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An Exploratory Study of Predictors of Academic Success in a Graduate Nursing Program

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An Exploratory Study of Predictors of Academic Success in a Graduate Nursing Program
by
Lori B. Brown
April 2011

Master's Thesis
Submitted to the Graduate Faculty of the College of Education at Grand Valley State University in partial fulfillment of the degree of Master of Education
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Lori / Mom
Abstract

Identifying qualified students who are most likely to be successful in their graduate nursing studies is the goal of the admission process. Because fiscal and human resources are often limited, it is important that universities admit students who have the academic capabilities necessary to complete the degree requirements. This study attempted to determine whether the established admission criteria for graduate nursing students at Grand Valley State University (GVSU) reliably predict success within the graduate nursing program and if so, whether any one criterion is a better predictor of success. For the purpose of this study, success was defined as completion of the program of study.

Using a retrospective design, the academic records of 256 graduate nursing students were examined, 159 of whom completed the program of study. No significant differences in GRE scores were found between those who completed their degree program and those who did not complete the program of study. However, significant relationships were noted between undergraduate grade point average (GPA) and graduate GPA at exit/graduation. Undergraduate GPAs were found to be significantly higher for those individuals who completed their degrees than for those who did not complete the program of study.

Based on these findings, GRE scores did not predict academic success in this sample of students admitted to the graduate nursing program.
at GVSU. These results suggest, however, that UGPAs may predict academic success and that UGPA may therefore be more predictive of academic success in GVSU’s graduate nursing program than GRE scores.
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Chapter One: Introduction

Problem Statement

The rising demand for nurses with graduate degrees to fill expanding roles within a changing health care system has also caused a high demand for admission into graduate nursing programs with limited capacities. The Institute of Medicine (IOM) (2010) notes the important, expanding roles nurses will play following passage of legislation to reform health care in the United States, stating that “nurses must achieve higher levels of education and training to respond to these increasing demands” (p. 2). At the same time, there continues to be a significant shortage in nursing faculty (National League for Nursing, 2010), which limits the number of applicants institutions can admit to their graduate programs. Because fiscal and human resources are often limited, it is important that universities admit students who have the academic capabilities necessary to complete the degree requirements. In order to do so, it is critical that universities establish application/admission criteria that reliably predict success within graduate nursing programs.

Importance of the Problem and Rationale for the Study

Universities seeking to maximize enrollment are often in competition with other institutions to attract and admit diverse groups of students who are most likely to be successful and complete the degree requirements. Factors beyond the program itself are often considered by potential students in making decisions regarding where to apply for admission. Anecdotal
evidence suggests that for some potential students, the requirement that applicants take the Graduate Record Examination (GRE) general test as an admission criterion to the program is a significant barrier and can be a key factor in determining which schools are of interest (L. K. Buck, personal communication, September 9, 2010; Katz, Chow, Motzer, & Woods, 2009). As a result, those universities which require that applicants take the GRE may potentially limit their applicant pools. Having a larger applicant pool allows an institution to be more selective and admit only those students it believes will be successful pursuing a graduate degree in nursing. Ascertaining which applicants are most likely to be successful is extremely important as graduate nursing programs with limited human and fiscal resources try to meet the demand for nurses who have advanced degrees. Because universities want to make informed and appropriate admission decisions, it is imperative that the criteria considered in making those decisions reliably predict those students who are most likely to succeed.

Identifying qualified students who are most likely to be successful in their graduate nursing studies is the goal of the admission process. Student attrition and provision of remedial learning opportunities to students who are struggling academically have been and continue to be costly to universities, not only financially but also relative to time and human resources (Ainslie et al., 1976; Utzman, Riddle, & Jewell, 2007). This is of particular concern at a time when many universities are experiencing a shortage of nursing faculty.
Hansen and Pozehl (1995) reiterate the importance of selecting candidates who are likely to be successful in a graduate nursing program, noting the "economic implications in terms of efficient use of faculty and other academic resources" (p. 433). If, in fact, the GRE requirement is an impediment to applying for admission for at least some potential students, determining the predictive reliability of GRE scores for applicants to the graduate nursing program will provide data to allow the nursing faculty at Grand Valley State University (GVSU) to make an informed decision regarding admission requirements, including whether or not to continue requiring the GRE for applicant consideration.

**Background of the Problem**

Applicants to graduate nursing programs have generally exceeded the number of students accepted into the programs for the past several decades (Hansen & Pozehl, 1995). As a result, universities must find ways to determine which applicants to admit. However, identifying reliable predictors of academic success while trying to meet the increasing demand for nurses prepared at the graduate level is a significant challenge for many universities.

For decades, multiple disciplines at many universities have considered GRE scores when making admission decisions (House & Johnson, 2002; Powers, 2004; Thieman, Weddle & Moore, 2003). The GRE General Test is a computer-based aptitude test that "measures verbal reasoning, quantitative reasoning, critical thinking and analytical writing skills that are not related to
any specific field of study” (GRE General Test, 2010, para. 1). Scores on the verbal and quantitative sections range from 200-800 points (in 10 point increments). Since October 2002, analytical writing section scores can range from 0-6 (in half point increments) (GRE General Test Scores, 2010). Prior to that time, the analytical section of the GRE general test had a score range of 200-800 points (in 10 point increments) (Educational Testing Service, 2001). For students testing between July 1, 2006, and June 30, 2009, the Educational Testing Service (2010) reports mean scores for students intending to major in health and medical sciences as follows: verbal 440 (SD + 90), quantitative 551 (SD + 123), and analytical writing 4.0 (SD + 0.7).

Researchers in numerous disciplines have studied the predictive reliability of GRE scores, as well as various other admission criteria including undergraduate grade point average (UGPA) with inconclusive results. A study of students admitted to a graduate program in physical therapy found that admission criteria (UGPA, GRE scores, and admission committee evaluations) moderately predicted graduate grade point average (GGPA), although the predictive power was limited due to the range of both admission criteria and GGPA (Thieman et al., 2003). Reisig and DeJong (2005), in a study of students admitted to a graduate program in criminal justice, found that “a composite measure including GRE scores and prior GPA is a fairly robust predictor of academic performance” (p. 37). Feeley, Williams, and Wise (2005), however, found that only UGPA predicted academic success for
masters-level graduate students in communication. GRE scores and prior GPA, when examined together, did not predict success for doctoral students in communication.

The predictive reliability of GRE scores and UGPA specifically as they relate to graduate programs in nursing has also been studied. Early researchers such as Ainslie et al. (1976) and Stein and Green (1970) found UGPAs and GRE scores to be only weakly associated with GGPA/academic success. Other early researchers, however, found both the GRE and UGPA to be predictors of academic success (Sime, 1978; Tripp & Duffey, 1981). More recently, Katz et al. (2009) found only a very weak correlation between GRE scores and academic success in a graduate program. Newton and Moore (2007) found that GRE scores correlated with academic success but were actually a “weaker predictor of performance than was UGPA” (p. 329).

Admission decisions are generally made based on some combination of both objective and subjective factors. Objective factors frequently considered are grade point average (GPA) and/or GRE scores. Burns et al. (1993) reviewed the admission criteria of 175 accredited graduate nursing programs; all consider either an applicant’s cumulative UGPA or the grade point average for undergraduate nursing courses (UGPA-NUR). Sixty-two percent of the programs reviewed also consider aptitude test scores (such as the GRE). Various subjective factors are also considered by many
Among the most common are interviews, letters of reference, and essays (Wilson, 1999).

For the sample that will be studied (students admitted between August 2000 and August 2008), application criteria at GVSU included a bachelor’s degree in nursing from an accredited program, an undergraduate GPA of 3.0 or higher in upper division coursework, completion of an introductory statistics course, current licensure as a registered nurse in the state of Michigan, academic and/or employment references, an essay describing professional and educational goals, and satisfactory performance on the GRE. Beginning in 2006, satisfactory performance on the GRE was defined as a minimum score of 400 verbal, 400 quantitative, and 4.0 analytical writing (GVSU, 2006). In addition, personal interviews were required for some applicants. UGPA and GRE scores were critical components considered when making admission decisions (A. Bostrom, personal communication, October 30, 2010).

