

2013

# Perceptions of Nursing Education Administrators Regarding the Relationship of Admission Criteria to Student Graduation

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## Recommended Citation

Cline, Joy F., "Perceptions of Nursing Education Administrators Regarding the Relationship of Admission Criteria to Student Graduation" (2013). *Theses, Dissertations and Capstones*. Paper 766.

# **Perceptions of Nursing Education Administrators Regarding the Relationship of Admission Criteria to Student Graduation**

A dissertation submitted to  
the Graduate College of  
Marshall University

in partial fulfillment of  
the requirement for the degree of  
Doctor of Education

in

Higher Education Leadership

by  
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December 2013

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## **Dedication**

I dedicate this dissertation to my husband, Richard Lee Cline, who has provided unwavering support through all my educational endeavors, and I am especially thankful for his encouragement throughout this dissertation process.

## Acknowledgements

I wish to especially thank Dr. Barbara Nicholson for her support and encouragement throughout this dissertation process. Without her patience and persistence, I would never have completed this dissertation. I also thank my committee members who supported me through the process: Dr. Lisa Heaton, Dr. Luke Eric Lassiter, and Dr. Cynthia Kolsun. I also want to thank all the faculty members at the Marshall University Graduate College for the knowledge that I gained in their classes and seminars.

I acknowledge all the persons in my life who have made this journey with me:

- My husband, Richard Lee Cline
- My children and their spouses, Lisa Cline (Dennis) Thornton and Richard Shane (Stacey) Cline
- My grandchildren, Jennifer, D.L., and Terrence Thornton
- My siblings and their spouses, Joe (Cassie) Cooper, Susan (Tim) Bratcher, and my sister-in-law, Mary Jean Cline
- My colleagues at the Marshall University College of Health Professions
- My friends who have consistently understood the frequent refusals of social events

I also want to thank the chairpersons who served as the sample in my study for their willingness to provide the time that it took to participate in the surveys and interviews, and for their forthrightness in the interviews. I could not have completed this study without them.

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## **Abstract**

This research investigated admission criteria of baccalaureate nursing students related to their success in a multi-state sample of peer universities in the United States. The researcher used mixed methods to collect data that were analyzed using descriptive and phenomenological approaches. The sample of the study was chairpersons from peer institutions of nursing. Data were collected based on the lived experiences of the chairpersons. The purpose of the study was to identify admission criteria that the schools in the study were using and to identify the criteria that predicted success as defined by graduation. The premise of the study was that if more students could graduate, the nursing shortage that is predicted could be mitigated. The findings of the study revealed that it is most likely that a combination of admission criteria predict student success in baccalaureate nursing programs. This study found that the criteria likely to predict success were overall college grade point average, college science grade point average, perseverance, and hardiness.

# CHAPTER 1

## **Perceptions of Nursing Education Administrators Regarding the Relationship of Admission Criteria to Student Graduation**

Many nursing schools are experiencing lower than desired graduation rates of students as evidenced by the interest that is being shown in the phenomenon by the National Council of State Boards of Nursing (NCBSN). One of the recommendations made by NCBSN in a policy position statement was that a full scale assessment be done to evaluate the reasons for lower than desired graduation rates in nursing school programs (NCSBN, 2009).

A related concern is the prediction of an even more severe nursing shortage than has been forecast in the past. Workforce analysts with the Bureau of Labor Statistics (2009) projected that more than 581,500 new registered nurse (RN) positions will be created through 2018, which would increase the size of the workforce by 22%, and employment of RNs is expected to see a higher increase than any of the other professions. Experts predict that the United States (U.S.) nursing shortage is projected to grow to 260,000 registered nurses by 2025 (Buerhaus, Anuerbach, & Stuiger, 2009). A shortage of this magnitude is twice as large as any previous nursing shortage experienced in the U.S. since the mid-1960s, and nursing school enrollments are not growing fast enough to meet the projected demand.

In 2009, in fact, the American Association of Colleges of Nursing (AACN) reported only a 3.6% increase in enrollment of student nurses which is clearly not great enough to meet the projected demand. If more student nurses were retained and graduated, it would increase the number of registered nurses available for employment, thereby helping to mitigate the nursing shortage.

In response to the concerns of NCSBN and the projected nursing shortage, state boards of nursing are stressing the importance of retention rates of nursing students more than in the past. Eighty percent is the benchmark number that the West Virginia Board of Nursing (WVBN) has historically used as the benchmark for student retention rates in the state's schools of nursing. The Board analyzes retention rates of students per academic year by reviewing self-reported numbers submitted by the schools of nursing that differentiate the numbers of students from one academic year to the next. The Director of Education of WVBN reports that there is no specific rule or position statement (state or national) that addresses the retention percentage required; thus, the percentages used are desired rates that the various state boards of nursing have established. If the retention rate of a WV school falls below 75%, the Board of Nursing will request a rationale and a plan of action from the school of nursing (C. Haynes, personal communication, June 28, 2010).

The National League of Nursing (NLN) is an accreditation agency for nursing schools that requests student graduation rates be reported through surveys. The NLN requires that each school select a graduation rate, and they recommend an 80% graduation rate from the nursing program within one and one-half times the length of the program (National League for Nursing Accrediting Commission, 2008). An experienced surveyor for the NLN relayed that most schools choose 80% as their desired graduation rate, although some schools will set the goal as high as 85% (M. Combs, personal communication, June 27, 2010). It is noteworthy that the NLN equates retention rate with graduation rate, whereas the West Virginia Board of Nursing measures retention per academic year.

## **Problem Statement**

Nursing schools are presently experiencing lower than desired graduation rates of students. The graduation rates are of particular significance due to the previously mentioned nursing shortage that is predicted to worsen over the next decade. If more students could be retained in nursing programs, the severe shortage of nurses that is predicted could be mitigated.

Admission criteria that nursing faculties use to admit students consist of a variety of criteria including standardized test scores, grade point averages, grades in specific courses, essays, and interviews (Ellis, 2006; Rosenberg, Perraud, & Willis, 2007; Sadler, 2003; Wolkowitz & Kelley, 2010). Identifying criteria which are predictors of student success is an important process for faculties. The faculty members at each school establish their own set of admission criteria; thus, criteria vary among programs. There is a paucity of research studies in the baccalaureate nursing literature that investigate the relationship, if any, of admission criteria to student graduation which prompts the question of whether admission criteria used by nursing schools have been examined for their relationship, if any, to retention and graduation rates. The scholarly literature focusing on associate degree, diploma, and licensed practical nurse (LPN) programs include some studies that explore admission criteria; but as is the case with the baccalaureate literature, these studies are few and are generally limited to one school of nursing. The hypothesis that grounds this study is that admission criteria of questionable value are perceived to be predictive and are currently used by nursing programs, and may be contributing to the lower than desired graduation rates that programs are experiencing.

In contrast to the limited number of published research studies that are specific to nursing student populations, there are copious research articles published in the broad education literature that address admission criteria related to student graduation in general college

populations. Among admission criteria addressed in the studies are reading comprehension, learning style, locus of control, advanced placement tests, personal essays, letters of recommendation, high school grades, interviews, and standardized test scores (Berhrman, & Street, 2005; Garton, Kitchel, & Ball, 2005; Gifford, Briceno-Perriott, & Mianzo, 2006; Kudlas, 2006; Murphy, Kliegr, Borneman, & Kuncel, 2009; Tam, & Sukhatme, 2004; Truell, & Woosley, 2008; Walters, Kyllonen, & Plante, 2006; Williford, 2009). The review of the general education literature reveals that some disciplines are similar to nursing in that there are limited numbers of studies which are discipline-specific that address admission criteria related to student graduation (Kudlas, 2006, Truell & Woosley, 2008). The literature review for this investigation included general education research as well as discipline-specific studies to determine whether similarities exist that may be common among disciplines. There may or may not be a relationship based on research in other fields that could shed light on the issue being studied.

This is a non-experimental descriptive study that collected and analyzed data regarding graduation rates, and the current admission criteria used by a public university in West Virginia and those of its 15 peer baccalaureate nursing programs located throughout the United States. The study also collected and analyzed the views of the chairpersons of nursing programs at each of those universities regarding their perceptions of the perceived-to-be predictive value of their admission criteria, and used phenomenological methods to conceptualize the chairpersons' consciousness of why students fail to succeed in nursing programs based on their lived experiences as educators who interact with nursing students. The study presumes that if educators could identify why students fail that admission criteria could be selected that would predict the students who were most likely to graduate from nursing programs.

## **Sample**

The researcher is a nursing faculty member at a public university in West Virginia. Fifteen peer institutions of the West Virginia school that have four-year baccalaureate nursing programs will serve as the sample for the study. The nursing schools that will be asked to participate are public institutions in the following states: Alabama, Illinois, Kentucky, Michigan, Missouri, North Carolina, North Dakota, Ohio, Pennsylvania, Tennessee, Washington, West Virginia, and Wyoming. The determination of peer institutions was accomplished by comparisons of community populations, geographical data, types of degrees offered, numbers of students and faculty members, and degree production by level and mix, and was provided to this researcher by the research department of the university of which the researcher is employed.

