically related to the content and candidate performance on the exam. This gap in the literature indicates a definite need for more research, specifically research related to the professional development needs of academic nurse education faculty in preparation for writing the CNE exam as well as characteristics of both successful and unsuccessful candidates who have attempted the exam.

Chapter Three

METHODOLOGY

The three-fold purpose of this study was (a) to describe the characteristics of the unsuccessful first-time candidates for the National League for Nursing (NLN) Certified Nurse Educator (CNE) exam; (b) to determine any statistically significant relationship between failure and select demographic data related to candidate highest degree obtained and institutional affiliation as coded by this researcher using the Carnegie basic classification for institutions; and (c) to determine any statistically significant relationship between failure and each content area of the CNE exam. The methodology used to conduct the research study is presented in this chapter. A description of the CNE exam development and exam specifics is also provided here. Details regarding the research study design, sample, data collection, and data analyses are included. Assumptions for and limitations to this study are also provided.

CNE Exam

Items used on the CNE exams are written by a committee of item writers who are current CNEs and are appointed by the director of the ANECP or a designee based on individual interest or professional recommendations from CNEs from across the country. The item writing team meets annually and the membership, which changes with every meeting, is determined in order to promote a diverse group of CNEs representing multiple program types and geographical areas. The total number of writers varies and is dependent upon the number of new items needed for

the Academic Nurse Educator Certification Program (ANECP). Item writers are instructed on current best practices for test development and item writing and construct items according to the exam blueprint based on current needs for the exam. These needs are determined after item analyses are conducted by the CNE Test Development Committee (TDC) upon request by the manager of the ANECP. The chair of the TDC, who is also a current member of the CNE Certification Commission and appointed by the Commission chair, appoints members to this committee (L. Simmons, personal communication, August 2, 2012).

The national academic nurse educator practice analysis, development of the exam blueprint from practice analysis data, use of current best practices of test development, and exam oversight by a panel of experts in the academic nurse educator role all serve to establish content and construct validity (Ortelli, 2006, 2012). CNE exam content area reliability estimates have been previously reported (Ortelli, 2006) with a coefficient alpha between tasks of .919 and an intraclass correlation of .990, demonstrating reliability between both the selection of appropriate academic nurse educator tasks and respondent agreement of significance and importance of those tasks (Ortelli, 2012).

The following is the description of the established method of scoring of the CNE exam as provided in the candidate handbook:

The passing score for the CNE examination was established via a systematic procedure (a standard setting study) that employed the judgment of academic nurse educators representing various geographical areas and program types. The methodology for the passing point study is known as a modified Angoff technique, in which content experts evaluated each item on the examination to determine the score that would best differentiate minimally-competent academic nurse educators deserving to be awarded certification from those who have not demonstrated sufficient knowledge (NLN, 2012a, Scoring section, p. 23).

To perform successfully on the criterion-referenced exam, candidates must demonstrate expert knowledge as compared to a standard, not to other candidates' performance. As there are multiple forms of the CNE exam in use today and the passing point for each exam may vary according to the exam's level of difficulty, statistical equating procedures are used for consistency in scoring. This method assures that the same amount of knowledge has been demonstrated by each candidate, regardless of the form used (NLN, 2012a; Ortelli, 2012).

Candidates for the CNE exam are randomly assigned to one of two current and equivalent forms of the exam each of which consists of 150 multiple-choice items. Of the items, 130 are used for scoring while the other 20 are items being tested for consideration for inclusion on future exams and are not included in the score determination. Candidates are unaware of which items are scored. The number of correct responses determines the final score, so there is no penalty for incorrect answers. Exams are taken on computers at secure testing centers across the country as well as in traditional paper-and-pencil format when the situation is warranted or made available by the ANECP director (NLN, 2012a, 2012d; Ortelli, 2012).

ANECP Structure and Governance

The TDC ensures that the exam is constructed using generally accepted format standards in conjunction with the testing platform administrators and with staff psychometric consultants. Item analyses and overall exam results are reviewed in order to ensure a quality exam. The TDC meets annually to review exam data and to determine the passing standard for all current forms of the CNE exam. Members of the TDC are also required to oversee practice analyses when conducted according to the CNE Certification Commission policies and procedures (NLN, 2012d). According to the current NLN bylaws and as the governing body of the CNE exam and the ANECP, the NLN Certification Commission serves as an independent and autonomous body

within the NLN responsible for all certification program policies and decisions (NLN, 2012e, Article XI, Section 1).

Research Design

A descriptive correlational design for analysis of the existing CNE database of first-time unsuccessful CNE attempts from September of 2005 through September of 2011 was used to answer research questions for this study. This research design served as a reliable and efficient method for identifying and disseminating much needed evidence regarding the CNE exam given the purpose of the study. There were no experimentations or manipulations of variables in this study, indicating a non-experimental design. The researcher did not seek to determine causality among the variables but sought to identify any relationship between a dependent variable and previously occurring independent variables, indicating descriptive correlational research (Polit & Beck, 2012).

Sample

The sample was obtained using a non-probability, convenience sampling of scores from all first time NLN CNE candidates from September of 2005 through September of 2012 who were unsuccessful on the exam, for a total of seven years of data ($n = 662$). The range of available candidates does not contain unsuccessful candidate information from the last quarter of 2011 and the first quarter of 2012. During this period of time, unsuccessful candidate data were not added to the existing database for reasons unknown to this researcher, nor to the current NLN database manager. Participants who tested in the new test plan pilot in that timeframe were excluded from this study. This selection criterion was chosen because these candidates tested in the initial CNE exam blueprint that was changed following a practice analysis in 2010. The new exam was developed from data revealed in a second practice analysis of academic nurse

educators and the resulting blueprint was introduced in 2012. While the actual content of the exam did not change, the number of questions in each content category did change.

Data Collection

Data collection entailed retrieving the existing data of all unsuccessful CNE candidates from September 2005 through September 2011. Archival data were retrieved by a database manager who was employed by the NLN as the Interim Director of Technology and assigned by the interim director of the Academic Nurse Educator Certification Program (ANECP) to retrieve the data for the purposes of this study. Data were formatted into a usable document by the database manager using Microsoft Excel software, delivered to this researcher via email, and housed on a password-protected home computer. All data reside in the contracted test administrator offices. Permission to use the database for research purposes was obtained from the interim director of the ANECP at the NLN for use in this study (See Appendix A).

Data collected for analyses consisted of select demographic variables in addition to mean scores of candidate performance in each of the six major content areas assessed by the exam. Demographic data that were available in the existing database provided to the researcher included candidate institutional affiliation and highest degree obtained at the time of application for certification. Candidate name or other personally identifying information was also excluded from the data retrieval process, and the NLN's database manager was instructed by the interim director of the ANECP, on behalf of this researcher, to monitor for and omit those data from the database.

Data housed at the test administrator offices were delivered electronically to the database manager at the NLN who organized the data into a usable Microsoft Excel document for research purposes. This step was necessary for accuracy of data as the database has been coded and keyed

using psychometric standards and nomenclature unknown to, and beyond the educational preparation of, this researcher. This step also served as an additional measure of protection of confidentiality as the database manager was able to ensure that no candidate identifying information was included in the data provided to the researcher. This method of data retrieval has been utilized successfully in a recent study using CNE exam candidate data for statistical analyses (Ortelli, 2012). Through carefully designed collection, the researcher also ensured statistical accuracy by carefully coding and inputting the data into the SPSS (Version 19; IBM, 2010) statistical software.

Data Analysis

Research Question One

To answer research question one related to demographic characteristics of unsuccessful CNE candidates, descriptive statistics were used (See Table 1). Percentages and frequencies of the selected demographic traits are presented in a contingency table. A contingency table is used to cross-tabulate the frequencies of two categorical variables (Polit & Beck, 2012). This statistical analysis was chosen to organize the nominal data and to reveal frequencies and percentages within each of the selected variables: highest degree obtained and institutional affiliation.

Research Question Two

To answer research question two related to a possible relationship between overall mean score on the CNE exam and either candidate institutional affiliation or highest degree obtained, a one-sample chi-square test was performed for each of the variables (See Table 1). To determine a possible relationship among the variables, sample data for this study were compared against reported frequency data from the overall population of first-time candidates within the same

timeframe. A one-sample chi-square test is useful in determining whether a significant difference exists between observed and expected frequencies of sample data in two or more categories (Key, 1997) and served to identify any relationships among the selected variables in question two.