Although GRE scores and UGPA are criteria for admission to many graduate nursing programs, including GVSU, their reliability in predicting academic success remains unclear due to the inconclusive findings of previous research. Therefore, a study that examines predictors of academic success is relevant and timely.
Statement of Purpose

The purpose of this study is to review admission and exit data related to graduate nursing students at GVSU to determine whether the established admission criteria reliably predict success within the graduate nursing program. A secondary goal of this study is to determine whether any one criterion is a better predictor of success. For the purpose of this study, success is defined as completion of the program of study.

The results of the study will be given to the dean, administrative team, and faculty of the Kirkhof College of Nursing (KCON) at GVSU. It is hoped that the information provided will contribute to the discussion regarding requirements for admission into the graduate nursing program.

Research Questions

Three primary research questions will be considered in this study.

1. Do GRE scores predict academic success in the graduate nursing program at GVSU?
2. Do UGPAs predict academic success in the graduate nursing program at GVSU?
3. Are GRE scores more predictive of academic success in the graduate nursing program at GVSU than UGPAs?

Design, Data Collection and Analysis

This study will use a retrospective research design to address the research questions. Following institutional review board approval for the
protection of human subjects, a de-identified dataset for a sample population of students admitted to the graduate nursing program between August 2000 and August 2008 will be requested from the university.

To facilitate analysis of the data file obtained from the GVSU Office of Institutional Analysis (OIA), it will be imported into the Statistical Package for the Social Sciences, version 16.0 (SPSS-16.0). To ensure accuracy, the imported file will be double-checked for any data transfer errors prior to conducting the analysis. The level of significance will be established at $p < .05$ for all statistical procedures.

Descriptive statistics will be used to describe demographic characteristics of the sample and the variables of interest for the study. Differences in GRE scores by demographic characteristics and selected markers of academic success will be explored using independent t-tests and chi-square analyses. Similar procedures will be used to determine differences in UGPA by demographic characteristics and selected markers of academic success. Regression procedures will be used to determine whether 1) GRE scores predict academic success; 2) UGPAs predict academic success; and 3) GREs or UGPA explains the greater amount of variance (linear regression) or odds (logistic regression) among selected markers of academic success among graduate nursing students.
Delimitations of the Study

This study will examine data related to graduate nursing students from only GVSU and cannot necessarily be generalized to other institutions. In addition, only a selected timeframe (2000-2008) will be used for this study. However, it should provide a representative sample of GVSU graduate nursing students.

Limitations of the Study

One possible limitation of this study is that external factors other than the variables being studied may have impacted student outcomes/academic success. In addition, it is possible that the years studied are not representative of the entire population and that studying samples from other points in history may produce different results.

Organization of Thesis

This thesis is organized into five chapters. Chapter One serves as the proposal for the study and an introduction to the remainder of the document. Chapter Two provides an overview of the evolution of nursing education as well as a review of existing literature related to the reliability of various admission criteria in predicting success in graduate programs. The details of the research design are found in Chapter Three. The results of the study, organized by research questions are reported in Chapter Four, while Chapter Five presents the conclusions drawn from the research.
Chapter Two: Literature Review

Introduction

This chapter is comprised of two primary sections. The chapter begins with an overview of the history of nursing education at both the undergraduate and graduate level, including a brief synopsis of the history of graduate nursing at GVSU. It is followed by a review of current literature related to the predictive value of various subjective (personal interviews, written goal statements/essays) and objective (GRE scores, prior GPA) graduate school admission criteria.

Research/Evaluation

Evolution of nursing education. The training required for those preparing to become nurses has changed dramatically throughout history. Individuals no longer train to become nurses via observation and apprenticeship. By 2011, nursing education options include hospital-based training and associate degree programs, baccalaureate degrees in nursing, and graduate programs leading to either masters or doctoral degrees in nursing (e.g., PhD, DNP).

Historical overview. For many people, thoughts of early nursing and nursing education include Florence Nightingale, who was considered in the mid-1800s to be the “foremost authority on nursing in Great Britain, Europe, and the United States by the general public” (Judd, Sitzman, & Davis, 2010, p. 28). However, in its earlier forms, nursing education instead consisted
simply of learning via observation and apprenticeship. Rather than receiving any formal education, individuals working as nurses during the 1600s and 1700s relied on knowledge acquired by various means such as caring for ill or injured family members and friends. Even if textbooks had been available, most individuals drawn to nursing were functionally illiterate and would not have been able to read the materials (Kalisch & Kalisch, 2004).

Nursing education in a more formal format was initiated by a German Lutheran pastor, Theodor Fliedner, and his wife, Friederike, who opened a small hospital/infirmary in Kaiserwerth, Germany, in 1836. To provide the nurses needed by the new hospital, a training school was also established. Nearly 15 years later, the hospital/school established by Fliedner and his wife trained a young woman who is perhaps the world’s most famous nurse – Florence Nightingale (Donahue, 1996; Judd et al., 2010; Kalisch & Kalisch, 2004).

Nightingale, according to Judd et al. (2010), “believed that organized nursing education would provide a means to raise nursing to a respectable endeavor by clarifying standards for professional and personal conduct and standardizing how nurses provided care for the sick” (p. 29). In 1860, Nightingale established a training school for nurses at St. Thomas Hospital in London. Although supported by colleagues and the Nightingale Fund (a charitable foundation), it was opposed by 96 of the 100 London physicians surveyed. Primary objectives of this first-of-its-kind school were to train home
care and hospital nurses as well as to provide training to nurses in how to
teach other nurses (Dossey, 2000; Kalisch & Kalisch, 2004). Students (called
probationers) were primarily uneducated and from the middle-class ranks.
Their expenses were paid by the Nightingale Fund. After signing a four-year
contract, the nurse probationers “were to be admitted free of charge and were
to receive free room and board, their own tea and sugar, a washing
allowance, and a wage of 10 Lira for their first year” (Donahue, 1996, p. 222).
During their first year, students learned how to provide direct patient care both
in home settings and in hospitals. The following three years of their contract,
they worked at an approved hospital as staff nurses (Judd et al., 2010). Judd
et al. note that

The Nightingale Training School served as a model for the
establishment of other nursing schools across England, Europe, and
the United States. The Nightingale Training School’s training model,
coupled with the visibility of nurse graduates who were highly sought
after in England and elsewhere, helped open up a new and
respectable career option for women all over the world. (p. 30)

Nightingale later published *Notes on Nursing* (1859), a 79-page book
whose purpose was to instruct women on provision of basic nursing care to
family members. However, the Nightingale Training School also used it as a
text for its students. It is now considered the earliest modern nursing text
(Dossey, 2000; Judd et al., 2010; Kalisch & Kalisch, 2004).
Training of nurses in the United States also evolved during the early- to mid-1800s. During that time, nursing education consisted largely of attendance at occasional lectures given by physicians. In 1849, a commission established by the legislature in the State of Massachusetts to propose ways to promote public health recommended the establishment of institutions to train nurses. In the earliest of these formal training programs, at the New England Female Medical College, those wishing to become nurses were encouraged to attend medical lectures; they also received bedside nursing training (Kalisch & Kalisch, 2004). The first nurse training program was started in 1862 by Dr. Marie Zakrzewska in association with the New England Hospital for Women and Children. Schools modeled after Nightingale’s were started in several eastern cities in the United States in the early 1870s. The earliest students were trained for one year; however, the training was soon extended to three years as hospital administrators “realized that nursing students cheaply provided the bulk of the workforce needed to run a hospital, including all of the cleaning, food preparation, laundering, and patient care” (Judd et al., 2010, pp. 44-45). During their training, students were expected to work seven days per week for 70-90 hours per week.

**Nursing as an undergraduate major.** Florence Nightingale “revolutionized and professionalized nursing by stressing that nursing was not a domestic, charitable service but a respected occupation requiring advanced education” (Chitty, 2011, p. 147). Concern about the quality of nursing
training programs in the late 1800s and early 1900s led to the study of better ways to provide nursing education. Recommendations from the American Society of Superintendents of Training Schools for Nurses that nurses be prepared for leadership resulted in Teachers College and Columbia University becoming models for nursing education (Chitty, 2011; Judd et al., 2010). One of the first major reports, published in 1923 and known as the Goldmark Report, emphasized the desirability of nurse leaders trained at the university level, the problems with hospital-based nursing training schools, and the lack of funds specifically for nursing education. The Goldmark committee “concluded that the training of nurses was a serious educational business that must be directed by those who were primarily committed to quality nursing education” (Kalisch & Kalisch, 2004, p. 228).