## **Methods of Study**

The study involved the use of both quantitative and qualitative methods. The quantitative element of the research involved the gathering and analyzing of admission criteria themselves and a survey of chairpersons of the nursing programs in the study sample through which perceptions were used to determine the extent to which any may be viewed as likely predictors of student graduation. The qualitative component involved a phenomenological analysis of the data that were gathered via interviews with those chairpersons.

The investigator used the schools' websites to identify current admissions criteria being used by the researcher's university and the peer schools that comprised the sample. Subsequent to admissions data gathering and analysis and the administration of the brief survey, a personal interview was conducted by the researcher with each chairperson or designee of the universities to confirm the information found on the schools' websites, and to solicit the perceptions of

nursing program chairpersons regarding the extent to which their schools' admission criteria were perceived to be helpful predictors of students' graduations. This qualitative element was conducted in an effort to gauge the perceived effectiveness of each school's criteria as seen through the lived experiences of the chairpersons of the nursing programs.

### **Purpose of Research**

The goal of the research was to assist nursing faculties, particularly those in the peer institutions in this study, in determining what kinds of admission criteria were currently in use, which of those were viewed as likely predictors of student graduation, and the satisfaction levels of the selected chairpersons (i.e., those within the sample of peer institutions) with their schools' respective admission criteria as well as their views as to what caused students to fail their programs of study. The researcher plans to share information derived from the study with the various nursing faculties of the schools in the research sample and to all nurse educators via the scholarly literature.

### **Research Questions**

The research questions that were addressed in the study are the following:

- To what extent, if any, are quantitative academic admission criteria (i.e., standardized test scores, overall pre-nursing college grade point averages, overall pre-nursing college math grade point averages, overall pre-nursing college science grade point averages, age, sex, socio-economic status, ethnicity, and previous work experience in health related fields) perceived to be predictive of student graduation in selected baccalaureate nursing schools?

- To what extent, if any, are non-quantitative admission criteria [i.e., specific character and/or personality traits (i.e., integrity, hardiness, locus of control, and perseverance) as measured by interviews, letters of recommendation, resumes, and personal statements] perceived to be predictive of student graduation in selected baccalaureate nursing schools?
- To what extent, if any, are nurse education administrators satisfied with the current admission criteria that are being used to admit nursing students at their individual schools?

### **Glossary of Terms**

The following terms were relevant to this study.

**Admission criteria:** standards used to determine whether students are admitted to nursing schools

**Culture:** dynamic processes or sets of practices that span within and across populations; not something that is innately possessed, per se, but instead practiced (E. Lassiter, personal communication, November, 5, 2013)

**Ethnicity:** relating to groups of people who have common cultural traditions and values

**Hardiness:** robustness; able to endure difficult conditions

**Integrity:** quality of having strong moral principles

**Locus of control:** the viewpoint of a person who sees life within her control (i.e., internal) or outside of her control (i.e., external)

**Math grade point average:** the grade achieved in one college math course (e.g., college algebra)

**Perseverance:** endurance; ability to continue in a course of action in spite of difficulty encountered

**Personal statements:** essays written by potential nursing students for the purpose of gauging whether the student is prepared to enter a nursing program of study

**Pre-nursing grade point average:** the overall college grade point average achieved in college classes that precede nursing classes

**Pre-nursing science grade point average:** the grade point average achieved in a combination of college science courses (e.g., anatomy, physiology, chemistry, and microbiology) that precede the beginning of nursing courses

**Sex:** male or female

**Socio-economic status:** concerned with the interaction of social and economic factors; the social level at which one lives (e.g., lower, middle, or upper social class); standard of living in relation to material comforts

**Standardized test scores:** Common tests (e.g., American College Test, Scholastic Aptitude Test) given to potential nursing students to compare their scores to national mean scores, often used by nursing schools as an admission criterion

## **Chapter 2**

### **Literature Review**

Reliable admission criteria are of utmost importance to nursing programs due to scarcity of learning resources (e.g., faculty members, clinical sites, classrooms, and learning labs) available which restricts the number of students who can be admitted (Charting Nursing's Future, 2010). When these restrictions are combined with the predicted shortages of nurses over the coming decades, the result could be critical for the health of U. S. citizens, especially when considering the projected increase in the elderly population due to aging baby-boomers who are approaching the last decades of their lives (Bureau of Labor Statistics, 2009). These issues make it especially important for nursing programs to have reliable admission criteria, and to retain those students who are admitted.

Research on the topic of criteria used to admit students in baccalaureate nursing programs in the United States is sparse in the scholarly literature. Independent variables commonly used in existing studies include pre-nursing overall grade point averages, pre-nursing math and science grade point averages, standardized test scores, admission interviews, and admission essays (Ellis, 2006; Rosenberg, Perraud, & Willis, 2007; Sadler, 2003; Wolkowitz, & Kelley, 2010).

Since research in the baccalaureate nursing field on the topic of admission is minimal, this literature review will include historical research related to admission criteria used to admit baccalaureate nursing students to provide a retrospective, longitudinal view of the problem. In addition to reviewing baccalaureate nursing admission data, this study will examine research from other types of nursing education including associate degree and diploma registered nurse programs. The scholarly literature in health care disciplines other than nursing (e.g., radiology and athletic training) will also be reviewed as well as studies from the general education literature in an effort to see if similarities exist among disciplines.

Unlike the minimal studies that have been published on admission criteria used to admit nursing students in the United States, international research (e.g., Canada, Israel, and England) offers numerous studies on admission criteria related to nursing student success. Some international studies will be included in this literature review as they relate to the topic of interest.

The most common criteria used in nursing programs admissions (i.e., grade point average, standardized test scores, interviews, and essays) will be used as the headings within each section, and will be followed by subheadings of historical perspective, current practice in baccalaureate programs, international programs, practice in other related nursing programs and allied health programs, and general education programs.

### **Grade Point Average**

Pre-nursing grade point average (GPA) is consistently used as an admission tool in nursing schools, and has commonly been used as an independent variable in investigations of admission criteria as related to student nurse graduation during the past three decades. This section of the literature review will examine the research on the use of GPA as a predictor in baccalaureate nursing student graduation historically, in current practice, in international context, in other nursing and allied health programs, and in the general education literature.

#### **Use of GPA as an Admission Criterion in Baccalaureate Nursing Programs**

Even though the vast majority of studies have found GPAs to be a valid admission indicator (Byrd, Garza, & Nieswiadomy, 1999; Hayes, 1982; Hayes, 2005; Newton, Smith, Moore, & Magnan, 2007; Westcott, C. L., 1997; & Wold & Worth, 1990), and most nursing schools use GPAs in their admission screening profiles, graduation rates in many schools

continue to remain lower than desired (National Council State Boards of Nursing, 2009). The limitations cited in some studies that researched pre-nursing GPAs raise the question of whether extraneous variables can be controlled sufficiently for the results of these studies to be reliable. Among the limitations to research that attempts to discover whether GPA is a predictor of educational success is that students have a varying number of pre-nursing credit hours, and learn to manipulate the academic system to inflate their grade point averages through use of transfer credits, repeating failed classes, enrolling in easy courses, attending a variety of educational institutions to complete their undergraduate work, and participating in academic forgiveness programs (Byrd, Garza, & Nieswiadomy, 1999; Wold & Worth, 1990).

Westcott (1997) argues that GPA does not always reflect intellectual ability; instead it is often influenced by the student's ability to memorize and reproduce what she has been taught, rather than reflecting the student's ability to think critically. Westcott further contends that early college GPA may be influenced strongly by students' preparations for college, their developmental level, and extraneous variables such as academic deficits, school or social adjustment difficulties, language differences, economic problems, or family responsibilities.

Another limitation cited by Wold and Worth is the lack of persistent annual studies of nursing students to cross-validate the results of ongoing studies of admission criteria related to student graduation. Validation could be achieved by redrawing and checking samples as long as the prediction battery that was tested in the research continued to be used. Such ongoing research is not prevalent in the nursing literature; however, nursing organizations are encouraging researchers to do more longitudinal as well as multi-site studies in an effort to produce reliable data that faculty members can use with a high degree of confidence (National League for Nursing, 2011).

Some studies include reports that specific grades and/or cumulative GPAs in science and math courses are predictors of success in nursing programs. Byrd et al. (1999) in a uni-site study reported that grades in science classes, specifically biological science courses and chemistry were predictors of student success in nursing classes. Catherine Hayes (2005) used discriminant analysis of data to study nursing students in three universities in Mississippi, and among her findings was that attrition of students was related to grades in pre-nursing chemistry and microbiology. Alden (2008) found correlations between and among cumulative GPA in anatomy and physiology, microbiology, psychology, and statistics and early academic success in a nursing program.