Research Question Three

To answer research question three related to any possible significant differences in mean scores in each content area among the selected demographics, a factorial ANOVA was used. This analysis is most appropriate because the researcher was attempting to determine if there is a difference between the means from non-related groups with more than one independent variable (Dantzler, 2014). For this question, the dependent variable was content area mean score while candidate highest degree obtained and institutional affiliation served as independent variables (See Table 1). A factorial ANOVA was run for each of the six content areas.

Table 1

Data Analysis Plan

| Research Question | Variables | Analysis |
|--|--|---|
| Q1. What are the demographic characteristics of the unsuccessful CNE first time candidates related to highest degree obtained and institutional affiliation? | Candidate highest degree obtained Candidate institutional affiliation | Frequency analysis Contingency table |
| Q2. Is there a statistically significant relationship between failure on the CNE exam and either highest degree obtained or institutional affiliation? | Candidate highest degree obtained Candidate institutional affiliation | One sample chi-square test |
| Q3. Is there a statistically significant difference in mean scores in each content area among unsuccessful candidate's highest degree obtained or institutional affiliation? | DV = Content area mean score IV ₁ = Candidate highest degree obtained IV ₂ = Institutional affiliation | Factorial ANOVA |

Ethical Considerations

As this study was a retrospective analysis of archival data, there was no recruitment of live human participants, and therefore there was no requirement of informed consent. Approval for this study was obtained by the Institutional Review Board (IRB) at The University of Alabama prior to data retrieval and analyses. No foreseeable risks to the CNE candidates associated with this study were identified as the data provided by the NLN contained no personal identifying information.

Candidates for the CNE exam acknowledge and agree that demographic information and score results may be used in an aggregate form for future statistical and research purposes upon application for examination. This acknowledgement is provided in the CNE Candidate Handbook (NLN, 2012a, p. 14) and served as informed consent for the purpose of this study (See Appendix B). Expedited review by the institutional IRB was requested for this study. A request for waiver of informed consent was submitted to the IRB. To protect anonymity of CNE candidates, no names or other identifying information were used in the data retrieval process or in subsequent analyses. This method offered the best form of protection of confidentiality (Polit & Beck, 2012). Reported institutional affiliation by the candidates was coded using the basic Carnegie classification of programs (Carnegie Foundation, n.d.). The Carnegie codes for the institutions were used for statistical analyses. No individual institution was identified or used for the purposes of this study.

Assumptions

For the purposes of this research study, the following assumptions were identified:

- the candidate demographic information is accurate and that the candidates answered questions honestly;
- the CNE candidate is committed to the development of characteristics necessary for nursing education leadership;
- the CNE candidate has prepared appropriately through continuing education opportunities or educational degree programs for success on the CNE exam;
- the candidate teaches in a nursing education program which grants a degree consistent with the overall institution's basic Carnegie classification; and

- being credentialed as a CNE demonstrates, to some degree, a mastery of the knowledge necessary for nursing education leadership.

Chapter Summary

The methodology for this quantitative, descriptive correlational study was provided in this chapter. A discussion of the CNE exam, in addition to its structure and governance, was provided to allow for an understanding of the tool used to measure the CNE exam candidate's knowledge of the full scope of the academic nurse educator role. The study's research design, sample, data collection procedures, and data analysis plan are presented to provide a foundation for the discussion of results in Chapter 4. Ethical considerations and identified assumptions are also provided.

Chapter Four

RESULTS

In this chapter, the author presents the results of the study conducted to (a) describe select characteristics of the unsuccessful first-time candidates for the CNE exam; (b) to determine any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) to determine any statistically significant relationship between failure and each content area of the CNE exam. A review of the research questions is presented first, followed by a description of the study sample, results of the data analyses, and a summary of the results.

Research Questions

The research questions that guided this study were:

1. What are the demographic characteristics of the unsuccessful CNE first time candidates related to highest degree obtained and institutional affiliation?
2. Is there a statistically significant relationship between failure on the CNE exam and either highest degree obtained or institutional affiliation?
3. Is there a statistically significant difference in mean scores in each content area among unsuccessful candidate's highest degree obtained or institutional affiliation?

Description of the Sample

The initial sample for this study consisted of individual scores from 662 first time National League for Nursing (NLN) Certified Nurse Educator (CNE) candidates from September of 2005 through September of 2012 who were unsuccessful on the exam. Score reports from each of the six content areas tested by the examination as well as the candidate overall score were used for data analyses. In addition to candidate scores, demographic information available to this researcher included candidate institutional affiliation and candidate highest degree obtained at the time of application for examination.

The range of available candidates does not contain unsuccessful candidate information from the last quarter of 2011 and the first quarter of 2012. During this period of time, unsuccessful candidate data were not added to the existing database for reasons unknown to this researcher, nor to the current NLN database manager. Any participants who tested in the new test plan pilot in that timeframe were excluded from this study as the exam blueprint changed in response to a second practice analysis of academic nurse educators. The new exam was developed from data revealed in a second practice analysis of academic nurse educators and introduced in 2012. It should be noted that although current candidates for the CNE exam test under a new test blueprint, the format, rigor, and content of the exam did not change. The practice analysis provided the CNE test development committee with information needed in order to change the percentage of questions asked in each category of the exam. Therefore, results from this study examining candidates from the first test blueprint should be considered relevant to current and potential exam candidates.

Self-reported institutional affiliation was coded by the researcher using the basic Carnegie classification for institutions (Carengie Foundation, n.d.). Codes for each institutional

category were as follows: 0 = not identified, 1 = tribal, 2 = associate's, 3 = special focus, 4 = baccalaureate, 5 = master's, 6 = doctoral/research, and 7 = diploma/not classified. Institutions with multiple campuses were coded with the highest basic Carnegie classification among the campuses. Highest degree obtained, as self-reported by the candidate, was coded as not identified (0), master's degree (1), or doctoral degree (2) with no differentiation applied to specific doctoral degree obtained. Individuals who indicated doctoral candidacy as the highest degree obtained were coded as having a doctoral degree. This coding procedure was done with the understanding that the particular candidate had completed the necessary coursework and demonstrated significant progress toward completion of the doctoral degree. Data were carefully organized into one document using Microsoft Excel for Mac 2011 (Version 14.4.1; Microsoft, 2010) software and then copied into SPSS (Version 19; IBM, 2010) statistical software for data analyses.

Following data input into SPSS, descriptive statistics regarding demographic variables of the sample revealed a majority of master's prepared academic nurse educators (62.1%) were teaching in associate degree programs (31.0%). The sample also consisted of those teaching in diploma programs or those institutions with no identifiable basic Carnegie classification (9.4%), tribal (0.2%), special focus (4.8%), baccalaureate (5.7%), master's (13.0%), and doctoral or research institutions (9.1%). Of the sample, 26.9% did not report an institutional affiliation and 22.2% did not report a highest degree obtained. Descriptive statistics for the candidate highest degree held are provided in Table 2. Candidate institutional affiliation descriptive statistics are provided in Table 3.

Table 2

Initial Sample Candidate Highest Degree Obtained Frequency and Percent Data

| Degree | <i>n</i> | % |
|------------------------|----------|-------|
| Not identified/Unknown | 147 | 22.2 |
| Master's | 411 | 62.1 |
| Doctorate | 104 | 15.7 |
| Total | 662 | 100.0 |

Table 3

Initial Sample Candidate Institutional Affiliation Frequency and Percent Data

| Institutional Affiliation | <i>n</i> | % |
|---------------------------|----------|-------|
| Not identified/Unknown | 178 | 26.9 |
| Tribal | 1 | 0.2 |
| Associate's | 205 | 31.0 |
| Special Focus | 32 | 4.8 |
| Baccalaureate | 38 | 5.7 |
| Master's | 86 | 13.0 |
| Doctoral/Research | 60 | 9.1 |
| Diploma/Not classified | 62 | 9.4 |
| Total | 662 | 100.0 |

A cursory analysis of the data points revealed one extreme outlier within the set of scores for a single content area. After verifying correct data entry, it was determined that the case be removed to avoid potential statistical noise throughout future data analyses. It was also determined that all cases with missing data be removed as these missing data could have distorted inferences about the population. The elimination of these cases resulted in a final

sample subset of 390 cases for further analyses. To reduce the risk of error, the number of demographic variables related to institutional affiliation was decreased to six categories. The data were recoded as: 0 = not identified, 1 = diploma/not classified, 2 = associate's, 3 = special focus/tribal, 4 = baccalaureate, and 5 = graduate. No changes were made to the categories or codes for highest degree held.

“Special focus” and “tribal” institutions were merged together because it was assumed by the researcher that in both categories, the focus of the nursing education was on a specific population of students. Additionally, “master’s” and “doctoral” institutions were merged together and re-classified as “graduate.” It was assumed that while those institutions classified as a master’s-granting institutions according to the Carnegie classification did grant more master’s degrees, there was a strong chance that many of the institutions granted doctoral degrees as well. Likewise, it was assumed that many of those institutions classified as doctoral/research institutions according to the Carnegie classification also provided master’s degrees.