Even before publication of the Goldmark Report, a nurse training school was established as a part of the University of Minnesota. It was a major step for nursing education, despite the fact that it offered only a three-year diploma and was a part of the College of Medicine. The first nursing school operated as an independent university department with its own budget, The Yale School of Nursing, opened in 1924 under the guidance of Dean Annie W. Goodrich (Chitty, 2011; Kalisch & Kalisch, 2004). In a 1932 report of the proceedings of the 38th convention of the National League of Nursing Education (NLN), Goodrich (as cited in Judd et al., 2010) noted that
Nursing education should find its place in the university, which is another way of saying that it belongs where all educational expressions have been increasingly placed, and for the reason that universal knowledge is there . . . [for] the needs of the students as future builders of the community. (p. 69)

Students were admitted to Yale’s program after having completed at least two years of college coursework, including courses in chemistry, psychology, and biology. They then embarked on a 28-month course of study that incorporated hospital service, community work, and public health and led to a Bachelor of Nursing degree. Despite the success of the Yale program, emulation was slow to follow. Opposition to nursing training at the university level came largely from private physicians, who believed nurses were over-trained, and hospital-based training schools, which believed that nursing training should consist of acquisition of technical skills and manual dexterity (Kalisch & Kalisch, 2004).

The need for nursing education to be based on “knowledge from the sciences and humanities” (Chitty, 2011, p. 150) was restated in numerous national studies in the ensuing years. The most major of these studies was Esther Lucille Brown’s *Nursing for the Future*, published in 1948 and commonly referred to as the Brown Report. The Brown Report recommended that basic nursing training/education be placed in universities/colleges. The Brown Report also recommended that all nursing
schools be examined and that only those meeting minimum requirements be accredited (Chitty, 2011; Kalisch & Kalisch, 2004).

Following World War II (WWII), despite a significant increase in students seeking college degrees, there was not a comparable increase in the number of baccalaureate nursing programs; most nurse training programs were still diploma programs associated with hospitals. Because they were supported by the hospitals, diploma programs were more concerned with the needs of the hospitals than the educational needs of their students. In addition, a newly developed educational model, the Associate Degree in Nursing (ADN), was developed in response to the nursing shortage that existed following WWII. There was rapid growth of ADN programs, primarily associated with the growing number of community colleges. With the increase in the number of ADN programs came a rapid decrease in the number of diploma programs (Chitty, 2011; Egenes, 2009).

In 1965, after in-depth study of nursing education, nursing practice, and trends in health care, the American Nurses Association (ANA) issued a position paper which again recommended that the education of licensed nurses take place in universities or colleges and that the baccalaureate degree be the minimum preparation for professional nursing (Chitty, 2011; Egenes, 2009). Although the position paper evolved out of concern about the changes necessary in nursing education as a result of advances in technology and changes in society, "publication of this document led to an
enduring rift in the profession and has discouraged movement toward the baccalaureate degree as the requirement for entry into practice for professional nursing” (Egenes, 2009, p. 20).

Despite the opposition, the number of baccalaureate programs in nursing has more than doubled since the 1960s. Following an enrollment decline in the 1990s, there has been a significant enrollment increase in the past decade (Scheckel, 2009). The American Association of Colleges of Nursing (AACN) (2011) reports that in 2010, 242,013 individuals applied to baccalaureate programs, up from 122,194 in 2004. However, only 96,975 of the applicants in 2010 were accepted, primarily due to a shortage of nursing faculty and resources.

**Graduate-level nursing education.** A shortage of nursing faculty is not a new phenomenon. In the 1960s, there were only 14 graduate nursing programs in the United States to train the nursing faculty required. A study commissioned at that time by the Surgeon General of the U.S. Public Health Service revealed that nursing faculty in all types of training/educational programs lacked adequate educational preparation. With so few graduate programs in nursing, nursing faculty were often forced to obtain graduate degrees in other disciplines such as education (Egenes, 2009). The increasing demand for graduate-level nursing education was the result of both the need for better-prepared nursing faculty and the continuing evolution of the nursing profession (Kalisch & Kalisch, 2004; Scheckel, 2009).
The purpose of graduate nursing education, according to Chitty (2011), is “to prepare persons with advanced nursing knowledge and clinical practice skills in a specialized area of practice” (p. 158). Although the earliest post-baccalaureate courses for nurses were offered by Teachers College, Columbia University, beginning in 1899 (Chitty, 2011), the first master’s degree in nursing was not available until the 1950s when Rutgers University offered a master’s degree in psychiatric nursing (Scheckel, 2009). A federal funding program established in 1964 facilitated the further development of graduate nursing programs (Egenes, 2009). As a result, according to Egenes, “the 1970s saw a rapid increase in graduate programs focused on clinical specialties and laid the basis for an expansion in advanced roles in nursing” (p. 21). As the number of master’s programs for nurses increased, so too did the support for master’s level education. In the late 1960s and again in the late 1970s, the ANA “advocated for nurses’ advanced preparation in theory to improve practice and in specialty nursing roles to offer high levels of competence in particular areas of nursing practice” (Scheckel, p. 40). Further support of master’s level nursing education was provided by the Council of Baccalaureate and Higher Degree Programs’ 1985 statement that “the nation needed nurses prepared with master’s degrees in nursing to meet society’s nursing needs” (as cited in Scheckel, p. 40).

During the 1950s and 1960s, the master’s degree was considered the highest degree nurses would need and was seen by many nurses as a
terminal (final) nursing degree. The majority of programs at that time offered degrees in and prepared nurses for careers in nursing education or nursing administration (Chitty, 2011). As nursing roles continued to expand, a program to prepare nurses to become nurse practitioners (NP) was introduced at the University of Colorado in the mid-1960s (Judd et al., 2010). Preparation at the master's level has continued to expand with degrees frequently offered that prepare nurses for advanced practice roles such as NPs and clinical nurse specialists, as well as nurse administrators, case managers, nurse anesthetists, and researchers (Chitty, 2011; Kalisch & Kalisch, 2004). Historically the most popular of these roles has been that of NP, with "nearly 48.5% of all master's level students enrolled in 2007-2008 . . . pursuing the NP credential" (Chitty, 2011, p. 159).

Education at the doctoral level, preparing nurses for administrative and teaching roles, has been formally available since the 1920s. At that time, nurses could receive an Educational Doctorate (EdD) at Teachers College, Columbia University (Scheckel, 2009). Obtaining a doctorate that included nursing content was not possible until the 1960s. Nurses were not able to obtain a doctorate in nursing until the 1970s (Carter, 2006), when it was recognized that nurses should have the "opportunity to conduct research and develop theory within their own discipline" (Scheckel, p. 42). In addition to a research-focused degree in nursing (PhD), the development of a Doctor of
Nursing Science (commonly designated as DNSc, DNS, or DSN) by Boston College offered nurses the option of obtaining a clinical doctorate (Scheckel).

The most recent change in doctoral education for nurses is the result of a proposal early in the 21st century by AACN that a new clinical practice degree – the Doctor of Nursing Practice (DNP) – be the requirement for certification and entry into advanced practice roles such as NP or nurse-midwife (Chitty, 2011; Judd et al., 2010). The DNP is considered "comparable to practice doctorates in fields such as pharmacy and physical therapy" (Scheckel, 2009, p. 43). Although there has been controversy related to the DNP (Scheckel), proponents of the degree see the DNP as one solution to the shortage of primary-care physicians (Chitty). In addition, DNP-prepared nurses may become nurse educators who help alleviate the shortage of nursing faculty (Scheckel).