### **International Studies on Use of GPA as an Admission Criterion**

Two studies (Bolan & Grainger, 2003; Salvatori, 2001) from Canada support overall GPA, as well as science and math GPAs, as reliable indicators for admission to nursing programs; however, both studies discuss other criteria which may be contributing to student failure. Salvatori (2001), in her interdisciplinary study that included nursing students in a broader population of students, related that although GPA has been consistently found to be a predictor of academic performance in research studies, it may not be a reliable indicator because pre-nursing grades may not be comparable across pre-discipline institutions of learning. Salvatori also questioned the restriction of range in grades which she believed poses an additional problem because most students who apply to nursing programs have strong academic backgrounds and high grades which cause limited variability in research data. Siu and Reiter (2009) similarly reported this high degree of homogeneity to be present in medical student applicants.

Bolan and Grainger (2003) studied students who were admitted to baccalaureate of nursing programs directly from high school. The study recommended that high school GPA

continue to be used as a criterion for admissions to nursing programs as well as continuing to give special consideration to sciences, languages, literature, and mathematics when ranking applicants. Other recommendations that resulted from the research were that high school peer groups should be considered for admission to provide support for students who will live away from home for the first time in their lives. The researchers also emphasized the roles that faculty advisors and senior students have in decreasing stress levels of students admitted directly from high school. An additional suggestion was that clinical hours should be increased and exposure to the clinical area should start at an early level in the program to assist students in gaining confidence.

### **Use of GPA as an Admission Criterion in Other Nursing and Allied Health Programs**

Two dissertations in the associate degree nursing (ADN) literature that were completed to determine predictors of success in ADN programs studied GPA as a predictor of graduation. Jackson (2002) questioned whether there were combinations of pre-nursing criterion that would predict ADN students' successes in college. The study, done at the fourth largest community college in the state of Florida with a sample of 235 subjects used five variables: academic achievement, English proficiency, achievement tendency (i.e., the difference between one's motivation to approach success and the motivation to avoid failure), weekly hours of employment, and level of financial difficulty. Three variables -- pre-semester GPA (i.e., semester prior to first nursing class after admission to program), reading level, and language level -- showed a significant relationship to graduation of students in first semester nursing courses. The other three variables -- achievement tendency, weekly hours of employment and level of financial difficulty -- were not found to be significant in the study.

Frazor (2004) also attempted to discover pre-nursing variables that would predict student success in ADN programs focusing on the relationship, if any, between academic achievement -- as measured by pre-requisite GPAs, scores on the American College Test (ACT) -- and student grades in nursing courses taken during the first year of the two-year program. The researcher did find a statistically significant relationship between graduations of students and pre-nursing (pre-requisite courses) GPA, but the relationship between graduation of students and the ACT was not statistically significant. As a result of the research, Frazor recommended that nursing faculties of associate degree programs cease using ACT scores as an admission criterion.

It is interesting to note that other health care disciplines have the same student graduation problems as nursing, leading to similar research on admission criteria as related to student success. Kudias (2006) studied multiple two-year radiology programs in the United States to see if a correlation existed between admission criteria and graduation rates. The survey requested information from the programs related to the dependent variable of graduation, and the independent variables of high school GPA, college GPA, selective GPA (i.e., science and math courses), reference letters, reference checks, writing samples, standardized test scores, non-cognitive test scores, criminal background checks, drug testing, departmental observation, and personal interviews. The results revealed that only selective GPA and reference letters were significantly correlated to increased graduation rates of students. A related finding of the study was that hospital-based and certificate-granting programs showed higher graduation rates than did other types of institutions (i.e., college degree-granting programs). The finding was attributed by the researcher to the possibility that hospital-based and certificate-granting programs admit fewer students and provide students with environments in which they feel more connected to the institutions both socially and academically

## **GPA as an Admission Criterion in Other Programs**

Much of the recent general higher education literature is focused on graduation of students through post-admission strategies such as advising and tutoring programs as opposed to studying pre-college factors (e.g., high school GPAs and ACT test scores); however, a few studies researched pre-admission variables used for general college admission in relation to student graduation (Goenner & Snaith, 2004; Scott, Tolson, & Huang, 2009; Tam & Sukhatme, 2004; Truell & Woosley, 2008; Williford, 2009). These studies used either overall high school GPA or a student's high school percentile rank upon graduation as an independent variable with graduation in the university setting as the dependent variable. The researchers agreed with the majority of nursing studies that found GPA to be the most reliable indicator for admission of students into college; however, the authors caution that their studies have weaknesses related to identifiable extraneous variables and the strong possibility of confounding variables. As a result, the researchers strongly recommend that more studies be done in order to prove or disapprove the results of their studies.

One of the concerns expressed in a study by Sadler and Tai (2007) included how advanced placement (AP) high school course grades are calculated in the college admission profile. Advanced placement courses generally focus on intense discussions, collaborative problem solving and learning to write clearly and persuasively as opposed to engaging in memorizing facts and figures. It is widely thought that AP courses can assist students to acquire skills and habits needed to succeed in college (College Board, 2012). Students are often encouraged to take AP courses even though they may earn lower grades in those classes. Paradoxically, students who do not take AP courses may find it hard to compete in the admission process with top students in AP programs who may have well over a 4.00 GPA. Some colleges

“un-weight” the GPA so as to give those who were not in AP classes a better chance of competing, but is that fair to the students in AP programs who may have scored lower grades than they would have if they had enrolled in regular classes? Sadler and Tai (2007) studied three high school variables: high school science grade, high school course level (regular, honor, and advanced placement), plus AP examination score. These three variables were compared with how students performed in their introductory college biology, chemistry, and physics coursework. The two variables that were found to correspond substantially to the college science courses were increasing rigor of high school science experience(s), and higher grades in high school science courses. The researchers stated that the study results can be interpreted to mean that advanced placement courses are a significant predictor of satisfactory performance in college science classes, although they recognize that there are many extraneous variables (e.g., student motivation, parental influence, and teacher quality) that could have influenced the college science course grades. The researchers did not include a recommendation as to how AP courses should be calculated in the admission profile, but it was clear that the rigor of AP science classes would likely result in a better chance of success in college science classes. It should be noted that the AP courses studied by Sadler and Tai were not inclusive of honors classes.

General education researchers consistently recommend that pre-nursing high school or college grades continue to be used as criteria for admission to higher education disciplines. Overall GPAs as well as GPAs in specific courses (e.g. sciences and languages) were found to be significant indicators of student success. In spite of their recommendations to continue to use GPAs as an admission indicator, however, researchers find it worrisome that extraneous variables (e.g., inconsistent grading across institutions of learning, and the ability of students to manipulate grades by repeating classes and participating in academic forgiveness programs) are

troublesome and could be interfering with the validity of the results of the research studies. Geiser (2009), a research associate at the University of California (UC), Berkley and formerly director of admissions research for the UC system, whose work has shaped numerous general admission initiatives undertaken by UC and has influenced decisions made by the College Board (i.e., non-profit organization committed to excellence and equity in education whose focus is to assist students to acquire skills and habits needed to succeed in college [College Board, 2012]) on revisions of the Scholastic Aptitude Test (SAT), advised researchers regarding validity of past studies of the SAT. He explained that simple bivariate correlation methods as done in studies of the SAT by the College Board can be misleading. For instance, if the independent variable were the Scholastic Aptitude Test (or GPA) and the dependent variable were student graduation, the correlation could be misleading because it could mask the contributions of socioeconomic status and other factors to this prediction. Geiser suggested that multiple regressions that involve additional admission factors (e.g., student manipulation of grades, family income, parents' education levels, high school quality, etc.) be used to attempt to control these extraneous variables. Geiser's advice illustrates the need for nurse researchers to use strong statistical methods that will provide valid information that can be relied on by nursing faculties.

### **Section Summary**

The research on GPAs and graduation supports the continued use of GPAs as admission criteria to nursing programs, but warns that other variables (e.g., socioeconomic status, inability to meet physical and psychological needs of self and family, lack of knowledge of available resources, etc.) are likely contributing to the lower-than-desired graduation of nursing students. Geiser's (2009) advice illustrates the importance of attempting to control extraneous variables in the statistical methods used in future research studies.

## **Pre-Admission Entrance Tests**

Testing tools commonly used by nursing schools as screening devices for admission include the American College Test (ACT) and the Scholastic Assessment Test (SAT), as well as nursing-specific entrance tests which include the Health Education Systems, Incorporated (HESI) exam, the Test of Essential Academic Skills (TEAS), the Nurse Entrance Test (NET), and the National League for Nursing Pre-Admission Examination (NLN-PAX).