Upon review of an initial frequency analysis, it was determined that the category “special focus/tribal” should be deleted due to the small frequency and potential risk of error in data analyses. The cases within “special focus/tribal” category were recoded using the institutional enrollment profile Carnegie classification, which further delineates the predominant degree classification of the institution. Examination of the 33 institutions within this category revealed that all were either baccalaureate or graduate institutions and were coded accordingly.

Reliability Testing

Ortelli (2012) previously examined whether each of the content areas tested on the CNE examination were reliable evaluation measures of the knowledge of the full scope of the academic nurse educator role. A Cronbach’s alpha of 0.758 was reported, indicating internal

consistency of the CNE exam. Corrected item-total correlations of the six content areas were reported and ranged from 0.45 to 0.65, indicating internal consistency of each of the content areas. It was determined that those candidates who score high in one content area tend to score high in other areas. Likewise, those who score low in one content area tend to score low in the other content areas. No further reliability testing was conducted for this study.

Testing Assumptions

In order to determine whether the assumptions of normality were met, the mean scores for each of the six content areas and the total points earned were analyzed using the Shapiro-Wilk statistic and Q-Q plots. The Shapiro-Wilk statistic for each of the content areas and the total points earned revealed that $p = < .001$ and these are presented in Table 4.

Table 4

Shapiro-Wilk Test of Normality for Content Scores and Total Points Earned

| Variable | Statistic | <i>df</i> | Sig. |
|----------------------|-----------|-----------|--------|
| Content Area 1 Score | .982 | 390 | < .001 |
| Content Area 2 Score | .949 | 390 | < .001 |
| Content Area 3 Score | .980 | 390 | < .001 |
| Content Area 4 Score | .976 | 390 | < .001 |
| Content Area 5 Score | .971 | 390 | < .001 |
| Content Area 6 Score | .980 | 390 | < .001 |
| Total Points Earned | .891 | 390 | < .001 |

Based on this analysis, it was concluded that the data are not normally distributed. Because the data were to be tested using factorial ANOVAs, which are very robust to the violations of most assumptions (Dantzler, 2014), there was no attempt made to transform the

data and appropriate analyses were conducted related to any violations. Any violations to assumptions and additional analyses related to those violations are addressed where appropriate. An evaluation of the data using a histogram revealed that the curves are skewed to the left, indicating that there are more scores with a higher value. It should be noted that these findings very closely resemble those presented by Ortelli (2012) in a similar study examining a possible “relationship between study participants’ educational preparation or years of full-time faculty employment and their first-time pass/fail performance on the CNE examination and first-time performance in each of the six CNE examination content areas” (p. 95).

Statistical Results of the Research Questions

This section provides the statistical results for the four research questions that served as the guide for this study. The research question will be presented followed by the explanation for the analysis performed in order to answer the question. Data will be provided in a graphic following each of the questions and analysis descriptions.

Research Question One

What are the demographic characteristics of the unsuccessful CNE first time candidates related to highest degree obtained and institutional affiliation? To answer this question, subset data of those candidates who were unsuccessful on the first attempt for the CNE exam were analyzed using a frequency analysis. Frequencies and percentages were revealed in a frequency table and are presented in Table 5. The results indicated that a majority (80.3%) of the sample held the master’s degree as the highest degree obtained. Further analysis revealed that the majority of candidates taught in an associate’s institution (41.5%), followed closely by those teaching in a graduate institution (34.6%).

Table 5

Subset Candidate Highest Degree Obtained and Institutional Affiliation Frequency and Percent Data

| <u>Highest Degree Obtained</u> | | |
|--------------------------------|----------|-------|
| | <i>n</i> | % |
| Master's | 313 | 80.3 |
| Doctorate | 77 | 19.7 |
| Total | 390 | 100.0 |

| <u>Institutional Affiliation</u> | | |
|----------------------------------|----------|-------|
| | <i>n</i> | % |
| Diploma | 49 | 12.6 |
| Associate's | 162 | 41.5 |
| Baccalaureate | 44 | 11.3 |
| Graduate | 135 | 34.6 |
| Total | 390 | 100.0 |

To further understand the demographic representation of the sample subset, the data were crosstabulated to determine the frequency distribution among the demographic variables. The resulting data are presented in Table 6.

Table 6

Subset Candidate Highest Degree Obtained and Institutional Affiliation Crosstabulation

| Institutional Affiliation | | Highest Degree Obtained | | Total |
|---------------------------|------------------------------------|-------------------------|-----------|--------|
| | | Master's | Doctorate | |
| Diploma | Count | 42 | 7 | 49 |
| | % within Institutional Affiliation | 85.70 | 14.30 | 100.00 |
| | % within Highest Degree Held | 13.40 | 9.10 | 12.60 |
| | % of Total | 10.80 | 1.80 | 12.60 |
| Associate's | Count | 146 | 16 | 162 |
| | % within Institutional Affiliation | 90.10 | 9.90 | 100.00 |
| | % within Highest Degree Held | 46.60 | 20.80 | 41.50 |
| | % of Total | 37.40 | 4.10 | 41.50 |
| Baccalaureate | Count | 30 | 14 | 44 |
| | % within Institutional Affiliation | 68.20 | 31.80 | 100.00 |
| | % within Highest Degree Held | 9.60 | 18.20 | 11.30 |
| | % of Total | 7.70 | 3.60 | 11.30 |
| Graduate | Count | 95 | 40 | 135 |
| | % within Institutional Affiliation | 70.40 | 29.60 | 100.00 |
| | % within Highest Degree Held | 30.40 | 51.90 | 34.60 |
| | % of Total | 24.40 | 10.30 | 34.60 |
| Total | Count | 313 | 77 | 390 |
| | % within Institutional Affiliation | 80.30 | 19.70 | 100.00 |
| | % within Highest Degree Held | 100.00 | 100.00 | 100.00 |
| | % of Total | 80.30 | 19.70 | 100.00 |

It was revealed that of those candidates with a master's degree, 46.6% were employed in an associate's institution and of those candidates with a doctorate, 51.9% were employed in a graduate institution. It was further revealed that the majority of those employed in a graduate institution (70.4%) reported the master's degree as the highest degree obtained.

Research Question Two

Is there a statistically significant relationship between failure on the CNE exam and either highest degree obtained or institutional affiliation? A one-sample chi-square test was performed to examine whether the distribution of failures related to highest degree obtained were distributed in a manner similar to that of the overall population of exam candidates. An alpha level of $<.05$ was established as the level of significance. The results of the chi-square test revealed $X^2 = 15.57$, $df = 1$, $p = <.001$, indicating that the distributions are not equal and there is a statistically significant relationship between first-time failure on the CNE exam and a candidate's highest degree obtained. Specifically, more candidates with a master's degree failed than was expected and fewer candidates with a doctorate failed than was expected as presented in Table 7.

Table 7

One-sample Chi-square Test for Highest Degree Obtained

| | Highest Degree Obtained | | Residual |
|-----------|-------------------------|----------|----------|
| | Observed | Expected | |
| Master's | 313 | 277.7 | 35.3 |
| Doctorate | 77 | 112.3 | -35.3 |
| Total | 390 | | |

Notes. a. Data were compared against reported frequency data from the overall population of first-time candidates within the same timeframe as reported by Orтели (2012).

b. $X^2 = 15.57$, $df = 1$, $p = <.001$

A second, one-sample chi-square test was performed to examine whether the distribution of failures related to institutional affiliation were distributed in a manner similar to that of the overall population of exam candidates. An alpha level of $<.05$ was established as the level of

significance. The results of the second chi-square test revealed $X^2 = 410.07$, $df = 3$, $p = < .001$, indicating that the distributions are not equal and there is a statistically significant relationship between first-time failure on the CNE exam and a candidate's institutional affiliation.

Specifically, as presented in Table 8, fewer candidates teaching in a baccalaureate institution failed than was expected while more candidates teaching in a graduate institution failed than was expected.