Graduate nursing education at GVSU. Graduate level nursing education at GVSU has been available since 1981, when KCON admitted its first graduate students (L. Scott, personal communication, December 4, 2010). A lack of funds, however, required that the program be put on hold temporarily. It "became a reality [when] the first courses were offered in 1983" (KCON, 2003). At that time, students were able to earn a Master of Science in Nursing (MSN) degree with a "major in nursing at the secondary level of health care (acute care of the adult and child)" (GVSC, 1983, p. 233). By 1996, the KCON graduate program offered preparation for roles in nursing
administration and nursing education as well as six different advanced
practice clinical emphases (adult, child, elderly, family, women, and mental
health) (GVSU, 1996). In 2005, in alignment with the change at the national
level to prepare for advanced practice roles at the doctoral level, KCON
began the development of a DNP curriculum to educate students as nursing
specialists. Following approval of the program by the GVSU University
Curriculum Committee (UCC), the first cohort of doctoral nursing students
was admitted in 2009 and began courses that fall. The new curriculum offers
both nursing administration/health care systems and advanced practice
tracks. Students opting for the advanced practice track choose between two
foci: adult/older adult and child/adolescent.

The movement of advanced practice preparation to the doctorate
brought with it the need for KCON to rewrite the master's degree curriculum
as well. Nursing faculty members looked to the relatively new clinical nurse
leader (CNL) role as a guide in the development of the new master's
program. Although not required to do so, graduates of KCON's new master's
program will be eligible to sit for certification as CNLs. The program/
curriculum change was approved by GVSU UCC in March, 2010. The first
cohort of students was admitted to the new program that spring and began
classes in the fall of 2010.

Admission criteria. Processes for admitting students to graduate
programs continue to evolve as universities attempt to determine those
criteria that best predict academic success. According to Mountford, Ehlert, Machell, and Cockrell (2007), a “shift away from student preparation and toward the prediction of student success” (p. 195) happened in the 1920s. Thelin (2003) reports that beginning in the 1920s, some universities began implementing selective admission policies as a result of having more applicants than could be admitted. During the 1930s and 1940s, assessments, including the tests which later became the GRE, were developed to assist institutions in making admission decisions (Schietinger, Stickler, Fincher, Miller, & Lins, 1968). Demand continued to increase in the 1960s and 1970s, resulting in even greater selectivity by educational institutions (Mountford et al.). During the past two decades, there has been a “greater emphasis on student recruitment activities” (Mountford et al., p. 196), which has presumably resulted in a further increase in the number of applicants for a limited number of seats and a resultant higher level of selectivity.

Multiple criteria are generally considered in making graduate admission decisions. Across disciplines, criteria assessed frequently include some combination of subjective measures (personal interview, written goal statement) and objective measures (UGPA and standardized aptitude test scores [e.g., GRE]) (Burns et al., 1993; Crosby, Dunn, Fallacaro, Jozwiak-Shields, & MacIsaac, 2003; Walden, 1978; Wilson, 1999). The following
section will examine these admission criteria and their relationship (or lack thereof) to academic success.

**Subjective admission criteria.** In making graduate admission decisions, institutions often consider various subjective factors. Personal interviews and essays are among those most commonly considered (Wilson, 1999).

While many graduate programs require compulsory interviews (wherein all applicants are interviewed), only one study related specifically to nursing was located that examined the relationship between personal interviews and academic success. In a study of 435 graduate nursing students admitted to the Yale University School of Nursing, Munro (1985) found no significant correlation between interview scores and GGPA ($r=.02$), although a significant correlation ($r=.53$) was found for a sub-group of students admitted to the midwifery program ($n=33$). The interview score (range from 26 to 105) was the sum of numerical ratings “for each of seven categories ranging from motivation for nursing to interpersonal style” (p. 55).

Levine, Knecht, and Eisen (1986), in a longitudinal study of 56 individuals who applied over a two-year period for admission to a graduate physical therapy program, looked at how prior academic performance (measured by prior GPA) and personal characteristics (assessed via interview) correlated to clinical and academic success in the program. Twenty-five individual interviews (one faculty person and one applicant) were
held in 1982, with the interviewer asking a set of 16 questions with additional questions allowed as needed for clarification. In 1983, group interviews with 31 applicants were conducted. Groups generally included three faculty and five applicants, although some variation was required due to scheduling conflicts. For the group interview, each applicant was given two problems (the first was intended to determine knowledge of physical therapy; the second presented a moral/ethical dilemma). Applicants were instructed to discuss each question, disregarding faculty members who were present. Interviewers followed up with questions as necessary to clarify responses and/or solicit feedback from quieter applicants.

Individual interviews were scored using a Likert-type scale after each applicant left the interview. A maximum of 112 points were possible. Similarly, following the group interview, each faculty member individually scored each applicant, again using a Likert-type scale that covered the same variables as those considered in the individual interviews conducted in 1982. A maximum of 78 points were possible on the group interview. Faculty members then came to a consensus regarding the final interview score of each applicant who participated in the group interview. Analysis of interview scores in relation to academic performance in the program showed no significant correlation for either the individual \((r=-.22)\) or group interviews \((r=-.06)\).
These findings support the position of Walden (1978), who questioned the benefit(s) of interviews in relationship to the cost, particularly since an interview is merely a limited interaction that may or may not present a true picture of an individual applicant. He noted that the lack of proven effectiveness in predicting academic success may be a good reason for institutions to reconsider whether or not to require graduate admission interviews, instead suggesting that institutions place greater reliance on specific essay questions (or perhaps goals statements), with the objective of “translat[ing] into written form what one might hope to gain from a direct interview with an applicant” (p. 56).

In addition to helping admission committees assess writing ability and motivation (Munro, 1985), written goals statements can also help predict successful completion of graduate programs (Hansen & Pozehl, 1995). In a study of 157 graduate nursing students from a Midwestern university, Newton and Moore (2006) found that the applicants who demonstrated high level quality of writing in written goals statements also had high level performance in writing-intensive theory courses. Those students who had lower quality of writing on their written goals statements had lower level performance in the nursing theory course. To quantify the quality of writing, pre-admission goals statements were evaluated using a rubric developed by the investigators. Three areas (sentence structure, punctuation, and language) were evaluated using a Likert-type scale. Each area could receive a score ranging from 1 to
4 with the total possible score ranging from 3 to 12. These scores were then analyzed relative to grades received in a first-semester, writing-intensive theory course. The analysis indicated a moderately strong significant relationship \( r = .489, p < .01, r^2 = .239 \). Newton and Moore did not look at the relationship between the written goal statement and ultimate success within the program (as measured by GGPA). However, the results of this study do provide insight into the ability of a pre-admission written goal statement to predict writing success within the program.

A similar study was conducted by Mountford et al. (2007) who looked at the relationship between writing samples submitted as an application requirement and the scores received in an online writing course. In this study of more than 300 students admitted to a Doctor of Education (EdD) program from 1997 to 2003, a statistically significant but weak correlation \( r = .174 \) was found between the submitted writing sample scores and the online writing course grades.

Halberstam and Redstone (2005), in a study that looked at multiple admission criteria, including personal essays, for 23 applicants to a graduate program in speech-language pathology, found a statistically significant correlation \( r = 0.72, p < 0.01 \) between the quality of writing on applicants’ personal essays and their overall GGPA. Grammar, content, and commitment to the field were considered when evaluating personal essays utilizing a four-point scale (1=fair, 2=good, 3=very good, and 4=excellent).
Investigators noted that the range of scores was limited with only one personal essay being evaluated only *fair*. “It is speculated,” they stated, “that the ability to formulate and craft a well-written essay relates to the abilities required for good grades in graduate coursework, which typically involves a good deal of high level writing” (p. 268).

**Objective admission criteria.** As noted previously, numerous researchers during the past several decades have studied the predictive reliability of GRE scores and UGPA with inconclusive results. Although widely used by universities in making graduate admission decisions, the continued use of GRE scores remains a much-debated topic (Suhayda, Hicks & Fogg, 2008). While some early researchers (Ainslie et al., 1976; Stein & Green, 1970) found UGPAs and GRE scores to be only weakly associated with GGPA/academic success, others (Sime, 1978; Tripp & Duffey, 1981) found both the GRE and UGPA to be valid predictors of academic success.