### **Historical Perspective on Use of Testing as an Admission Criterion**

The most common tests used for college admissions are the ACT and the SAT I which are designed to assess high school students' general education knowledge and their abilities to complete college-level work (Geiser, 2009). Much of the content in the SAT I (which tests general reasoning ability) is less linked to what students study in school than is the ACT (which places more emphasis on content mastery). The content of the ACT is derived from surveys of high schools' curricula and reviews of state educational standards. In spite of the differences, however, both tests are used by colleges and universities to compare students against one another rather than to assess curriculum mastery (Geiser, 2009).

Four topics are covered on the ACT: English, mathematics, reading, and science. The ACT writing examination is an optional part of the test which measures skills in planning and writing a short essay, and the ACT is geared for students who are strong in language (The ACT, 2009). In comparison to the ACT, the SAT I is written in a more traditional test format. Those students who do well with shorter sections and frequent switching between subjects will likely prefer it (Porcaro, 2009). Another difference between the tests is that the SAT I lists the questions by degree of difficulty. The choice of which test is administered to students depends primarily on the part of the country in which they reside. The SAT I is used more in the Eastern

and Western sections of the United States while the ACT is primarily used in the Midwestern and Southern regions (Porcaro, 2009; O'Shaughnessy, 2012).

An achievement test called the SAT II adds to the array of examinations used to measure student learning. It is a test that measures mastery of specific high school subjects which makes it more similar to the ACT than the SAT I (Perez, 2002). The SAT II is a set of 20 different tests focusing on specific disciplines such as English, history, social sciences, mathematics, physical sciences, and foreign languages. Each subject test lasts one hour and consists of multiple choice questions with the exception of a portion of the writing test which includes an essay section (About the SAT II Subject Tests, Kaplan, Inc., 2005). The SAT II is used by colleges to decide which course of study is appropriate for the students once they have been admitted. A low score on the writing test might mean the student has to take remedial English, whereas a high score on a math test may mean that the student will be exempted from an introductory math course. Colleges also use the SAT II as an admission tool to compare applicants from different educational backgrounds and different high schools which helps to decide whether students are ready for the college's curriculum (About the SAT Subject Tests, The College Board, 2012). Both the SAT II and the ACT are achievement tests, whereas the SAT I is an aptitude test that measures inherent ability and deductive reasoning skills.

### **Use of Testing as an Admission Criterion in Baccalaureate Nursing Programs**

Nursing schools vary as to which tests (e.g., ACT or SAT I) they accept and which parts of the tests they use to award the admission points that determine students' rankings. Some nursing schools use composite scores of the tests while other schools may use only the verbal or math scores. The choices of which tests and which parts of the tests to use are decided by the individual schools of nursing faculties.

Even though the ACT and SAT I are used frequently by nursing schools, there is a paucity of published research that addresses the reliability of these tests when used for baccalaureate nursing student admissions. Wold & Worth's (1990) classic study of nursing admission criteria -- which used numerous independent variables, was a longitudinal study, and is persistently cited in the literature -- used the SAT I verbal score as one of several variables tested as potential predictors of student success along with seven academic courses (i.e., anatomy, physiology, bacteriology, organic chemistry, inorganic chemistry, general psychology, and child development), pre-requisite college courses GPA (i.e., those specific courses required for admission to the nursing program), overall pre-nursing college GPA (i.e., all college courses that student has completed at the point at which they applied to the nursing program), Inference Test (i.e., an Educational Testing Service instrument that measures logical reasoning), the Extended Range Vocabulary Test, and Witkin's Groups Embedded Figures Test. The researchers collected data over four successive cohort classes of nursing students for the five semesters of the upper-division classes of the baccalaureate nursing program. Participation was 100% ( $n = 155$ ) on all variables except the SAT verbal. Not all students had taken the SAT, thus 100% participation was not possible. Stepwise multiple-regression showed that the best predictors of performance were the GPA in the seven required pre-requisite courses (i.e., anatomy, physiology, bacteriology, organic chemistry, inorganic chemistry, general psychology, and child development) and the verbal SAT score. The other variables -- overall GPA, Inference Test, Extended Range Vocabulary Test, and Witkin's Group Embedded Figures Test -- were not perceived to be predictors.

A Delta State University dissertation (Hayes, 2005), important because it is a multi-site study albeit in one state, studied three baccalaureate nursing schools in Mississippi. A population

of 188 students was studied over a period of two years through the quantitative, non-experimental study. The independent variables in the study were ACT composite score, ACT reading sub-score, ACT mathematics sub-score, GPA for pre-requisite course work, number of institutions previously attended, and letter grades in the courses of anatomy and physiology, college algebra, English I, chemistry I, and microbiology. Of the total population, 139 students were retained, while 49 failed (a 64% retention rate for the two-year period). Students who failed had an average ACT composite of 20 as compared to the successful students' average score of 23. Other mean scores for the students who failed were an ACT reading score of 21 and ACT mathematics score of 19 as compared to ACT reading score of 24 and ACT mathematics of 21 for those students who passed. The mean GPA for students who failed was 3.1 in pre-requisite courses as compared to 3.5 for students who passed, and the number of past institutions attended for the group who failed was 2.0 while the successful group had attended 2.4. The study indicated that the ACT composite and grades in pre-requisite coursework were the variables that were the most significant. Limitations of the study were identified as geography (i.e., limited to the state of Mississippi) and the time for collection (only two years). Another limitation that Hayes identified was that the study was descriptive and the data were analyzed through discriminant analysis which prompted her to recommend more sophisticated statistical tests be used in future studies.

### **Use of Testing as an Admission Criterion in Other Nursing and Allied Health Programs**

Another dissertation that was written in Mississippi (Gilmore, 2006) studied student success in an AD nursing program in two rural community colleges. The purpose of the study was to assist nursing programs in determining admission criteria that could be used as predictors of student success (i.e., passing grade of C in each required course) throughout the program of

study, and to predict success (i.e., measured by pass or fail) on the National Council Licensure Examination for Registered Nurses (NCLEX-RN) as well. The independent variables were ACT composite score, ACT math sub-score, ACT reading sub-score, ACT English sub-score, ACT science sub-score, anatomy and physiology grades, and cumulative GPA prior to entering nursing school. Statistical tests (i.e., analysis of variance and logistic regression) showed that all the independent variables in combination were predictors of success in the nursing programs. The ACT English sub-score was the only variable that was individually significant as an independent variable of success (i.e., passing grade of C in each required course) while nursing GPA was the only variable that was an independent predictor of NCLEX-RN success (i.e., measured by pass or fail).

Researchers from the discipline of athletic training (Platt, Turocy, & McGlumphy, 2001) investigated the reliability of the SAT I scores and high school GPAs for athletic training and five other allied health disciplines (i.e., health management systems, occupational therapy, perfusion therapy, physician assistant, and physical therapy). The purpose of the study was to compare the SAT I scores and high school grade point averages among disciplines as they relate to success in college classes as measured by cumulative GPAs upon graduation. The population consisted of a mix of 373 students from the six allied health programs, and the stepwise forward regression analysis revealed that high school GPA and SAT I verbal scores were predictors of college GPA in the group as a whole. The SAT I math score, however, was not perceived to be a predictor of college GPA of the group. When the researchers separated the disciplines and looked at them individually, the SAT I math score was a significant predictor only in perfusion technology and physician assistant programs, while the high school GPA and the SAT I verbal were predictors of college GPA in both occupational therapy and physical therapy. Neither of the

variables was perceived to be predictors for the health management systems group. Limitations of the study that may have caused variations in the results were that 75% of the sample was graduates of the physical and occupational therapy programs. The study was prompted by the trend of athletic training programs' linking with other allied health programs to create colleges in university settings. The researchers emphasized the importance of making baseline comparisons between allied health programs to shed light on information that could assist in establishing overall admission criteria for colleges-of-allied health programs. Recommendations were made to consider this research a pilot study, and that athletic training programs repeat the study at their respective schools.

### **Testing as an Admission Criterion in Other Programs**

Another body of knowledge is available in the general education literature, which does provide studies that examine testing as related to academic success in college. The investigations cover the usual array of topics as well as some unique ones, such as use of GPAs as the sole indicators of admissions in an effort to increase minority admissions. The literature also conveys that a decrease of public funding is causing public universities to increase their student numbers to generate revenue earned through tuition dollars, which may result in lowered entrance requirements in order to allow more students to be admitted (Goenner & Snaith, 2004; Tam & Sukhatme, 2004).