Table 8

One-sample Chi-square Test for Institutional Affiliation

| | Institutional Affiliation | | Residual |
|---------------|---------------------------|----------|----------|
| | Observed | Expected | |
| Diploma | 49 | 31.6 | 17.4 |
| Associates | 162 | 173.4 | -11.4 |
| Baccalaureate | 44 | 152.4 | -108.4 |
| Graduate | 135 | 32.5 | 102.5 |
| Total | 390 | | |

Notes. a. Data were compared against reported frequency data from the overall population of first-time candidates within the same timeframe as reported by Ortelli (2012).

b. $X^2 = 410.07$, $df = 3$, $p = < .001$

Prior to analysis, expected frequencies were calculated by the researcher and used for each chi-square test performed. As a reference, the total percentage of all candidates, both successful and unsuccessful, for the examination in the same time frame used in this study was obtained from the reported data in a study performed by Ortelli (2012). Ortelli presented frequencies of candidates who reported a master's or doctoral degree as the highest degree obtained as well as institutional affiliation. The institutional affiliations in the reference study were diploma, associate, baccalaureate, master's, and doctoral degree programs. The expected

frequencies for each category were obtained by multiplying this current study sample of failures ($n = 390$) by the population sample (N) percentages of all candidates in each category as reported by Ortelli (2012).

Research Question Three

Is there a statistically significant difference in mean scores in each content area among unsuccessful candidate's highest degree obtained or institutional affiliation? To answer this question, a factorial ANOVA was conducted for each content area using the content area mean score as the dependent variable (DV) and the candidate highest degree obtained and candidate institutional affiliation as the independent variables (IV) for statistical analysis. The assumption of normality was previously reported indicating a deviation from an expected normal distribution in each of the content area mean scores. The data are presented in a table following a description of each content area factorial ANOVA result.

Content area one (facilitate learning). Content area one mean scores for candidates teaching in diploma, associate's, baccalaureate, and graduate programs were 21.27 (2.43), 20.85 (2.76), 21.68 (2.84), and 21.56 (2.46) respectively. Content area one mean score for master's and doctorally prepared candidates were 21.17 (2.71) and 21.51 (2.35) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the assumption of independence was met. An examination of the Levene's test indicated that the homogeneity of variance assumption was satisfied, $F(7, 382) = 1.060, p = .39$. A review of the ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = 2.357(3,382), p = .07$, or candidate highest degree obtained, $F = 1.566(1,382), p = .21$. The interaction effect was also not statistically significant (Table 9).

Table 9

Factorial ANOVA for Content Area 1 (Facilitate Learning)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared | Noncent. Parameter | Observed Power ^b |
|-------------------------|-------------------------------|-----|----------------|-----------|------|---------------------------|-----------------------|--------------------------------|
| Corrected Model | 79.831 ^a | 7 | 11.404 | 1.653 | .119 | .029 | 11.573 | .682 |
| Intercept | 78367.729 | 1 | 78367.729 | 11361.123 | .000 | .967 | 11361.123 | 1.000 |
| Institution | 48.772 | 3 | 16.257 | 2.357 | .071 | .018 | 7.071 | .590 |
| Degree | 10.801 | 1 | 10.801 | 1.566 | .212 | .004 | 1.566 | .239 |
| Institution * Degree | 31.521 | 3 | 10.507 | 1.523 | .208 | .012 | 4.570 | .402 |
| Error | 2634.992 | 382 | 6.898 | | | | | |
| Total | 178633.000 | 390 | | | | | | |
| Corrected Total | 2714.823 | 389 | | | | | | |

Notes. a. R Squared = .029 (Adjusted R Squared = .012)

b. Computed using alpha = .05

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area one.

Content area two (facilitate learner development and socialization). Content area two mean scores for candidates teaching in diploma, associate's, baccalaureate, and graduate programs were 10.29 (1.78), 10.33 (1.67), 9.95 (1.78), and 9.87 (1.74) respectively. Content area two mean score for master's and doctorally prepared candidates were 10.11 (1.72) and 10.18 (1.75) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the assumption of independence was met. An examination of the Levene's test indicated that the homogeneity of variance assumption was satisfied, $F(7, 382) = .538, p = .81$. A review of the ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = .546(3,382), p$

= .65, or candidate highest degree obtained, $F = .446(1,382)$, $p = .51$. The interaction effect was also not statistically significant (Table 10).

Table 10

Factorial ANOVA for Content Area 2 (Facilitate Learner Development and Socialization)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared | Noncent. Parameter | Observed Power ^b |
|-------------------------|-------------------------------|-----|----------------|----------|------|---------------------------|-----------------------|--------------------------------|
| Corrected Model | 26.388 ^a | 7 | 3.770 | 1.271 | .263 | .023 | 8.897 | .545 |
| Intercept | 17440.818 | 1 | 17440.818 | 5880.581 | .000 | .939 | 5880.581 | 1.000 |
| Institution | 4.859 | 3 | 1.620 | .546 | .651 | .004 | 1.638 | .162 |
| Degree | 1.321 | 1 | 1.321 | .446 | .505 | .001 | .446 | .102 |
| Institution * Degree | 5.431 | 3 | 1.810 | .610 | .609 | .005 | 1.831 | .177 |
| Error | 1132.948 | 382 | 2.966 | | | | | |
| Total | 41105.000 | 390 | | | | | | |
| Corrected Total | 1159.336 | 389 | | | | | | |

Notes. a. R Squared = .023 (Adjusted R Squared = .005)

b. Computed using alpha = .05

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area two.

Content area three (use assessment and evaluation strategies). Content area three mean scores for candidates teaching in diploma, associate's, baccalaureate, and graduate programs were 12.80 (2.46), 12.70 (2.43), 12.55 (2.27), and 13.05 (2.23) respectively. Content area three mean score for master's and doctorally prepared candidates were 12.86 (2.31) and 12.65 (2.50) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the

assumption of independence was met. An examination of the Levene's test indicated that the homogeneity of variance assumption was satisfied, $F(7, 382) = 1.720, p = .10$. A review of the ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = 1.774(3,382), p = .15$, or candidate highest degree obtained, $F = .891(1,382), p = .35$. The interaction effect was also not statistically significant (Table 11).

Table 11

Factorial ANOVA for Content Area 3 (Use Assessment and Evaluation Strategies)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared | Noncent. Parameter | Observed Power ^b |
|-------------------------|-------------------------------|-----|----------------|----------|------|---------------------------|-----------------------|--------------------------------|
| Corrected Model | 39.906 ^a | 7 | 5.701 | 1.036 | .405 | .019 | 7.252 | .448 |
| Intercept | 27395.427 | 1 | 27395.427 | 4978.218 | .000 | .929 | 4978.218 | 1.000 |
| Institution | 29.283 | 3 | 9.761 | 1.774 | .152 | .014 | 5.321 | .462 |
| Degree | 4.903 | 1 | 4.903 | .891 | .346 | .002 | .891 | .156 |
| Institution * Degree | 22.406 | 3 | 7.469 | 1.357 | .256 | .011 | 4.072 | .361 |
| Error | 2102.169 | 382 | 5.503 | | | | | |
| Total | 66219.000 | 390 | | | | | | |
| Corrected Total | 2142.074 | 389 | | | | | | |

Notes. a. R Squared = .019 (Adjusted R Squared = .001)

b. Computed using alpha = .05

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area three.

Content area four (participate in curriculum design). Content area four mean scores for candidates teaching in diploma, associate's, baccalaureate, and graduate programs were 17.22 (2.10), 17.33 (2.46), 16.66 (2.51), and 17.33 (2.06) respectively. Content area four mean score

for master's and doctorally prepared candidates were 17.19 (2.32) and 17.44 (2.14) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the assumption of independence was met. An examination of the Levene's test indicated that the homogeneity of variance assumption was satisfied, $F(7, 382) = 1.016, p = .42$. A review of the ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = .958(3,382), p = .41$, or candidate highest degree obtained, $F = .323(1,382), p = .57$. The interaction effect was also not statistically significant (Table 12).

Table 12

Factorial ANOVA for Content Area 4 (Participate in Curriculum Design)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared | Noncent. Parameter | Observed Power ^b |
|----------------------|-------------------------|-----|-------------|----------|------|---------------------|--------------------|-----------------------------|
| Corrected Model | 28.979 ^a | 7 | 4.140 | .788 | .598 | .014 | 5.516 | .341 |
| Intercept | 50127.422 | 1 | 50127.422 | 9541.516 | .000 | .962 | 9541.516 | 1.000 |
| Institution | 15.095 | 3 | 5.032 | .958 | .413 | .007 | 2.873 | .262 |
| Degree | 1.699 | 1 | 1.699 | .323 | .570 | .001 | .323 | .088 |
| Institution * Degree | 5.626 | 3 | 1.875 | .357 | .784 | .003 | 1.071 | .120 |
| Error | 2006.880 | 382 | 5.254 | | | | | |
| Total | 117999.000 | 390 | | | | | | |
| Corrected Total | 2035.859 | 389 | | | | | | |

Notes. a. R Squared = .014 (Adjusted R Squared = -.004)

b. Computed using alpha = .05

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area four.