More recently, in a meta-analysis of nearly 100 studies across multiple disciplines, Kuncel, Wee, Serafin, and Hezlett (2010) found both GRE-V and GRE-Q scores to be valid predictors of GGPA in both masters (effect size .30) and doctoral (effect size .27) programs. It should be noted that although no financial support was received for the research and/or authorship of the article, funding was received from the Educational Testing Service (ETS) (parent organization of the GRE) “to support graduate students to conduct the study” (Kuncel et al., p. 350). Thieman et al. (2003) also reported that in a
retrospective study of 121 graduate physical therapy students, cumulative GGPA was positively correlated with GRE scores ($r=.304$, $p<0.01$), albeit weakly.

Feeley et al. (2005), however, found that GRE scores alone were not valid predictors of GGPA/academic success. In a study of 142 master’s and doctoral communication students, a positive correlation with GGPA was reported only for GRE-V for master’s students ($r=.22$, $p<0.05$). GRE-V was not significantly correlated to GGPA for doctoral students, and GRE-Q was not significantly correlated to GGPA for either masters or doctoral students.

A limited number of studies specifically related to nursing have explored the predictive reliability of GRE scores (Newton & Moore, 2007). In particular, several recent studies involving graduate nursing students (Hansen & Pozehl, 1995; Katz et al., 2009; Newton & Moore, 2007; Suhayda et al., 2008) reported inconsistent findings similar to studies conducted in other disciplines. For example, Katz et al. found only a very weak correlation ($r=.16-.24$, $p<0.001-0.02$) between GRE scores and academic success as measured by cumulative GGPA. There was no relationship between the analytic or analytical writing scores and the cumulative GGPA. As a result, only 5% to 8% of the variance in cumulative GGPA was explained by GRE scores. Hansen and Pozehl (1995), however, reported that GRE-V was a strong predictor of academic performance, as well as the aggregate GRE score ($R^2=.34$; $F[2,56]=14.27$; $p<0.001$). In light of these findings, Hansen
and Pozehl advocate for the continued use of aggregate scores in admission decisions.

Suhayda et al. (2008) found that the combination of a cumulative UGPA or an undergraduate nursing GPA predicted academic success in 99% of the 738 graduate nursing student records that they examined. With these findings in mind, they determined that the GRE added no predictive value beyond an academic GPA. These findings were supported by Newton and Moore (2007), who found that although GRE scores correlated with academic success, UGPA was actually a stronger predictor of success. When performing a regression analysis, the authors found that UGPA was a significant predictor of GRE scores. GRE-V and GRE-Q scores were significantly higher for individuals who had an UGPA above 3.28 (t=2.75, df=115, p=0.008; t=2.03, df=115, p=0.046) respectively. The authors contend that these data support the use of UGPA rather than GRE scores for making admission decisions.

Summary

The training required for those preparing to become nurses has changed dramatically throughout history. Early nursing education consisted primarily of individuals learning via observation and apprenticeship (Kalisch & Kalisch, 2004). By the mid-1800s, a young woman named Florence Nightingale revolutionized nursing education. In response to her belief that “nursing was not a domestic, charitable service but a respected occupation
requiring advanced education" (Chitty, 2011, p. 147), Nightingale established a training school for nurses at St. Thomas Hospital in London (Dossey, 2000, Kalisch & Kalisch, 2004). The school served as a model for nursing schools in the United States and Europe. The school's training model and its highly sought after graduates “helped open up a new and respectable career option for women all over the world” (Judd et al., 2010, p. 30).

Growing concern about the quality of nursing training programs led to numerous studies of nursing education from the early through mid 1900s. The importance of nurse leaders being trained at the university level was a consistent theme (Chitty, 2010; Kalisch & Kalisch, 2004).

The first university nursing school to operate as an independent department opened at Yale in 1924. After completing at least two years of preparatory college coursework, students were admitted to a 28-month course of study that led to a Bachelor of Nursing degree. Both private physicians and hospital-based training programs opposed nursing training at the university level, and emulation of the Yale program was slow to follow (Kalisch & Kalisch, 2004).

In 1965, the ANA again recommended that nursing education should take place in universities. They further recommended that entry into professional nursing practice should be at the baccalaureate level. This recommendation has “led to an enduring rift in the profession and has discouraged movement toward the baccalaureate degree as the requirement
for entry into practice for professional nursing" (Egenes, 2009, p. 20). Despite
the opposition, since the 1960s the number of nursing programs at the
baccalaureate level has more than doubled (Scheckel, 2009). By 2010, the
number of applicants to baccalaureate programs exceeded 240,000. Due
primarily to a shortage of nursing faculty and resources, only 96,975 of the
applicants were accepted (AACN, 2011).

Although nurses could obtain graduate degrees in other disciplines
such as education (Egenes, 2009), the first master's degree in nursing was
not offered until the 1950s (Scheckel, 2009). A federal funding program
established in the mid-1960s helped facilitate the further expansion of
graduate nursing education (Egenes). A degree in nursing at the doctoral
level was not possible until the 1970s, although obtaining a doctorate in
another discipline with some nursing content had become an option ten years
earlier (Carter, 2006).

The most recent change in nursing education at the doctoral level is
the development of a clinical practice degree, the Doctor of Nursing Practice
(DNP). Nurses desiring a terminal nursing degree now have multiple options
including a research-focused degree (PhD) or a doctorate with a clinical focus
(DNSc, DNS, DSN, or DNP) (Chitty, 2011; Scheckel, 2009). AACN has
proposed that the DNP be the requirement for certification/entry into
advanced practice roles such as nurse midwives or NPs (Chitty; Judd et al.,
2010).
Graduate level nursing education at GVSU was first available in the early 1980s. The first students were able to earn an MSN with a “major in nursing at the secondary level of health care (acute care of the adult and child)” (GVSC, 1983, p. 233). The master’s program evolved and by 1996 offered multiple degree tracks including nursing administration, nursing education, and six different advanced practice emphases (GVSU, 1996). In response to the 2005 proposal by AACN, KCON developed a DNP curriculum to move preparation for advanced practice roles to the doctoral level. The first students were admitted to the new DNP program and began classes in fall of 2009. As a result of the movement of advanced practice preparation to the doctoral level, KCON also rewrote its master’s level curriculum. The new MSN program prepares students as advanced generalists and allows them to test for certification as CNLs. The first students in the new MSN program began classes in fall of 2010.

For decades, investigators in multiple disciplines have attempted to identify predictors of success in graduate programs. Graduate admission criteria considered frequently include some combination of subjective (e.g., interview, personal statement) and objective (e.g., prior GPA and standardized test scores [GRE, etc.]) measures. However, findings have been inconclusive across all studies using various methodologies.

When considering subjective measures, studies that evaluated personal interviews found no correlation between the interview and academic
success (Levine et al., 1986; Munro, 1985). Written goal/personal statements, however, were found to be reliable predictors of academic success, particularly in writing-intensive courses (Halberstam & Redstone, 2005; Mountford et al., 2007; Munro, 1985; Newton & Moore, 2006).

Perhaps of greater interest are the inconclusive findings related to objective measures. Some early researchers (Ainslie et al., 1976; Stein & Green, 1970) found UGPAs and GRE scores to be only weakly associated with graduate academic success. Others (Sime, 1978; Tripp & Duffey, 1981), however, found both UGPA and GRE to be valid predictors of academic success.

Recent studies have produced similar inconclusive findings. Kuncel et al. (2010), in a study indirectly funded by ETS (parent organization of the GRE), found both GRE-V and GRE-Q scores to be valid predictors of GGPA, as did Hansen and Pozehl (1995) and Thieman et al. (2003). Others, however, found either that GRE scores alone were not valid predictors of GGPA or that UGPA was actually a stronger predictor of academic success (Feeley et al., 2005; Newton & Moore, 2007; Suhayda et al., 2008).