A 2004 study by Noble and Sawyer examined high school GPAs in contrast to test scores as an effective predictor of students' success in their first year of college, cross-validating accuracy of prediction equations and cutoffs based on ACT composite scores, high school GPAs, and both variables jointly. The population consisted of 219,435 first-year college students from 301 postsecondary institutions. The data were collected from students' self-reports of their

grades in 30 preparatory high school courses provided at the time they took the ACT, and it was noted that the source of the data was a limitation of the study. The researchers found that high school GPAs did not predict high levels of achievement during the first year of college. A student with a 4.00 high school GPA had a less than 0.50 probability of earning a 3.75 or higher GPA in her first year of college. High school GPA values of less than 3.00 provided little differentiation in terms of students' chances of achieving different first-year college GPAs than the 4.00 students. The researchers concluded that non-cognitive factors (i.e., personal characteristics such as effort, attendance, conformity, and motivation) likely contributed significantly to high school grades lower than a B, which could account for the lack of variance. Predictions based on a combination of ACT scores and GPAs were more accurate than those based on ACT scores or GPAs alone. Conclusions were that college and high school grades reflect both cognitive and non-cognitive factors, although non-cognitive factors are less pervasive at high achievement levels. The primary conclusion was that if one were to choose between ACT scores and high school grades, ACT scores would provide greater differentiation across levels of achievement than high school GPAs in terms of probability of success during the first year of college, but that a combined variable that includes both ACT scores and high school GPAs is the best predictor.

Tam and Sukhatme (2004) conducted research that suggested that high school quality -- defined in their study as the average high school ACT score as opposed to students' individual ACT scores -- can make a difference on how students score on standardized tests such as the ACT. As a result of the study, the researchers created a new criterion which was a modified high school percentile rank (HSPR).

The researchers studied a cohort group of 2,529 freshmen who entered the University of Illinois at Chicago (UIC) with an average ACT score of 20.8 and an overall high school percentile rank average of 73.0. The researchers tracked the students in this cohort for six years to learn more about the attributes of both successful and unsuccessful students, and they measured student success by graduation within six years of starting studies at UIC. For the cohort studied, the six-year graduation rate was 36%. Most of the attrition occurred in the first two years which the researchers believed highlighted the importance of graduation programs in the first two years of college. The initial results indicated that the impact of ACT on graduation rate was twice as large as the impact of high school percentile rank; however, analysis of additional data proved that among the variables (i.e., student's ACT score, high school percentile rank, and average high school ACT) considered, the average high school ACT variable was the most significant for determining success in college. The problem with the results was that this variable (average high school ACT score) was not student-specific. Every student from the same high school had the same average high school ACT (HSACT) score, but this finding revealed how the overall quality of high schools affects students' successes in universities. The researchers created a new variable which was a modified high school percentile rank (HSPR). The formula used to create the new variable was  $\text{student HSPR} \times \text{HSACT score} / \% \text{ graduation rate of high school} = \text{modified HSPR}$ . This new variable took into account both a student's rank in high school (HSPR) and a quantitative measure of the school quality (HSACT). The modified high school percentile rank was much improved over the standard high school percentile rank in projecting eventual graduation. The researchers argued that because colleges must make good admission decisions in view of decreased public funding, use of the new variable would result in higher college graduation rates.

A study performed by Adelman (2006) supported research that reports that high school quality makes a difference in how students perform in college. The study pronounced that “academic intensity of the student’s high school curriculum still counts more than anything else in pre-collegiate history in providing momentum toward completing a bachelor’s degree” (p. xvii). Adelman’s study provided a minimal list of classes that students who plan to go to college should complete:

- 3.75 or more Carnegie units of English:
- 3.75 or more Carnegie units of mathematics  
(highest mathematics of calculus, pre-calculus, or trigonometry):
- 2.5 or more Carnegie units of science *or* more than 2.0 Carnegie units of core laboratory science (biology, chemistry, and physics):
- more than 2.0 Carnegie Units of foreign languages:
- more than 2.0 Carnegie Units of history and social studies,  
or more Carnegie Units of computer science:
- more than one Advanced Placement course:
- no remedial English:  
and no remedial mathematics.

Ninety-five percent of the students who completed the minimal high school curriculum as outlined earned bachelor’s degrees, and 41 percent also earned master’s degrees, first professional or doctoral degrees.

Adelman noted that not all high schools present adequate opportunity to learn and that some groups are excluded more than others. He named Latino students as less likely to attend high schools offering trigonometry or calculus than white or Asian students. Students with low

socioeconomic status were less likely to attend schools that offered math above Algebra 2.

Adelman informed that the highest level of mathematics reached in high school continues to be a key marker in pre-collegiate momentum with the tipping point of momentum toward a bachelor's degree now firmly above Algebra 2.

Goenner and Snaith (2004) performed research at the University of North Dakota (UND) using regression analysis methods to investigate the potential results of raising the ACT score used to automatically admit students to a cumulative score of 24 (from the current score of 21), and raising the automatic admission high school GPA requirement to 3.5 (from the current GPA of 2.5). Regression analysis of four-year, five-year, and six-year graduation rates showed that ACT scores had a positive and statistically significant effect for each time interval. Increasing the ACT score of the lowest 25<sup>th</sup> percentile by two points and increasing average high school GPA of the UND student body by a quarter-point was predicted to increase first-year graduation by 3.4 percent. Four year, five year, and six year graduation rates were predicted to increase by 3.8%, 5.9%, and 6.3% respectively.

The researchers were not worried about enrollment numbers decreasing as they predicted that students who could not meet the higher admission criteria would be forced to enter programs (e.g., at two-year institutions) that would prepare them for the curriculums of higher institutions of learning. The University of North Dakota subsequent to the research negotiated articulation agreements with several two-year institutions in North Dakota and Minnesota, and researchers predicted that high school students would work harder to meet the higher standards. The elevation of the admission standards is expected to result in an environment that is more conducive to attracting better prepared students, which would result in improved educational outcomes as measured by retention and graduation rates. The approach by Goenner and Snaith

could result in increased homogeneity of the student body at UND, but the researchers hope to negate the possibility by attracting more students from community colleges who are better prepared for four-year institutions of learning versus admitting lower performing students directly from high school.

### **Section Summary**

It remains questionable whether the ACT or the SAT I cumulative scores are critical to the success of college students when used independently as indicators in the pre-admission process; however, the ACT English score and the SAT verbal score have consistently been found to be significant indicators of college success. High school quality is likely a variable that could affect the success of college students as well, although this finding likely falls into the category of simple common sense. One researcher created a new formula for colleges to use when considering students for admission, which includes combining the high school percentile rank and graduation rate combined with the students' ACT cumulative scores. There has not been enough research to prove the significance of the formula, but it does illustrate that more research needs to be done that involves testing multiple variables instead of attempting to correlate only one independent variable with the dependent variable of college success. It is likely a combination of variables (i.e., criteria) that makes a difference in whether students succeed in college as opposed to a sole indicator; moreover, if a solitary variable is calculated statistically without considering the extraneous non-cognitive factors, the statistics cannot be relied upon to the extent that one can be confident of the results (Geiser, 2009).

## Nursing Specific Entrance Tests

### Test of Essential Academic Skills (TEAS)

Nursing programs are increasingly using nursing aptitude tests to determine which students meet the criteria for admission, and to determine whether those who are admitted have a high chance of failure. Assessment Technologies Institute (ATI) sells the Test of Essential Academic Skills (TEAS) to nursing programs, and the company markets the test as a predictor of the academic readiness of applicants prior to admission into a program of study in nursing (I Want to Know Who Has the Ability to Think Like a Nurse, 2011). The test consists of a multiple-choice assessment of basic academic knowledge in reading, mathematics, science, English and language usage, and the objectives assessed are determined by nurse educators. Composite scores, as well as sub-scores, are computed in each of the four content areas to assess specific content comprehension. The company also provides preparatory materials for students to assist them in preparing for the test.

*Use of testing (TEAS) as an admission criterion in baccalaureate nursing programs.*

Some research has been done to test the validity of the TEAS test, including a study published in 2007 by Newton, Smith, Moore, and Magnan. The study design was “exploratory descriptive” (Newton et al., p. 146), and involved a sample of two cohorts of students ( $n = 164$ ) from a Midwestern public university who were admitted to the nursing major during one academic year. All sophomore baccalaureate students were required to take the TEAS the first month of the first semester. The dependent variable was early academic achievement (overall first-semester grade point average based on student grades in four didactic nursing courses), and independent variables were pre-admission GPA (PGPA) and the composite score on the TEAS.

A regression analysis showed that both preadmission GPA and TEAS scores were statistically significant predictors of variance in first semester GPA.

An examination of the standardized beta weights of the predictors suggested that preadmission GPA ( $\beta = .394$ ;  $P < .001$ ) was a more important predictor of first semester GPA than was the TEAS score ( $\beta = .227$ ;  $P < .001$ ). Tests were done to eliminate multi-collinearity as a potential explanatory variable in the analysis by assessing the correlation between PGPA and TEAS score ( $r = .257$ ,  $P < .003$ ).