Content area five (pursue continuous quality improvement in the academic nurse educator role). Content area five mean scores for candidates teaching in diploma, associate’s, baccalaureate, and graduate programs were 10.47 (1.69), 10.22 (1.96), 10.23 (2.32), and 10.33 (1.70) respectively. Content area five mean score for master’s and doctorally prepared candidates were 10.35 (1.91) and 10.04 (1.89) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the assumption of independence was met. An examination of the Levene’s test indicated that the homogeneity of variance assumption was violated, $F(7, 382) = 3.046, p = .004$. Therefore, a Welch test was conducted. A review of the adjusted ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = .276(3,124.668), p = .84$, or candidate highest degree obtained, $F = 1.863(1,121.818), p = .18$. The interaction effect was also not statistically significant (Table 13).

Table 13

Adjusted Factorial ANOVA for Content Area 5 (Pursue Continuous Quality Improvement in the Academic Nurse Educator Role) using the Welch Test

| | Statistic ^a | df1 | df2 | Sig. |
|----------------|------------------------|-----|---------|------|
| Welch | .276 | 3 | 124.668 | .842 |
| Brown-Forsythe | .240 | 3 | 181.916 | .868 |

Note. a. Asymptotically F distributed.

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area five.

Content area six (engage in scholarship, service, and leadership). Content area six mean scores for candidates teaching in diploma, associate’s, baccalaureate, and graduate

programs were 15.43 (2.40), 15.42 (2.55), 15.50 (2.43), and 15.70 (2.65) respectively. Content area six mean score for master's and doctorally prepared candidates were 15.57 (2.47) and 15.35 (2.85) respectively. A scatterplot of residuals against the levels of each independent variable was reviewed. A random display of points around 0 provided evidence that the assumption of independence was met. An examination of the Levene's test indicated that the homogeneity of variance assumption was satisfied, $F(7, 382) = 1.803, p = .09$. A review of the ANOVA results indicated no significant main effect of either candidate institutional affiliation, $F = .069(3,382), p = .98$, or candidate highest degree obtained, $F = .244(1,382), p = .85$. The interaction effect was also not statistically significant (Table 14).

Table 14

Factorial ANOVA for Content Area 6 (Engage in Scholarship, Service, and Leadership)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared | Noncent. Parameter | Observed Power ^b |
|-------------------------|-------------------------------|-----|----------------|----------|------|---------------------------|-----------------------|--------------------------------|
| Corrected Model | 45.885 ^a | 7 | 6.555 | 1.009 | .424 | .018 | 7.064 | .437 |
| Intercept | 41290.549 | 1 | 41290.549 | 6356.732 | .000 | .943 | 6356.732 | 1.000 |
| Institution | 1.353 | 3 | .451 | .069 | .976 | .001 | .208 | .062 |
| Degree | .244 | 1 | .244 | .038 | .847 | .000 | .038 | .054 |
| Institution * Degree | 33.809 | 3 | 11.270 | 1.735 | .159 | .013 | 5.205 | .453 |
| Error | 2481.305 | 382 | 6.496 | | | | | |
| Total | 96566.000 | 390 | | | | | | |
| Corrected Total | 2527.190 | 389 | | | | | | |

Notes. a. R Squared = .018 (Adjusted R Squared = .000)

b. Computed using alpha = .05

The analysis indicated that candidate institutional affiliation and highest degree obtained had no statistically significant effect on mean scores in content area six.

Chapter Summary

The researcher examined the performance of 390 academic nurse educators who were unsuccessful on the CNE exam between September of 2005 and September of 2012. The majority (80.3%) of candidates self-reported a master's degree as the highest degree held in addition to a higher percentage of candidates (41.5%) indicating teaching in an associate's program, as classified by the basic and institutional enrollment profile Carnegie classifications, followed closely by those reporting teaching in a graduate institution (34.6%). Cross-tabulated data revealed that 46.6% of those candidates with a master's degree were employed in an associate's institution and 51.9% with a doctorate were employed in a graduate institution. It was further revealed that the majority of those employed in a graduate institution (70.4%) reported the master's degree as the highest degree obtained.

A one-sample chi-square test revealed that the distributions of unsuccessful candidates according to degree are not equal to those expected in the overall population of exam candidates. There is a statistically significant relationship between first-time failure on the CNE exam and a candidate's highest degree obtained ($X^2 = 410.07$, $df = 3$, $p = < .001$). Specifically, more candidates with a master's degree and fewer with a doctorate failed than would be expected in the overall sample of both successful and unsuccessful candidates.

A second, one-sample chi-square test revealed that the distributions of unsuccessful candidates according to institutional affiliation are not equal to those expected in the overall population of exam candidates. There is a statistically significant relationship between first-time failure on the CNE exam and a candidate's institutional affiliation ($X^2 = 410.07$, $df = 3$, $p = <$

.001). Specifically, fewer candidates teaching in a baccalaureate institution and more candidates teaching in a graduate institution failed than was expected in the overall sample of both successful and unsuccessful candidates.

A factorial ANOVA was performed in order to determine if candidate highest degree obtained or institutional affiliation had an effect on mean scores in each content area of the CNE exam. It was revealed that there is no statistically significant effect on mean scores in any of the six content areas related to degree or institutional affiliation. It was noted that examination of the Levene's test indicated that the homogeneity of variance assumption was violated ($F(7, 382) = 3.046, p = .004$) in content area five. Following a Welch test, a review of the adjusted ANOVA results indicated no significant main effect of either candidate institutional affiliation ($F = .276(3,124.668), p = .84$) or candidate highest degree obtained ($F = 1.863(1,121.818), p = .18$). The interaction effect within each of the content areas was also not statistically significant.

Chapter Five

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

This chapter includes a restatement of the research purpose, a review of the methodology used for the study, and a summary of the findings. This chapter focuses on a discussion of the study results as they relate to the conceptual framework used for the study and as compared to findings reported by other researchers. Finally, implications for nursing educators and recommendations for future research will be provided.

Purpose Statement

The purpose of this study was to (a) describe select characteristics of the unsuccessful first-time candidates for the CNE exam; (b) determine any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) determine any statistically significant relationship between failure and each content area of the CNE exam. The National League for Nursing's (NLN) excellence in nursing education (ENE) model (2006) served as the framework for this study. The role of Academic Leader within the Well-prepared Faculty component of the model provided the lens by which the significance of academic nurse educator certification is viewed as an indicator of excellence within nursing education. Characteristics of the academic leader, according to the ENE model, can be aligned directly to one or more of the Core Competencies that served as the guide for the development of the CNE

exam test plan. It was therefore assumed that success on the CNE exam demonstrates, in some way, these characteristics.

The following three research questions were answered in this study:

1. What are the demographic characteristics of the unsuccessful CNE first time candidates related to highest degree obtained and institutional affiliation?
2. Is there a statistically significant relationship between failure on the CNE exam and either highest degree obtained or institutional affiliation?
3. Is there a statistically significant difference in mean scores in each content area among unsuccessful candidate's highest degree obtained or institutional affiliation?

Review of the Methodology

In this study, the researcher utilized a non-experimental, descriptive correlational design for analysis of the existing CNE database of first-time unsuccessful CNE attempts from September of 2005 through September of 2011. A non-probability, convenience sampling of scores from all first time NLN CNE candidates from that timeframe who were unsuccessful on the exam was used. The range of available candidates does not contain unsuccessful candidate information from the last quarter of 2011 and the first quarter of 2012 for reasons unknown to this researcher. Any participants who tested in the new test plan pilot in that timeframe were excluded from this study. To find answers to the research questions, relationships between candidate highest degree obtained (master's and doctorate), candidate institutional affiliation as determined by the basic and institutional enrollment profile Carnegie classifications (diploma, associate's baccalaureate, and graduate), and CNE content area and overall exam scores were analyzed. Data analysis consisted of the use of a frequency analysis, one-sample chi-square tests, and factorial ANOVAs.

Summary of the Results

Descriptive statistics revealed that more (37.4%) candidates self-reported holding a master's degree and teaching in an associate's program, as classified by the basic and institutional enrollment profile Carnegie classifications. Data revealed that just over half of the candidates with a doctorate were employed in a graduate institution. Interestingly, a large majority (70.3%) of those employed in a graduate institution reported the master's degree as the highest degree obtained.

One-sample chi-square tests revealed that the distributions of unsuccessful candidates according to highest degree and institutional affiliation are not equal to those expected in the overall population of exam candidates. These data indicate that there is a statistically significant relationship between first-time failure on the CNE exam and a candidate's highest degree obtained as well as institutional affiliation. Specifically, more candidates with a master's degree and fewer with a doctorate failed than would be expected, while fewer candidates teaching in a baccalaureate institution and more candidates teaching in a graduate institution failed than was expected in the overall sample of both successful and unsuccessful candidates.