Conclusion

As the literature review shows, findings from previous studies that examined the reliability of various admission criteria in predicting success in graduate programs, particularly nursing, have been largely inconclusive. As a result, further investigation is warranted. While it is important to look at other
disciplines and nursing programs, it is also important to know and understand
the specific data for students admitted to the graduate nursing program at
GVSU. This study, therefore, will examine the reliability of various admission
criteria in predicting the academic success of graduate nursing students at
GVSU.
Chapter Three: Research Design

Introduction

The purpose of this study was to review admission and exit data related to graduate nursing students at GVSU to determine whether the established admission criteria reliably predicted success within the graduate nursing program. A second goal of this study was to determine whether any one criterion was a better predictor of success. For the purpose of this study, success is defined as completion of the program of study.

Three primary research questions were considered in this study:

(1) Do GRE scores predict academic success in the graduate nursing program at GVSU?
(2) Do UGPA's predict academic success in the graduate nursing program at GVSU?
(3) Are GRE scores more predictive of academic success in the graduate nursing program at GVSU than UGPA's?

In this chapter, the selection of participants will be discussed, followed by a brief description of the instrumentation used in the study. Next a description of the data collection will address the dataset, protection of participants' identities, and potential risks and benefits to study subjects. Finally, data analysis methods utilized will be discussed.
Participants/Subjects

Since the focus of this study was on predictors of success within the graduate nursing program, participants were limited to graduate nursing students at KCON. The participant population for this study included all graduate nursing students admitted to KCON between August 2000 and August 2008 (N=292). However, because of missing data on one or more of the variables of interest, the final sample size was 256 graduate students. As a result, the findings of this study are based on data obtained from 87.67% of the students admitted to the KCON graduate nursing program during this time period.

Instrumentation

Given that the study used a retrospective design, no questionnaires, interview guides, surveys, etc., were utilized. A tool was developed by the researcher to facilitate data collection (Appendix A).

Data Collection

Prior to obtaining Human Research Review Committee (HRRC) approval for this study, permission to request access to the de-identified admission and academic information of graduate nursing students admitted to KCON between 2000-2008 was granted by the KCON Associate Dean for Graduate Programs (Appendix B). Following HRRC approval for the protection of human subjects (Appendix C), a de-identified dataset for the students admitted to the graduate nursing program between August 2000 and
August 2008 was obtained from the GVSU OIA. Specific information requested included selected demographic information, grade point averages, course repeats and/or incompletes, and date and semester of entry and exit.

Even though this was a retrospective study, several strategies were implemented to protect the participants in this investigation. Because the dataset was de-identified, all participants' identities were protected. There was minimal risk to the participants due to the anonymity of the dataset. All results were aggregated with no individual or identifying data reported. All data concerning this project, including electronic files, were kept on either a password protected computer or in a locked drawer. In summary, there were no perceived risks or benefits to students currently admitted to the program. Inasmuch as this was a retrospective study, there was no active participation by subjects.

**Data Analysis**

In order to answer the research questions posed for this study, the following data analyses were used. The data file obtained from OIA was imported into the SPSS-16.0. Prior to conducting the analysis, the imported file was double-checked for any data transfer errors to ensure accuracy. The level of significance was established at p < .05 for all statistical procedures.

Descriptive statistics were used to describe demographic characteristics of the sample and the variables of interest for the study. Bivariate procedures were used to explore differences in GRE scores by
selected markers of academic success. More specifically, independent t-tests were used based on levels of measurement of the independent variables. Similar procedures were used to determine differences in grade point averages by selected markers of academic success. In order to determine the best predictors of academic success, logistic regression analysis was planned to address the second goal of the study.

**Summary**

A retrospective study design was used to execute this study, yet it is recognized that it has limitations. The researcher was limited by the nature and quality of the previously-collected data (e.g., missing data), ultimately influencing the planned analysis. Due to missing data in the records of the participant population, a sample of 256 students admitted to the graduate nursing program between 2000 and 2008 was studied. Results of the study are discussed in detail in the following chapter.
Chapter Four: Results

Introduction

The purpose of this study was to analyze the admission and exit data of graduate nursing students at GVSU to ascertain whether the previously established admission criteria reliably predict academic success within the graduate nursing program. In addition, a secondary goal of this study was to determine whether any one criterion is a better predictor of success. For the purpose of this study, success is defined as completion of the program of study. Chapter Four presents the results of this study.

Demographic Information

Because this study focused on predictors of success within the graduate nursing program at GVSU, the study was limited to graduate nursing students admitted to KCON between August 2000 and August 2008. Missing data on one or more of the variables of interest reduced the initial participant population (N=292) to a final sample size of 256 graduate nursing students. The findings of this study, therefore, are based on data obtained from 87.67% of the students admitted to the KCON graduate nursing program during this time period.

The sample studied was predominantly female (n=230; 89.8%), with 26 male participants (10.2%). The age of the participants ranged from 21 years to 57 years with a mean age of 33.34 years (SD ± 9.53 years). While the vast majority (93%) of the participants were Caucasian (n=238), 17
participants were identified as an ethnic minority. Ethnicities represented were Hispanic (n=7), African-American (n=4), Asian (n=4), and American Indian (n=2). Ethnicity was not reported for one participant. Nearly all of the participants (n=247, 96.5%) were Michigan residents, representing 35 of Michigan's 83 counties. More than half of the study participants (n=154, 60.2%) were from Kent and Ottawa Counties. Two of the 11 non-Michigan residents were international students. The other nine non-Michigan residents were from Alaska, Illinois, Massachusetts, Minnesota, Ohio, and Wisconsin.

Findings

For the purpose of this study, academic success was defined as completion of the program of study. Of the sample studied, 159 (62.1%) completed the program of study; 97 (37.9%) left the program without being awarded a degree. An analysis of GRE scores earned by the participants is presented below.

**GRE scores.** Verbal, quantitative, and analytic reasoning GRE scores can range from 200 to 800. In addition, analytical writing scores can range from 0 to 6. In this study, verbal GRE scores achieved by participants ranged from 300-680 points with a mean of 475.62 (SD ± 76.16). Quantitative GRE scores ranged from 310-780 with a mean of 520.55 (SD ± 90.30), analytic scores ranged from 300-800 with a mean of 545.00 (SD ± 113.49), and analytical writing scores ranged from 2.5-6.0 with a mean of 4.088 (SD ± 0.73).
As noted in Chapter One, during the time period studied, KCON preferred applicant GRE scores that were greater than or equal to 400 on the verbal component, 400 on the quantitative, and either 400 on the analytic reasoning component or 4.0 on the analytical writing component. (Note: The GRE changed from having an analytic component to having an analytical writing component during the time period studied.) A summary of the GRE scores achieved by study participants is presented in Table 1 and Table 2.

Table 1

<table>
<thead>
<tr>
<th>Category</th>
<th>Verbal</th>
<th>Quantitative</th>
<th>Analytic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>300-680</td>
<td>310-780</td>
<td>300-800</td>
</tr>
<tr>
<td></td>
<td>475.62 ± 76.16</td>
<td>520.55 ± 90.30</td>
<td>545.00 ± 113.49</td>
</tr>
<tr>
<td></td>
<td>(n=256)</td>
<td>(n=256)</td>
<td>(n=122)</td>
</tr>
<tr>
<td>&lt;400</td>
<td>33</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>400-499</td>
<td>119</td>
<td>79</td>
<td>38</td>
</tr>
<tr>
<td>500-599</td>
<td>90</td>
<td>95</td>
<td>30</td>
</tr>
<tr>
<td>600-699</td>
<td>15</td>
<td>54</td>
<td>34</td>
</tr>
<tr>
<td>≥ 700</td>
<td>0</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

For the ≥ 700 range in the analytic scores noted above, one participant earned a perfect score of 800.
Table 2

GRE Analytical Writing Scores

<table>
<thead>
<tr>
<th>Category</th>
<th>Analytical Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>2.5-6.0</td>
</tr>
</tbody>
</table>

4.088 \pm 0.73
(n=130)

<table>
<thead>
<tr>
<th>Range</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>3.0</td>
<td>24</td>
</tr>
<tr>
<td>3.5</td>
<td>5</td>
</tr>
<tr>
<td>4.0</td>
<td>59</td>
</tr>
<tr>
<td>4.5</td>
<td>8</td>
</tr>
<tr>
<td>5.0</td>
<td>30</td>
</tr>
<tr>
<td>5.5</td>
<td>1</td>
</tr>
<tr>
<td>6.0</td>
<td>2</td>
</tr>
</tbody>
</table>