The correlation coefficient obtained provides evidence that multi-collinearity did not exist in these data. The questions of whether nursing aptitude adds to the prediction of early academic achievement were addressed by examining incremental changes in  $R^2$ . After controlling for order of admission, PGPA accounted for 15.4% of the variance in first semester nursing GPA. In the final step, the entry of TEAS scores into the model accounted for an additional 4.8% of the variance in first semester nursing GPA. The researchers suggest that nursing aptitude (measured by the TEAS) increases the prediction of early academic achievement. (Newton, et al., p. 147).

*Use of testing (TEAS) as an admission criterion in other nursing and allied health programs.*

A study by Wolkowitz and Kelley (2010) found that pre-nursing science grades are statistically significant predictors of students' successes in nursing programs. The researchers applied a multiple regression model to student test scores on the TEAS four content areas (i.e., science, mathematics, reading, and English) to predict early nursing program success as defined by student performance on a Fundamentals of Nursing ATI TEAS Achievement Test. This was a pertinent study since the TEAS scores in the four categories are weighted to compute the

cumulative score. In all versions (1.0-4.0) of the TEAS test, English is the most heavily weighted, followed by mathematics, reading, and science, respectively. The researchers hypothesized that reading and science abilities are better predictors of success than mathematics or English abilities. Science grades are weighted the lowest on the TEAS test, but this study found science to be the most significant predictor of nursing student success followed by reading, English, and mathematics respectively. This study supports other studies (Alden, 2008; Bolan & Grainger, 2003; Byrd, Garza, & Nieswiadomy, 1999; Hayes, 2005; Salvatori, 2001) that have shown pre-nursing grades in science to be a strong predictor of nursing students' successes.

### **Nurse Entrance Test (NET)**

Another entrance test designed to be used by nursing programs as an admission tool is the Nurse Entrance Test (NET) used by 24% of all RN and LPN programs according to information provided on Educational Resource's web-site (Nurse Entrance Exam, n.d.). The test evaluates six areas: essential math skills, reading comprehension which includes critical thinking, written expression, test-taking skill, learning styles, and stress-level profile.

*Use of testing (NET) as an admission criterion in other nursing and allied health programs.*

A study at an RN diploma school (Ellis, 2006) evaluated the NET as a tool for the identification of qualified applicants. The school was experiencing high attrition rates which prompted the study, and the trended data of NET scores suggested that the candidates with lower scores on areas of the test that predicted critical thinking ability were more likely to be unsuccessful. The information regarding critical thinking prompted the faculty to make a change in admission criteria which required candidates to score 50% or better on each component of the

critical thinking appraisal portion of the NET. Components of this section include inferential reading, main idea of passage, and predicting of outcomes (Ellis, 2006).

A faculty committee was formed to compare retention in the program before and after the change, which studied 137 students over the years of 2003, 2004, and 2005. The students who were admitted in 2003 and 2004 comprised Group One and those admitted in 2005 made-up Group Two. Group Two was different because they were admitted after changes were made in admission criteria that emphasized critical thinking (i.e., in 2005). According to percentage calculations between the two groups, 89.1% of the students in group two were retained in level one nursing courses compared to 70.7% in group one. The data collected for the study showed that students who scored less than 55% on the reading comprehension section of the test were more likely to be unsuccessful in the program, leading the researchers to conclude that critical thinking and reading comprehension were significant components to measure during the admission process.

A study conducted in an associate degree nursing program (Gallagher, Bomba, & Crane, 2001) compared the NET to an entrance examination called the Registered Nurse Entrance Examination (RNEE). The RNEE tests verbal ability, numerical ability, life science, physical science, and reading skill (RNEE Test, 2011). The nursing program was currently using the RNEE and wanted to compare it to the NET to assist them in deciding whether they wanted to switch from the RNEE to the NET for their admission test.

Students were randomly assigned to one of 12 nursing sections which were divided into three groups consisting of four sections each for the purposes of the research. The curriculum required that students' complete four learning modules during the first semester of the nursing

program, and all the students completed the first four-week module together. Each group completed the three remaining modules in different sequences.

The RNEE and NET scores were examined to determine whether they were predictive of successful completion of the first nursing course with success in the course defined by faculty as earning a “C” or better (C = 73.5%). The non-academic indicators were addressed through a referral system whereby students who were determined to require support in any non-academic areas were referred for counseling or remedial assistance. Admission data and first-course grades were examined to determine their ability to predict successful nursing program completion. The final nursing course average was reviewed as a predictor for passing NCLEX-RN.

Results of the NET academic subtests revealed no significant difference between class grades for students who were successful (i.e., “C” or better) and those who were unsuccessful (i.e., below a “C”) except for the mathematics scores, which showed that the non-successful students’ mean was significantly higher than the successful students’ mean. In comparison, students successfully completing the first course had higher RNEE admission scores than those who were not successful; therefore, RNEE scores were further examined by performing a logistic regression, the results of which supported RNEE as an effective predictor of success in the first course. The reading comprehension course was the only subtest on the RNEE that proved useful for estimating a minimum score to determine a 50% probability of success in Nursing 101 (i.e., the first course). The Nursing 101 course average was perceived to be a predictor of successful completion of the nursing program and success on the NCLEX-RN. At the conclusion of the study, the faculty chose to continue to use the RNEE as their instrument for screening for admission of students, as they did not believe that there was enough evidence to support a change to the NET.

## **Health Education Systems, Incorporated (HESI)**

The HESI nursing entrance exam consists of six sections: (1) anatomy and physiology, biology and chemistry; (2) vocabulary and general knowledge; (3) reading comprehension; (4) grammar; (5) basic math skills; (6) learning styles, decision-making skills, and personality traits. The test is often given during the first semester of nursing to determine if students are at a high risk for failure, which would indicate that they have needs that should be addressed through remedial programs or other resources. Some schools do administer the test during the pre-admission period and use it to determine which students will be admitted.

### *Use of testing (HESI) as an admission criterion in baccalaureate nursing programs.*

Murray, Merriman and Adamson (2008) conducted research to investigate the validity of the HESI Admission Test (HESI A<sup>2</sup>), and shared their belief that GPAs are of questionable value as admission criteria due to the concerns of grade inflation and variable grading systems. In contrast, they believe that standardized tests provide greater precision and methodological rigor, thereby providing a more reliable and consistent measure of students' achievements and abilities. A longitudinal, descriptive design was used to assess the value of the HESI A<sup>2</sup>, plus a bivariate regression analysis was conducted to determine if A<sup>2</sup> composite scores could predict course grades in all nursing courses. The sample consisted of 217 ADN students and 69 BSN students who took the A<sup>2</sup> after admission to their respective programs. In the ADN program, while students' grades were inconsistently reported, the HESI A<sup>2</sup> was found to be correlated with eight of the nine nursing course grades in the total curriculum for the sample of students ( $n = 68$ ) that were reported ( $r = 0.253-0.442$ ;  $P = .05-.01$ ). In the BSN program, students' A<sup>2</sup> scores were statistically correlated to 10 of the 20 nursing course grades ( $r = 0.241-0.374$ ;  $P = .05-.01$ ).

In the sophomore year of the BSN curriculum, four of five course grades were positively related to A<sup>2</sup> scores; in the junior year, five of nine course grades were positively related to the A<sup>2</sup> scores; and in the senior year, one of six course grades was positively related to the A<sup>2</sup> scores. Data reported that all 69 BSN students graduated within two years of admission. Findings in the ADN population found that those students who completed the program scored significantly higher on the A<sup>2</sup> than those who did not complete the program. In the first level of the ADN curriculum, three of three course grades were positively correlated with A<sup>2</sup> scores; in the second level, one of two course grades was positively correlated with A<sup>2</sup> scores; and in the third and fourth levels, four of four course grades were positively correlated with A<sup>2</sup> scores. The researchers summarized findings that indicated that A<sup>2</sup> scores were valid predictors of student success, and can help faculties in the selection process of students; however, they shared their opinions that in addition to using the A<sup>2</sup>, that GPAs, in spite of grade inflation and differences in grading systems should continue to be evaluated paying particular attention to science grades.

A dissertation (Norman, 2006) investigated the relationship between the score on HESI A<sup>2</sup> and cumulative grades from prerequisite academic support courses as predictors of success in the junior year of a baccalaureate nursing education program. The following were used in the study as predictors: demographic characteristics, nursing theory grades, learning styles, personality profiles, and behavioral factors. The design of the study was retrospective-correlational and 128 students served as the sample. There was a statistically significant correlation between the grade point averages in the prerequisite academic support courses and the A<sup>2</sup> cumulative score for the sample. Both the GPAs and the A<sup>2</sup> cumulative scores correlated positively with student success in the junior year of the nursing program. Use of both the cumulative GPA in pre-nursing support courses and the HESI A<sup>2</sup> was supported.