A factorial ANOVA was also performed to determine if candidate highest degree obtained or institutional affiliation had an effect on mean scores in each content area of the CNE exam. Data indicate that there is no statistically significant effect on mean scores in any of the six content areas related to degree or institutional affiliation. The interaction effect within each of the content areas was also not statistically significant.

Discussion of the Results

This section details the results of the statistical analyses for each of the research questions. Included is a discussion of the study results as they relate to the conceptual framework

used for the study. The results, as they relate to findings reported by other researchers, will also be presented as appropriate.

Research Question One

For the first research question, the researcher examined the demographics of the sample of the unsuccessful CNE first time candidates as they related to the candidate highest degree obtained and the institutional affiliation of the candidate at the time of the exam. Results revealed that a majority of the candidates held a master's degree. Additionally, a higher percentage of the candidates taught in either an associate's institution or a graduate institution. Further, approximately one-half of the candidates with a master's degree taught in an associate's institution while just over half of those candidates with a doctoral degree taught in a graduate institution. Of the total number of faculty teaching in a graduate institution, the majority reported a master's degree as the highest degree held.

It was not surprising that a majority of unsuccessful candidates for the CNE exam held a master's degree as the highest degree obtained. This finding is consistent with the percentage of overall first time CNE candidates in the same timeframe, as well as national nurse educator faculty rates according to highest degree obtained as reported by Ortelli (2012). Also not surprising was the finding that one-half of the candidates with a master's degree taught in an associate's institution and one-half of those with a doctoral degree taught in a graduate institution. This finding is consistent with the level of the degree programs and the expected minimum degree requirements of the faculty in most institutions (AACN, 2008; Bartles, 2007; Bosold & Darnell, 2012; NLN, 2012c; Poindexter, 2013).

Of interest to the researcher, however, was the finding that a majority of those who reported teaching in a graduate institution (master's or doctoral granting institutions according to

the Carnegie basic classification) held a master's degree as the highest degree obtained. After review, this finding makes sense in that while the institution is classified as a master's or doctoral institution, the nursing program at these institutions may only grant a baccalaureate nursing degree. It might be inferred that this level of nursing education degree would not require a faculty comprised of a majority of doctorally prepared nurse educators, as one might expect to find in a master's or doctoral degree-granting nursing program.

The data from this study indicate that those with a master's degree teaching in a graduate institution are more likely to be unsuccessful on the first attempt on the CNE exam than others. This finding is supported by the conceptual framework used for this study (NLN, 2006). Specifically, it could be suggested that those academic nurse educators who serve as expert researchers, expert clinicians, and academic leaders, as outlined in the model, do so as a result of years of experience and advanced education in the role that is required to teach in graduate institutions. These data are closely related to the findings reported by previous researchers indicating that years of experience (Bolender, 2001; Fernandez et al., 2008) and education at the doctoral level (Ortelli, 2012) are predictors of success on specialty certification exams.

Further, the functions and associated tasks within the conceptual framework (NLN, 2006) can also be related back to the Core Competencies of Nurse Educators with Task Statements (NLN, 2012c) as the CNE exam is based upon those Core Competencies. The Core Competencies are each representative of the functions and associated tasks within the ENE model. Therefore, it might be suggested that the nurse educator who has demonstrated mastery of the necessary knowledge of the role according to the Core Competencies by becoming certified has also demonstrated success in the functions of the Well-prepared Faculty component of the model.

Research Question Two

In the second research question, the researcher examined the relationship between first time failure on the CNE exam and either the highest degree obtained or the institutional affiliation to determine if a statistically significant relationship exists. It was revealed that a statistically significant relationship between first time failure and highest degree obtained as well as first time failure and institutional affiliation. Specifically, more candidates with a master's degree failed than was expected when compared to the larger sample of all first time CNE exam candidates. Further, more candidates teaching in a graduate institution failed than was expected when compared to the larger sample of all first time CNE exam candidates.

Prior to analysis, the reported frequencies of candidates with master's and doctoral degrees, as well as institutional affiliations, were obtained from Orтели's (2012) work examining candidate performance on the CNE exam. These reported frequencies allowed the researcher to determine expected frequencies for each variable by multiplying this current study sample of failures ($n = 390$) by the population sample (N) percentages of all candidates in each category as reported by Orтели (2012). Given the results from research question one, the findings in the chi-square tests were not surprising.

Findings from research question one revealed that more candidates with a master's degree teaching in a graduate institution failed the exam. These findings suggest that it might seem reasonable to anticipate that as the number of faculty who are not as experienced or prepared for the role of the academic nurse educator increases at institutions that grant advanced degrees, the application of knowledge of the full scope of the faculty role might decrease. Authors of prior studies and reports address this assumption and indicate that faculty members should be better prepared for the role in the specific institutions in which they are employed

(AACN, 2008; Bartles, 2007; Bosold & Darnell, 2012; Hagler et al., 2014; NLN, 2012c, 2013; Ortelli, 2006; Poindexter, 2013). Therefore, as more emphasis is placed on research and service in institutions that grant advanced degrees, in addition to teaching, faculty members teaching in those institutions might strive to become knowledgeable in the tripartite role of the academic nurse educator in order to be successful on the CNE exam.

These findings also correlate with prior studies in which researchers reported years of experience in the role (Bolender, 2001; Fernandez et al, 2008; Ortelli, 2012) as well as more years of education (Fernandez et al., 2008; Ortelli, 2012) are significant factors in predicting the outcome of performance on certification exams. The findings from those prior studies translate to this study as academic nurse educators who are doctorally prepared or who have received advanced preparation in the role of the academic nurse educator with multiple years of experience in the role. The CNE exam measures whether the academic nurse educator has mastered the knowledge of the full scope of the academic nurse educator role as defined by the Core Competencies. It might be suggested, then, that the candidate with more years of teaching experience and advanced training in the role would be more likely to be successful on the CNE exam.

In relation to the conceptual framework for this study, the results of research question two support the tenets of the framework with regard to the Well-prepared Faculty component of the model. Within that component, faculty members are expected to possess multiple skills and abilities. Among those, faculties should consist of a range of members who are proficient in (a) research, practice, and teaching skills, (b) serving as citizens of the academy, (c) curriculum design, implementation, and evaluation, (d) mentoring neophyte educators, (e) providing leadership to transform and re-vision nursing education, (f) building the science of nursing

education, and (g) evaluation methods (NLN, 2006). While faculties across all levels of nursing education can, and should, address the skills and abilities within the model to some extent, the focus on research skills, building the science of nursing education, and serving as citizens of the academy is emphasized more in programs and institutions at and above the level of the baccalaureate degree (AACN, 2008; Bartles, 2007; Bosold & Darnell, 2012; Boyer, 1990; NLN, 2012c; Poindexter, 2013; Sauter et al., 2012). Therefore, it is suggested that those faculty members teaching in degree programs that do not emphasize all of the skills and abilities within the identified component of the model seek advanced training in the full scope of the role while gaining years of experience before attempting certification.

Research Question Three

For the third and final research question, the researcher examined whether a statistically significant difference in mean scores in the content areas measured on the CNE exam exists among the candidate highest degree obtained and institutional affiliation. Data revealed that the variables had no significant effect on mean scores in any of the six content areas measured on the exam. Additionally, it was revealed that the interaction effect within each of the content areas was not statistically significant.

This finding was somewhat unexpected by the researcher. Data obtained from answering research question two indicated that more candidates with a master's degree were unsuccessful than was expected, so it was assumed that there would be a significant effect on mean scores in at least one content area. However, the data indicated that a candidate's place of employment and highest degree obtained does not significantly influence the performance in any one category on the CNE exam. Simply put, failure on the exam is due to unsuccessful performance across all categories measured by the CNE exam. No one category significantly affected the unsuccessful

performance of the first time candidates according to highest degree obtained or institutional affiliation. It could be implied that these data strengthen the suggestion that years of experience and advanced education and preparation in the role of the academic nurse educator are more indicative of a mastery of the knowledge of the full scope of the role.

Although the findings for this research question were not found to be statistically significant, there is support for the findings reported by Ortelli (2012) indicating a statistically significant relationship between years of full-time teaching experience and first time performance in five of the six content areas. A statistically significant relationship between years of full-time teaching experience and overall performance on the CNE exam was also reported. Specifically, for every year of full-time teaching in the faculty role, there was a 1.045 greater chance of success on the CNE exam (Ortelli, 2012). One might consider that experience in the role of the academic nurse educator is more significant to exam performance in each of the content areas than the candidate's place of employment or what degree the candidate holds.