UGPA. For this study, UGPAs ranged from 2.30 to 4.0 on a 4.0 scale. The mean UGPA for the sample studied was 3.63 (SD \pm .40). Interestingly, the graduate nursing program admission criteria specifies an UGPA of 3.0 or greater. Despite this requirement, 16 of the study participants had UGPAs less than 3.0. Because the study utilized existing data, there was no opportunity to explain the discrepancy. Table 3 depicts UGPA by grade categories.
Table 3

Undergraduate Grade Point Average (UGPA)

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Undergraduate GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.30 – 4.00</td>
<td>3.64 ± 0.39</td>
</tr>
<tr>
<td>&lt;3.00</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>3.00 – 3.249</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>3.25 – 3.499</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>3.50 – 3.749</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>3.75 – 3.99</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>4.00</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>

**GGPA.** In order to remain in a graduate program at GVSU, including nursing, students must maintain a GGPA of 3.0 or higher. For the sample studied, GGPAs ranged from 1.83 to 4.0 on a 4.0 scale. The mean GGPA was 3.72 (SD ± .36). As noted on Table 4, 11 of the participants in this study (4.6%) had GGPAs below the required 3.0 GGPA. As was the case with UGPA, there was no opportunity to explain the discrepancy.
Table 4

Graduate Grade Point Average (GGPA)

<table>
<thead>
<tr>
<th>Category</th>
<th>1.830 - 4.00</th>
<th>3.72 ± 0.36</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3.00</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>3.00 - 3.249</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3.25 - 3.499</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>3.50 - 3.749</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>3.75 - 3.99</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Research Questions

Bivariate and inferential analyses were used to answer the research questions posed for this study. The results of each question are summarized in the following sections.

Research question 1: Do GRE scores predict academic success in the graduate nursing program at GVSU? Independent t-tests were used to compare average GRE scores between those participants who completed the program of study and those participants who did not complete the program of study. No statistical differences were noted in GRE scores between the two groups.
The mean GRE verbal score for those who received an MSN degree was 476.98 ± 77.66 while the mean GRE verbal score for those who did not receive an MSN degree was 473.40 ± 73.98 (t=.375, df=254, p=.716). Similarly, the GRE quantitative mean score was 524.53 ± 88.94 for those who received an MSN degree compared to 514.02 ± 92.56 for those who did not receive an MSN degree (t=.903, df=254, p=.367). For those participants who completed the analytic component (n=122), the mean was the same for both groups (M = 545.00), with slight differences in the amount of variance (SD ± 111.47 for those who received an MSN degree; SD ± 117.73 for those who did not receive an MSN degree) (t=.000, df=120, p=1.00). Based on these results, GRE scores did not predict academic success in this sample of students admitted to the graduate nursing program at GVSU.

**Research question 2: Do UGPAs predict academic success in the graduate nursing program at GVSU?** In order to determine if UGPAs could predict academic success, differences in grade point averages were first explored by grade category between the two groups. Independent t-tests were used to complete the between-group comparison.

UGPAs by degree completion/non-completion are listed in Table 5. Of the 97 participants who did not complete their MSN degree, 10 (10.31%) had grade point averages less than the previously-established admission criterion of 3.00. Five additional participants had UGPAs below 3.25, a typical cut-off point for graduate programs which have a GRE opt-out option.
Table 5
UGPA by Degree Completion

<table>
<thead>
<tr>
<th>Undergraduate GPA Category</th>
<th>MSN Degree (n=159)</th>
<th>No MSN Degree (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3.00</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>3.00-3.249</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>3.25-3.499</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>3.50-3.749</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>3.75-3.99</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>4.00</td>
<td>63</td>
<td>17</td>
</tr>
<tr>
<td>Missing</td>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>

Participants who completed the program and received an MSN degree had significantly higher (t=2.907, df=112, p=.004) UGPAs (mean = 3.684 ± 0.34) compared to those who did not complete the program/receive an MSN (mean = 3.5046 ± 0.46). These results suggest that UGPAs may predict academic success within the graduate nursing program at GVSU.

Research question 3: Are GRE scores more predictive of academic success in the graduate nursing program at GVSU than UGPAs? In order to answer this research question, the preferred statistical
procedure is a logistic regression analysis. Prior to conducting this procedure, the data were assessed for the presence of multicollinearity, a major assumption violation in regression procedures. Multicollinearity jeopardizes the ability to obtain stable regression coefficients and limits the ability to interpret the results with confidence. Because there were a number of significant correlations found between potential predictors, a diagnosis of multicollinearity was presumed. As a result, analyses were done using Pearson's Product Moment Correlations to describe the presence and magnitude of the relationships among UGPA and GRE scores with GGPA. For this procedure, GGPA served as the proxy measure for academic success.

A number of significant relationships were noted between GRE scores and GGPA (Table 6). In particular, weak, yet statistically significant, correlations were present between GGPA and verbal ($r=.147$), quantitative ($r=.209$) and analytic reasoning ($r=.227$) GRE scores. However, it was found that the correlation between UGPA and GGPA was much stronger ($r=.383$) than the correlations with GRE scores. Therefore, the findings suggest that UGPA may be more predictive of academic success than GRE scores.
Table 6
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GRE-V</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>GRE-Q</td>
<td>.319**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>GRE-A</td>
<td>.411**</td>
<td>.540**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>GRE-AW</td>
<td>.196*</td>
<td>.313**</td>
<td>N/A</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>UGPA</td>
<td>.189**</td>
<td>.158*</td>
<td>.207*</td>
<td>.020</td>
<td>1.00</td>
</tr>
<tr>
<td>6.</td>
<td>GGPA</td>
<td>.147**</td>
<td>.209**</td>
<td>.227*</td>
<td>.065</td>
<td>.383**</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01

Summary

This study analyzed the admission and exit data of graduate nursing students at GVSU to determine whether the previously established admission criteria reliably predict academic success within the graduate nursing program and if so, whether any one criterion is a better predictor of success. Study findings indicate that UGPA may be a more reliable predictor of academic success than GRE scores. The following chapter will discuss conclusions that might be drawn from these findings, how these findings might be utilized to revise admission criteria for applicants to the graduate nursing programs at GVSU, and suggestions for possible future research.
Chapter Five: Conclusion

Summary of the Study

This study sought to determine whether the established admission criteria at KCON reliably predict success within its graduate nursing program. A secondary goal of this study was to determine whether any one criterion is a better predictor of success. For the purpose of this study, success was defined as completion of the program of study. This study was completed by comparing two predictive preadmission criteria, GRE scores and UGPA, to exit GGPA. No statistical differences were noted in average GRE scores between those participants who completed the program of study and those participants who did not complete the program of study. Participants who completed the program of study and received an MSN degree, however, had significantly higher UGPAs than did those who did not complete the program of study.

Conclusion

Although GRE scores and UGPA are criteria for admission to many graduate nursing programs, including GVSU, previous research related to their reliability in predicting academic success has resulted in inconclusive findings. The results of this study indicate that while correlations are present between GRE scores and GGPA, there is a much stronger correlation between UGPA and GGPA. Based on the findings of this study, GRE scores did not predict academic success in this sample of students admitted to the
graduate nursing program at GVSU. These results suggest, however, that UGPAs may predict academic success within the graduate nursing program at GVSU, and that UGPA may therefore be more predictive of academic success in KCON's graduate nursing program than GRE scores.

Discussion

Nursing education and the nursing profession continue to evolve and change. As noted in Chapter Two, the repeated call by organizations such as the ANA and the Council of Baccalaureate and Higher Degree Programs (Scheckel, 2009) over the past several decades for nurses to be educated with advanced degrees supports the need for graduate nursing programs. In the wake of recently enacted health care reform, nurses will fill important, expanding roles which will require "higher levels of education and training" (IOM, 2010, p. 2), resulting, presumably, in an increased demand for admission into graduate nursing programs with limited capacities due to a shortage of human and fiscal resources. These shortages limit the number of applicants institutions can admit. It therefore becomes increasingly important that students be admitted who are most likely to be academically successful and that perceived barriers to application be eliminated where possible. If in fact the GRE is a significant barrier for some potential students (L. K. Buck, personal communication, September 9, 2010; Katz et al., 2009), requiring that applicants take the GRE may potentially limit KCON’s applicant pool. A larger applicant pool will allow GVSU/KCON to be more selective and
admit those students who are most likely to be successful, based on those
criteria shown to reliably predict academic success (i.e., UGPA).