*Use of testing (HESI) as an admission criterion in other nursing and allied health programs.*

A descriptive longitudinal study was done to determine the accuracy of HESI examinations when used for predicting associate degree nursing student success (Yoho, Young, Adamson, & Britt, 2007). The faculty of a Southwest Texas associate degree nursing program used standardized examinations (HESI A<sup>2</sup>) to assist them in identifying students who have the academic preparation necessary to succeed in the nursing program, and to identify those students who would be at risk for failure. A correlational design was used to assess the predictive value of HESI examinations, specifically the A<sup>2</sup> in relation to the Mid-Curricular HESI exam (MC), and the NCLEX-RN in relation to the HESI exam (E<sup>2</sup>). This study limited itself to assessing the math and reading comprehension A<sup>2</sup> scores in predicting the students' MC scores, the accuracy of the MC scores in predicting E<sup>2</sup> scores, and the E<sup>2</sup> scores in predicting NCLEX-RN success. The number of students in the sample was 139 who took the A<sup>2</sup>, MC, E<sup>2</sup>, and NCLEX-RN between August 2002 and October 2004, and students in the program remained in the study until the time they exited the program, whether due to failure to succeed or graduation.

Faculty members at the school selected a composite score of 70% as the minimally acceptable score for the A<sup>2</sup> math and reading comprehensions examinations, and selected 850 as the minimal score for the MC and E<sup>2</sup>. Of the 139 students who took the A<sup>2</sup>, 135 (97.12%) achieved the faculty-designated composite score of 70% or higher. On the A<sup>2</sup> mathematics examination, 128 of 139 students (92.09%) achieved the minimally acceptable score of 70% or higher, and on the A<sup>2</sup> reading comprehension examination, 121 (87.05%) achieved the minimally acceptable score of 70% or higher. At the end of the first year 101 of the original 139 students remained in the program (72.66%). Of those 101 students, 22 (21.78%) achieved the designated score of 850 on the MC. Of the 128 students who made an acceptable A<sup>2</sup> math score, only 20

achieved a satisfactory MC score. Faculty members speculated that the low scores could be attributable to the absence of consequences for failure on this examination, leading them to conclude that students did not take the examination seriously.

In the final semester, 77 of the original 139 students remained in the program (55.40%). All 22 of the students who achieved an acceptable MC score did achieve the faculty-designated score of 850 or higher on the E<sup>2</sup>. Of the total number of students who took the E<sup>2</sup> ( $n = 77$ ), 58 (73.32%) achieved the faculty designated HESI score of 850 or higher on their first attempt to take the E<sup>2</sup>. Of the 58 students who had successful E<sup>2</sup> scores, 55 (94.83%) were successful on their first attempt at taking the NCLEX-RN. Pearson correlations were used to determine the relationship(s), if any, between students' A<sup>2</sup> mathematics scores and their MC scores, and between students' A<sup>2</sup> reading comprehension scores and their MC scores. The reading comprehension scores were positively correlated with the MC scores, but the math scores showed no significant relationship. The faculty also decided that the A<sup>2</sup> benchmark score of 70% was too low, and increased it to 75% after the study concluded.

### **National League for Nursing Pre-Admission Examination for Registered Nurses (NLN PAX-RN)**

The NLN PAX-RN (PAX) (About the NLN Pre-Admission Exam, n.d.) examination's purpose is to be used as an entrance examination to predict students who are most likely to be successful in nursing school. The examinations are marketed to assist nursing schools in evaluating how potential students will perform in the nursing program, and to help students determine if they have the academic skills for success in nursing schools. The PAX tests students in three areas which include mathematics (i.e., basic calculations, word problems, algebra, geometry, conversions, graphs, and applied mathematics); verbal skills (i.e., word knowledge and reading comprehension); and science (i.e., general biology, chemistry, physics, and earth

science) (NLN PAX-RN Exam Study Guide for Nursing Students and How to Study, 2011).

There is a paucity of scholarly research on the PAX. An extensive search of the literature review returned no research reports in the scholarly databases.

### **Section Summary**

The entrance exams particular to nursing found reading and critical thinking to be statistically significant indicators of student success in nursing programs. Math, however, was not found to be as significant as reading in most cases. Another finding was that combinations of GPA and TEAS scores were found to be significant indicators of success. Pre-nursing science grades were found to be significant, although in relation to this finding it was noted that the TEAS weights science last when considering English, math, reading, and science.

### **Interviews**

Interviews of applicants are used by some nursing schools in the admission process to assist in determining which candidates will be admitted. The literature reports that interviews are more useful in determining student performance in the clinical setting as opposed to academic performance in the classroom (Ehrenfeld & Tabak, 2000; Rosenberg, Perraud, & Willis, 2007; Salvatori, 2001). Interviews can assist faculty members in identifying students who may have inadequate understanding of the work of nurses. This misunderstanding can result in the student's leaving the nursing program prematurely, which contributes to the higher-than-desired attrition rate that is a problem that many nursing schools are experiencing.

Traits identified as lacking in students who leave nursing schools prematurely for non-academic reasons are compassion, social and emotional maturity, reliability, integrity, altruism, respect for others, and ability to work with diverse populations (Rosenberg, Perraud, & Willis, 2007). A benefit of interviews is that they allow faculty members to have personal interactions

with potential nursing students, which may result in assisting students to better understand the role of nurses, and to identify the traits that successful nurses possess. Nurse faculty members generally rank student performance and personality traits displayed during interviews, thus if a student possesses traits that would not be conducive to success, the faculty member can influence the admission ranking score of the student.

### **Use of Interview as an Admission Criterion in Baccalaureate Nursing Programs**

Admission interviews are especially important to accelerated nursing programs due to the fast pace and rigorous curriculum in these programs. Rosenberg, Perraud, and Willis (2007) reported an educational innovation that consisted of adding the interview process to admission criteria of accelerated second-degree baccalaureate nursing (BSN) students. Accelerated students complete the baccalaureate nursing program faster than typical students; for example, they may complete a four-year program in one-to-three years by registering for upward of 20 hours per semester. It is important that applicants be screened carefully to determine if they have the traits and lifestyles that are necessary to complete such a rigorous program of study. The students who complete these programs are generally highly motivated, competitive, and excellent time managers, as well as having the ability to manage their personal lifestyles to allow for the time it takes to complete coursework. An intense admission process that measures the potential of students to complete accelerated programs is imperative to assure success of the students.

Rosenberg et al. (2007) described the change that one school of nursing made to add interviews to their admission criteria. The program was a 12-month accelerated BSN program that demanded students work at a fast pace, and be experts at balancing their lifestyles with the demands of the academic curriculum. The personality traits that were desirable in these students were the ability to show empathy and a good understanding of the work of nurses, and the

interview process helped identify these desired traits. The leaders of the interview process were especially concerned about inter-rater reliability; as a result, an interview guide was established as well as interviewer training sessions. Interviewers were experienced faculty members in either the accelerated or traditional BSN program, and two faculty members interviewed applicants during 30-minute sessions with one interviewer acting as the recorder. The interviewers' tasks were to assess the applicant's motivation to enter nursing, capacity for empathy, suitable personal characteristics, readiness to manage an accelerated program, and life inconsistencies that could interfere with success in the program (Rosenberg, et al., 2007). Examples of questions asked by the interviewers were as follows: "What is your understanding of the work of nursing, and what experiences have you had to gain that understanding?" and "What personal characteristics do you possess that make you a suitable candidate for a career in nursing?" Other questions were directed toward applicants' personal roles that could include caregiving, need to work, and long travel distances. Applicants were given the opportunity to verbalize their understanding of the commitment required.

After the interview was completed, the interviewers immediately completed the interview guide forms which included an overall rating sheet with ratings of highly recommend, recommend, recommend for wait list, or deny. For each rating, there was a detailed description. For those individuals who were placed on the wait list or denied, personal characteristics that the interviewers believed were missing were lack of compassion, altruism, interpersonal skills, and empathy as well as lack of motivation and poor understanding of the work of nursing. A final step in the process occurred if a student did not complete the program which consisted of a post-mortem review of the student's file. The reviewer surveyed the file while asking the question, "Could this student's outcome have been predicted?" The author reported that in almost every

case, data were in the file that should have indicated the potential for student failure. Either the data were overlooked by the interviewers or were not considered significant. The post-mortem review information was communicated to interviewers in an effort to avoid similar mistakes in future interview sessions. At the point that this article was written, not enough time has elapsed to provide retention results based on the addition of the interviews to the admission process.

A recent descriptive study (McNelis, Wellman, Krothe, Hrisomalos, Mceleveen, & South, 2010) reported the addition of interviews to the admission process at Indiana University (IU) School of Nursing in 2007. Until this change, the IU School of Nursing had used only pre-nursing GPA as criterion to admit students. The new GPA criteria included a break-down of critical, analytical and science GPA 20%, cumulative GPA (15%), and nursing GPA (30%); interview (30%), and service requirements (5%). The concerns that prompted the changes were trepidations concerning retention of students, academic success and quality, and lack of diversity of the student population.