Ortelli's (2012) findings are actually more congruent with the conceptual framework used for this study. The skills and abilities within the Well-prepared component of the ENE model (NLN, 2006) lend themselves more to experience in the role of the educator, rather than highest degree held or institutional affiliation because of the focus on actual work of the educator, and not on educator preparation or work environment. Again, one might argue that each of the variables may serve to strengthen the other in terms of prediction of performance. This consideration was beyond the scope of this study, however, and an analysis of the combined variables should be considered for future studies. Therefore, Ortelli's findings, coupled with the findings from this study, might suggest that those academic nurse educators with multiple years

of teaching experience who hold a doctoral degree are more likely to be successful on the first attempt of the CNE exam than their counterparts.

As the research in the area of certification in the role of the academic nurse educator is just beginning to emerge, little is actually known about the factors contributing to success, failure, or the value of holding certification in the role. This lack of research provides nursing education researchers with a variety of options to consider for future research. What is known, however, is that researchers agree that qualified and certified teachers produce better results in the classroom (Boyd et al., 2007; Darling-Hammond et al., 2005; Kane et al., 2007; Marszalek, Odom, LaNasa, & Adler, 2010; Stronge et al., 2007), with student attitudes toward learning (Helding & Fraser, 2013; Stronge, et al., 2007), and the overall classroom environment (Marszalek et al., 2010; Stronge et al., 2007).

While little is known about the perceived value of certification in the academic nurse educator role, there is a positive perception regarding certification in the clinical nurse specialty role as it relates to personal empowerment, staff turnover, patient safety, and patient outcomes (Byrne et al., 2004; Cramer, et al., 2014; Haskins et al., 2011; Kaplow, 2011; Niebuhr & Biel, 2007; Rees et al., 2014; Wade, 2009; Weeks et al., 2006; Wilkerson, 2011) and there is reason to suggest that the same would be the case in the area of academic nursing education. There is also limited evidence suggesting that higher levels of education and years of experience in the role are predictive of success on nursing specialty certification exams (Bolender, 2001; Ortelli, 2012). Due to this limited available evidence, further studies in this area are warranted.

Limitations

For the purposes of this research study, the following limitations were identified:

- The author is unaware of any preparation courses or materials used, or the quality of such courses, materials, or both, prior to candidates taking the exam. These factors could possibly affect the success or failure on the exam depending on the use or quality of such courses and materials. This quality could affect performance and skew the relationship between performance and other factors being studied.
- There is no indication as to whether the candidates' preparation as an academic nurse educator included coursework or an educational preparation program designed with the Core Competencies for nurse educators in mind. This lack of available information served as a limitation because not knowing whether the candidate received an education based on the same framework as the CNE exam or not could limit the researcher's understanding of factors that contribute to CNE exam failure.
- Data sets with missing data regarding candidate highest degree obtained or institutional affiliation were excluded from the study. This resulted in a loss of just over one-third of the initial sample of score data. This lack of available data served as a limitation because of the potential effect on the overall outcomes of the statistical analyses.

Implications for Nursing Education

A number of implications can be made from the results of this study that have relevance for nursing education faculty, deans and directors, and students of nursing education. The findings provide academic nurse educator faculty and students in nurse educator programs with data that can contribute to making a more informed decision regarding seeking and preparing for

certification as a personal and professional goal. Further, nursing program deans or directors are provided with information regarding which faculty members might be encouraged to attempt certification as an academic nurse educator. While not a predictive study, the findings do suggest that certain characteristics might serve to limit the chances of success on the CNE exam.

Findings from this study indicate that, as a whole, the greatest percentage of unsuccessful candidates are employed in associate's institutions and hold a master's degree. These data are important in that the national percentage of nurse educator faculty reflects a majority of master's-prepared nurses. Therefore, the sample of potential candidates for the CNE exam is largely master's prepared. Historically, master's prepared nurse educators are not formally prepared for the academic nurse educator role, so mentoring and education in the role would be paramount.

Those nurse educators with a master's degree who are interested in obtaining certification in the role might also be wise to first consider doctoral education, or some other preparation for the academic role, prior to seeking certification as an academic nurse educator. Likewise, program directors and deans might suggest to those novice nurse educators with a master's degree to seek professional development opportunities in areas related to the tripartite role of the academic nurse educator while gaining valuable experience in the role prior to seeking certification. Based on the data, it could be inferred that these candidates are least likely to be functioning in the full scope of the academic nurse educator and are, therefore, more likely to be unsuccessful on the CNE exam.

The findings also indicate that although the majority of unsuccessful candidates teach in an associate's institution, of those candidates teaching in a master's or doctoral degree-granting institution, the majority of unsuccessful candidates hold a master's degree. Additionally, and of statistical significance, is the fact that more candidates teaching in graduate institutions failed

than was expected when compared to the larger population of all first-time candidates (successful and unsuccessful). Together, these data indicate that master's-prepared candidates teaching in graduate institutions are more likely to be unsuccessful on the first attempt of the exam than their counterparts in other institutions. This finding is important for the potential candidate to consider when seeking certification in the role so that appropriate consideration might be given to adequate academic preparation and individual professional role development prior to seeking certification.

Additionally, as data indicate that there is no statistically significant effect on unsuccessful performance in any of the content areas on the CNE exam according to where one is employed or what degree is held, the candidate should consider previously reported evidence which states that years of experience is a significant predictor of success on the CNE exam (Ortelli, 2012). Taken with the results from this current study, it can be implied that the potential candidate should consider obtaining a doctoral degree and working in the role of an academic nurse educator for several years prior to attempting certification. This suggestion should not discourage all candidates working with a master's degree from attempting certification as an academic nurse educator. It should be mentioned that other variables, many of which were not available to this researcher for a number of reasons, might play a role in the overall performance of the CNE candidate and this warrants future studies on the topic.

Suggestions for Future Research

The field for research in this relatively new area of nursing education is wide open and a range of possibilities exists. More evidence-based nursing education data are needed in order to build and strengthen the body of knowledge related to nursing education and the role of the

academic nurse educator. The following recommendations for further research in the area of certification in the role of the academic nurse educator are given:

1. Replication of this study should be conducted using a sample of candidate scores from the new CNE test plan. Although current candidates for the CNE exam test under a new test blueprint, the format, rigor, and content of the exam did not change from the initial exam. The only change that occurred was the percentage of questions asked in each category of the exam. This additional study would allow for comparisons of demographic data of unsuccessful candidates to be made across multiple years.
2. This study should be replicated using other characteristics as independent variables, such as age, race, years of experience as a full time academic nurse educator, whether or not a CNE prep course was attended, and majority area of teaching workload (i.e., diploma, baccalaureate, graduate). Understanding and comparing multiple demographic data would allow researchers to more accurately predict which candidates are more likely to be unsuccessful on the first attempt on the CNE exam. This understanding would allow for more specific interventions to be provided for exam preparation.
3. An examination of the performance of candidates among specific degree programs taught according to the percentage of workload in each level of education by the candidate should be conducted. While this current study demonstrated that those with a master's degree teaching in a graduate institution were more likely to fail, further studies that examine more specifically the area where the candidates teach would provide further evidence for understanding possible predictive factors.

4. Studies examining the performance of CNE candidates according to the type of master's nursing degree earned (education, administration, advanced clinical practice) or doctoral degree earned (PhD, EdD, DNP) would provide nursing education researchers with a knowledge of how academic preparation might affect overall performance on the CNE exam. Although there is evidence to support that years of experience is a significant predictor of success, understanding the performance of candidates from these suggested variables might reveal more significance that can be used in conjunction with prior results to better prepare candidates for success.
5. A comparison of the performance on the CNE exam among candidates who attended traditional face-to-face graduate programs versus blended or online graduate programs would provide important data. As more and more courses and entire degree programs are being provided in blended and online formats, studies examining the performance of candidates from the multiple learning environments would provide comparative data that might be useful in preparing future candidates for the CNE exam.
6. Studies examining the lived experiences of academic nurse educators during the process of preparation for the CNE exam, of academic nurse educators who hold the CNE credential, and of students taught by both CNE faculty and non-CNE faculty would provide a much needed source of qualitative data to the area of nursing education research. These types of studies would provide rich data that would allow future candidates to better understand the process of exam preparation and career experiences after obtaining the CNE credential by revealing possible themes that might emerge from those stories and experiences. Program leaders would also benefit

- from understanding the impact of certified nurse educators on the experiences of the students. Researchers should seek to determine the presence of any related patterns of association among the phenomena, rather than any causal relationships within each.
7. The perceived value of certification as an academic nurse educator among current nurse faculty and nursing program administrators should be examined to provide further data which might support the value of certification in a nursing specialty role. While certification is a requirement for practice for the advanced practice clinical nurse, the same is not the case for academic nurse educators. Demonstration of the value of certification in the academic nurse educator role among program directors and professional colleagues might serve to encourage more nurse educators to seek certification as a personal and professional goal.
 8. Student outcomes (retention, satisfaction, licensure or certification exam performance) according to the percentage of CNE faculty should be examined. Program leaders would be provided with useful information regarding the outcomes of students taught by certified nurse educator faculty members. This type of study would also add to the body of literature related to evidence-based nursing education and the value of nursing specialty certification. The design of such a study should examine a direct link between student outcomes and nurse faculty certification while closely controlling for any possible extraneous variables that might interfere with or skew the results.
 9. An examination of any correlations between certification exam success and good teaching practice should be conducted. As previously mentioned, certification in the role does not necessarily ensure success as an academic nurse educator, so identifying

outcomes that measure quality teaching and any correlations to certification in the role would add to the literature related to the value of specialty certification.