Several previous studies have found GRE scores to reliably predict
academic success (Hansen & Pozehl, 1995; Kuncel et al., 2010; Thieman et
al., 2003). The findings of this study, however, align most closely with those
of Katz et al. (2009), who found only a very weak correlation between GRE
scores and academic success as measured by cumulative GGPA; Newton
and Moore (2007), who determined that UGPA was actually a stronger
predictor of success than were GRE scores; and Suhayda et al. (2008),
whose findings indicated that the GRE added no predictive value beyond an
academic GPA.

Recommendations

As previously noted, the findings of this study indicate that UGPA may
better predict academic success within the graduate nursing program at
GVSU than do GRE scores. These findings are supported by those of
previous studies (Katz et al., 2009; Newton & Moore, 2007; Suhayda et al.,
2008). Based on these findings, it is therefore recommended that KCON
waive the GRE as a pre-admission requirement for those applicants with a
prior GPA of 3.25 or higher.

One limitation of this study is that student outcomes/academic success
may be unrelated to the students’ innate ability but rather have been impacted
by external factors other than the variables studied. Although other reasons
for non-completion of a graduate nursing degree are often not officially documented, one possible focus suggested for future study is to determine the reasons for degree non-completion and whether or not there is any correlation to pre-admission criteria.

A second limitation of this study perhaps more germane to the issue of predicting academic success is that the GRE scores and UGPAs of only those students who were admitted were included in the dataset. Another suggestion for future study is to analyze whether or not the UGPAs and/or GRE scores of students who applied but were not admitted to KCON would have similar predictive validity.

Finally, this study did not explore the effect of demographic and personal variables on academic success. It is possible that variables such as age, gender and ethnicity, as well as socioeconomic and English proficiency could explain some of the variation in GGPA. It is important for future research to examine these issues and determine their role in academic success in pursuing graduate education.
References


Newton, S. E., & Moore, G. (2007). Undergraduate grade point average and Graduate Record Examination scores: The experience of one graduate nursing program. *Nursing Education Perspectives, 28*, 327-331.


Appendix A: Data Collection Form

1. Date of Entry: ________________ Semester ____________ Year

2. Date of Exit: ________________ Semester ____________ Year

3. Length of time between entry and exit: _______ years _______ months

3. Graduated: ___________ Yes ___________ No
   If yes: ________________ Semester ____________ Year

4. Date of Birth: ____________________________

5. Age at Entry: ____________________________

6. Marital Status: ________________ (for example, married, single, divorced)

7. Gender: ____________ female ____________ male

8. Ethnicity:
   ____________ White ____________ African-American
   ____________ Hispanic ____________ Asian
   ____________ Other: ____________________________

9. Household Income: $_____________ / year

10. County/State of residence at application:
    _______ _________ County _________ State

11. Date GRE taken: ____________ month ____________ year

12. GRE scores:
    ____________ Verbal ____________ Quantitative
    ____________ Analytic ____________ Analytical Writing

13. Overall Undergraduate Grade Point Average (GPA):
    ___________________________ / 4.0
14. Date of BSN: __________ month __________ year

15. Terminal GVSU Graduate GPA: ___________________/ 4.0

16. Non-GVSU Graduate GPA: ___________________/ 4.0

17. Repeated Courses:
   Number of repeats: ______________
   For each repeated course:
       __________ Name of course (i.e., NUR 530)
       __________ semester __________ year (date of initial enrollment)
       __________ semester __________ year (date of repeated enrollment)
       __________ grade for initial enrollment
       __________ grade for repeated enrollment

18. Incomplete Courses:
   Number of incompletes: ______________
   For each incomplete course:
       __________ Name of course (i.e., NUR 530)
       __________ semester __________ year (date of initial enrollment)
       __________ semester __________ year (date of repeated enrollment)
       __________ final grade for course

19. Number of credits earned in graduate program: ______________

20. Number of non-GVSU graduate credits earned: ______________

21. Number of credits attempted in graduate program: ______________

22. Number of non-GVSU graduate credits attempted: ______________
October 20, 2010

Ms. Lori B. Brown
Graduate Student
College of Education
Grand Valley State University

Dear Ms. Brown:

I am excited to hear about your thesis research, entitled "An Exploratory Study of Predictors of Academic Success in a Graduate Nursing Program." Even though you are completing this project as partial fulfillment of your graduate degree in education, your research efforts have the potential to inform the graduate admission process in the Kirkhof College of Nursing. Therefore, it is with great enthusiasm that I provide support for your endeavors.

You have my permission to request a de-identified database with information concerning the admission and academic profile of graduate nursing students admitted to the Kirkhof College of Nursing between 2000-2008. It is my understanding that this information will remain secure with access limited to you and your thesis chairperson.

I wish you much success with your research. I look forward to hearing the results.

Sincerely,

Linda D. Scott, PhD, RN, NEA-BC, FAAN
Associate Dean for Graduate Programs
Kirkhof College of Nursing
Appendix C: HRRC Approval

DATE: November 10, 2010

TO: Lori Brown, B.S.
FROM: Grand Valley State University Human Research Review Committee
STUDY TITLE: [197409-1] An Exploratory Study of Predictors of Academic Success in a Graduate Nursing Program
REFERENCE #: SUBMISSION TYPE: New Project
ACTION: APPROVED
EFFE C TIVE DATE: November 10, 2010
REVIEW TYPE: Exempt Review

Thank you for your submission of materials for this research study. The Human Research Review Committee has reviewed your submission and approved your research plan application under Exempt Review, category 1-4: analysis of existing records originally collected for non-research purposes. All appropriate authorizations have been recorded. This approval is based on no greater than minimal risk to research participants. All research must be conducted in accordance with this approved submission.

This EXEMPT research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 197409.

Exempt protocols do not require formal renewal. However, we do confirm on an annual basis that the research continues to meet the criteria for exemption and that there have been no significant changes in activity or key personnel. By November 10, 2011, please complete the brief Continuing Review Application Form, available in your IRBNet Project Designer, or from our website, www.gvsu.edu/hrrc, and submit this form via IRBNet.

Once study enrollment and data analysis have been concluded, please complete the Closed Protocol Reporting Form on our website, and upload a saved copy to IRBNet.

This project remains subject to the research ethics standards of HRRC policies and procedures pertaining to exempt studies.

Please note the following in order to comply with federal regulations and HRRC policy:

1. Any revision to previously approved materials must be approved by this office prior to initiation. Please use the Change in Protocol forms for this procedure. This includes, but is not limited to, changes in key personnel, study location, participant selection process, etc.

2. All UNEXPECTED PROBLEMS and SERIOUS ADVERSE EVENTS to participants or other parties affected by the research must be reported to this office within two days of the event occurrence. Please use the UP/SAE Report form.

3. All instances of non-compliance or complaints regarding this study must be reported to this office in a timely manner. There are no specific forms for this report type.
If you have any questions, please contact the HRRC Office, Monday through Thursday, at (616) 331-3197 or hrc@ovsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with this office.

cc:
GRAND VALLEY STATE UNIVERSITY
ED 695 Data Form

NAME: Lori B. Brown

MAJOR: (Choose only 1)

- Adult/High Ed
- CSAL
- Lib. Media
- Ed Tech
- Ed Leadership
- Elem. Ed.
- Ed. Diff.
- Mid. Or Sec.
- Reading
- Early child/ECDD
- EI
- LD
- TESOL

TITLE: An Exploratory Study of Predictors of Academic Success in a Graduate Nursing Program


SUPERVISOR’S SIGNATURE OF APPROVAL: [Signature]

Using key words or phrases, choose several ERIC descriptors (5 - 7 minimum) to describe the contents of your project.

1. Reliable predictors 6. Predictive reliability
2. Academic success predictors 7. Graduate admissions
5. GRE scores 10.