Chapter Summary

This study examined (a) select characteristics of the unsuccessful first-time candidates for the CNE exam; (b) any statistically significant relationship between failure and select demographic data related to highest degree obtained by the candidate and candidate institutional affiliation as coded by this researcher; and (c) any statistically significant relationship between failure and each content area of the CNE exam. Understanding these factors will help to provide academic nurse educators and program administrators with information necessary to identify potential successful candidates on the CNE exam. The data will also assist program administrators in directing those faculty members most at risk for unsuccessful performance on the CNE exam to appropriate development opportunities.

One-sample chi-square tests indicated that those nurse educators with a master's degree teaching in a graduate institution, as classified by the Carnegie basic classification system, were more likely to be unsuccessful on the CNE exam than others. Additionally, prior research has revealed that the number of years of full-time teaching experience is a significantly strong indicator of CNE exam performance. This information could be used to encourage similar potential candidates to seek a doctoral degree or more years of experience in the role prior to seeking nurse educator certification as a personal and professional goal. Due to a dearth of information related to this topic, further research, both quantitative and qualitative, related to the CNE exam, candidate, and credentialed nurse educator is needed.

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APPENDIX A

The University of Alabama IRB Approval Letter

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

May 20, 2014

John D. Lundeen, RN, MSN, CNE
ELPTS
College of Education
The University of Alabama
Box 870231

Re: IRB # EX-14-CM-071 "Analysis of Unsuccessful Candidate
Performance for the Certified Nurse Educator Examination"

Dear Mr. Lundeen:

The University of Alabama Institutional Review Board has granted approval
for your proposed research.

Your protocol has been given exempt approval according to 45 CFR part
46.101(b)(4) as outlined below:

(4) Research involving the collection or study of existing data, documents,
records, pathological specimens, or diagnostic specimens, if these sources are
publicly available or if the information is recorded by the investigator in such
a manner that subjects cannot be identified, directly or through identifiers
linked to the subjects.

Your application will expire on May 19, 2015. If your research will continue
beyond this date, complete the relevant portions of Continuing Review and
Closure Form. If you wish to modify the application, complete the
Modification of an Approved Protocol Form. When the study closes,
complete the appropriate portions of FORM: Continuing Review and
Closure.

Should you need to submit any further correspondence regarding this
proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 820-3066

Carpantato i. Myles, MSM, CIM, CIP
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama

APPENDIX B

NLN Use of CNE Database Approval Letter



August 19, 2013

To: John D. Lundeen, RN, MSN, CNE

Re: Site Approval from NLN for Use of Data Base

Dear John:

Thank you for your interest in adding to the body of research of nursing education. Your request to utilize the certified nurse educator (CNE) testing data base held by the National League for Nursing (NLN) has been approved. We understand and value the desire to support the CNE program by such research efforts.

The data base will be provided to you in an electronic format. Any identifying information of test results has been removed. Demographic information is present but no names are given.

We would ask that when you have completed your research project, that you attest to the destruction of the data base in your possession. As is common practice at the NLN, we would also ask that you allow the NLN right of first refusal for any potential publications that come from your research project.

Please feel free to contact the CNE program at the NLN if we can be of additional assistance to you as you proceed with your project. Contact information is below.

Sincerely,

Larry E. Simmons, RN, PhD, CNE, NEA-BC

Interim Director, CNE Program

National League for Nursing

2600 Virginia Ave NW Eighth Floor

Washington, DC, 20037

Email: lasimmons@nlr.org Phone: 646-842-1768

National League for Nursing
61 Broadway, 33rd Floor
New York, NY 10006
800-669-1656
www.nln.org

APPENDIX C

CNE Candidate Informed Consent Notice

CNE 2012 Candidate Handbook

APPLYING FOR THE EXAMINATION

It is your responsibility to ensure that the online application and any requested supporting documents are accurately submitted, that the information provided is accurate, and that all deadlines are met. Your careful attention will enable prompt and efficient processing. NLN reserves the right to verify information supplied by each candidate. An application is considered complete only if all requested information is complete and accurate; if the candidate is eligible for the examination; and if fees are submitted. **Please note that the name and address provided by you during registration must exactly match both forms of your valid identification.** See p. 18 for information about proper identification. Any misrepresentation of information shall be considered grounds for prohibition from testing or revocation of certification. Candidates must apply and register for the CNE examination online at: http://www.nln.org/eseries/source/custom/01_certification_exam.cfm. Applications will not be accepted via mail or fax.

Practice requirements cannot be waived. Do NOT send examination application or fees if the eligibility requirements have not been met at the time of application.

Fees

Candidates must submit the appropriate fee with the complete examination application. **Payment may be made by credit card only** (Visa, MasterCard, American Express or Discover). Company checks, personal checks, money orders and cash are not acceptable forms of payment. You must submit a valid credit card in order for your application and registration to be processed.

Table 3:

| Certification Exam | NLN member Fee* | Non-member Fee* |
|--------------------|-----------------|-----------------|
| Initial testing | \$375 | \$475 |
| Retest | \$325 | \$425 |

*The above fees apply to testing within the continental U.S. and Hawaii. If you require testing at a testing center located within one of the U.S. Territories, please contact the NLN's Academic Nurse Educator Certification Program at 618-453-5896 or via email at certification@nln.org to discuss testing arrangements and the applicable fees.

Verification

Information on applications will be verified. Authorized personnel will check applications for accuracy of information. Information may be verified by telephone, letter or other means. All information gained through verification procedures will be kept confidential except in instances where the law or professional obligations require disclosure of facts. Should any information on the application be found

false or materially misleading, the applicant will be notified and declared ineligible to continue in the certification process.

Agreement of Authorization & Confidentiality

The ANECP is committed to protecting confidential and/or proprietary information related to candidates, certificants and the examination development and maintenance process.

Information about candidates for testing and their examination results are considered confidential. Exam scores will be released only to the individual candidate unless a signed release is provided. Information submitted by candidates or CNEs in connection with an application or recertification application is considered confidential.

When applying online, candidates will be required to read and acknowledge understanding of the following *Agreement of Authorization and Confidentiality*:

"I have read and understand the information provided in the candidate handbook. In making this application, I fully understand that it is an application only and does not guarantee certification. I attest by answering "yes" to the statement "I have read and understand the preceding information" that I currently meet the eligibility requirements and I authorize the NLN to make whatever inquiries and investigations that it deems reasonable to verify my credentials and professional standing. I understand that false information may be cause for revocation of this application without a refund of any fees paid, loss of the credential (if currently held), or denial as a candidate to take the examination. I understand that I can be disqualified from taking or completing the examination, or from receiving examination scores if the Certification Committee of the NLN determines in its sole discretion that I was engaged in collaborative, disruptive or other prohibited behavior during the administration of the examination. I understand and agree that if I am certified following acceptance of this application and successful completion of the examination, such certification does not constitute NLN's warranty or guarantee of my competency to practice as an academic nurse educator. I understand that the initial certification period is five calendar years following successfully passing the examination, and I agree to meet the then-current requirements if I wish to maintain active certification status thereafter. I further understand that the governing body has the authority to change requirements to attain and maintain certification from time to time. If I am certified, I authorize NLN to include my name in a list of certified individuals and agree to use the CNE designation and related NLN trade names, trademarks, and logos only as permitted by NLN policies. I understand and agree that the NLN may also use anonymous and aggregate application and examination data for statistical analysis. I further agree to abide by the policies and procedures as set forth in the candidate handbook."