The authors discussed the importance of students' understanding the work that nurses perform and that the knowledge of the profession should be considered as a component of admission criteria. The information would be provided by the planned interviews, which were conducted at both campuses (Indianapolis and Bloomington). Interviewers were asked to attend live or view via computer program an orientation session that described how to conduct the interviews. Each interview team was composed of two people (one a faculty member and the other a community partner, emeritus faculty member or another faculty member) who conducted a 20-minute interview with one candidate. Following the interview, each interviewer independently evaluated the applicant using a Likert scale of 1 (below average) and 4 (excellent) in the following areas: experiences leading to choice of nursing, investigation of profession,

special gifts and talents that would contribute to success in school and in the profession, personal statement (from application), and service. The information was scored per applicant via a computer program. Students receiving the highest scores were offered an admission slot. It was too soon to assess results for the change, but data will be tallied after the process has been in use for several admission cycles to evaluate the following variables: diversity; examination and course grades; standardized testing scores (administered throughout the nursing program); progression, retention, and graduation; NCLEX-RN scores; admission to graduate school; and faculty satisfaction with graduates. Based on the results of the first-year data, the admission criteria were revised to calculate students' critical, analytical, and science GPAs at 30%; nursing GPA at 30%; interview at 30%; and service experience at 10%. The decision was based on responses from a survey that students and interviewers completed in the first admission cycle. Responses indicated that both interviewers and students thought that the new policy and the interview were positive, and results suggested that this varied approach to student admissions was successful in its initial implementation. The researchers realized that further longitudinal studies would be needed to examine how variables were affected.

As noted in the previously described study, one reason that interviews are becoming more popular as an admission tool is the lack of sufficient minority admissions in nursing schools. The Sullivan Commission (Missing Persons, 2004) identified a lack of minorities in health professions as a major factor contributing to health disparities among minority populations. The Commission indicated that although African-Americans, Hispanic-Americans, and American Indians comprise 25% of the population of the United States, these three groups made up less than 9% of nurses at the time. The nursing schools that used standardized testing as an admission

indicator tended to admit fewer minority students which led the Sullivan Commission to recommend that standardized testing be eliminated as an admission variable.

Trice and Foster (2008) found that at the University of North Florida's School of Nursing, students with high GPAs were favored in the admission process. Officials in the nursing program believed that by using GPAs as the major indicator for admissions, they were eliminating many potentially good students, including minorities. They added interviews to the admission process, which resulted in acceptance of highly qualified students while giving deserving students, including minority students with good but lower GPAs, the opportunity to enter the program. The change in the admission process increased minority admissions from a low of 2% to a high of 25%. Neither the overall graduation rate nor the NCLEX-RN pass rate was adversely affected (Trice, et al., 2008).

### **International Studies on the Use of Interviews as an Admission Criterion**

An often-cited study in the research literature is one completed in Israel at the University of Tel Aviv (Ehrenfeld & Tabak, 2000) that examined the value of interviews as a tool for selection of undergraduate students in BSN programs. The findings indicated that interviews can be used as a tool to prevent admission of students who are likely to drop-out due to non-academic issues. The researcher determined that without interviews, the graduation rate lowered minimally. It was found that personal interviews accounted for a higher graduation rate than group interviews; however, personal student interviews were more time-intensive than the group student interviews. Group interviews concentrated on four items consisting of familiarity with the profession, reasons for choosing the profession, students' capabilities of handling stressful situations, and students' qualities of life. The interviewers also discovered through post-interview student surveys that group interviews reduced anxiety of candidates as opposed to

personal interviews. The interviews allowed faculty members an opportunity to assess the candidates' interpersonal communication skills, body language, eye contact, leadership, authority, reasoning, and expressiveness.

The negative aspects of group interviews were that interviewers were not able to adequately judge passive candidates or the degrees of inhibition caused by language difficulties among immigrants. Participant surveys indicated that some students found it difficult to express individual opinions due to other candidates' dominating the discussion. The negative issues were overcome with personal interviews, but other problems arose such as student anxiety and the elicitation of only answers thought to be socially acceptable. Students preferred the group interviews by 87% (Ehrenfeld, et al., 2000). All interviewers and prospective students expressed reservations regarding using the interview as an instrument for screening potential students owing to its lack of objectivity, and its low prediction value. The program did not adopt interviews as a tool to be used for screening applicants. This is the only study found in the research literature that concluded that interviews were not sufficient predictors of student success to make them worthwhile instruments to use for admissions.

An innovative interview technique was introduced in a school of nursing in British Columbia, Canada (McBurney & Carty, 2009). The technique is referred to as multiple mini-interviews (MMI), and the process requires that each candidate rotate through a series of interview stations. Each station is in a separate room with an individual interviewer. At each station, the candidate responds to a scenario designed to test for competencies and is observed for specific attributes that are considered necessary for success in the program of study, and in the nursing profession. Examples of qualities that might be used to assess candidates are critical thinking, communication, compassion, and empathy. Each candidate had eight minutes to

respond to each scenario, but the evaluations of the trial interviews indicated that eight minutes was too long. Organizers considered reducing the time to six minutes in future interviews. The evaluations showed that students and interviewers believed the process to be worthwhile. Lemay's 2007 research (as cited in McBurney & Carty, 2009) showed that the MMI was a more reliable and better predictor than the traditional panel interviews.

Another international study (Salvatori, 2001) researched the published literature to determine appropriate admission criteria for health professional disciplines. Salvatori investigated both cognitive abilities and personal qualities of applicants including pre-admission academic grades, aptitude tests, interviews, written submissions, and letters of reference. It was clear to the researcher that "pre-admission GPA is the best predictor of academic performance in all health care professions; however, the relationship between GPA and clinical performance was less clear" (Salvatori, 2001, p. 159). Non-cognitive variables such as work experience, interpersonal skills, motivation, maturity, empathy, and integrity may contribute to both academic and clinical performance, but according to this study, the literature is not clear on the best way to assess these non-cognitive variables. Salvatori could not find enough evidence in the scholarly literature to support the use of interviews or essays to select candidates in any of the health professional disciplines. She concluded that if interviews were used, a structured format and the use of trained and experienced interviewers would be essential to success. She recommended further study of interviews as an admission tool. Campbell and Dickson's study (as cited in Salvatori, 2001) recommended that qualitative studies might be useful to explore variables related to student graduation.

A study that was completed in Israel (Zeidner, Hayon, & Laskov, 1990) to research nursing admission criteria is of note because its findings are remarkably similar to more recent

studies. The researchers examined the validity of scholastic aptitude test scores, high school grades, and evaluations of performance in group interviews. The results revealed that cumulative aptitude testing scores correlated moderately with college GPA and certification examination scores, whereas high school grades did not positively correlate with either dependent variable. Group interview ratings did correlate moderately with clinical performance, but negligibly with academic factors (i.e., college GPA, and certification examination scores). The methods used to interview the students were similar to those described in recent studies, that is, group interviews of six informants that lasted two hours. In the first stage of the interview, the prospective students presented five-minute self-presentations in response to a prompt which asked the informant to tell the interviewers a little about themselves. In the second stage, informants were divided into groups of three, and asked to discuss a moral dilemma, come to some kind of group decision, and justify it to their original group of six students. Two interviewers rated each of the informants along a five-point scale (i.e., from 5 = very good to 1 = very poor) using pre-determined criteria including the ability to cope with evaluative anxiety, facility of oral communications, facility in comprehending instructions, ability to empathize with others, consistency of behavioral responses, taking initiative in group tasks, and self-confidence. Interrater reliability had been established prior to the interviews.

### **Section Summary**

There have not been a sufficient number of studies conducted to conclude that using interviews as part of the admission process makes a difference in the graduation rate. It can be said that interviews do allow faculty members and students to meet each other prior to the students' admission status being determined, that they create an opportunity for students to learn more about the work of nursing before they make their decision whether to accept or deny the

admission if it is offered to them, and they allow faculty members to assess potential students for non-cognitive traits such as respect for others and empathy. The most important aspect of using interviews is that they appear to result in more minority admissions; however, if faculties' goals are to admit more minority students, it is essential that resources be provided that assure success of the students.

## **Essays**

There are few undergraduate research articles available on the use of essays as an admission tool for undergraduate students; however, the literature review did reveal several articles researching students' essays at the graduate level that may be helpful. Terminology was confusing in the literature, as essays are often referred to as personal statements or goal statements.

### **Historical Perspective on Use of Essays as an Admission Criterion**

Leners, Beardslee, and Peters (1996) became concerned that their school of nursing was using only GPA as an admission criterion as opposed to considering other variables such as service projects, maturity levels, and communication skills. Another concern was that faculty members had watched the minimum acceptable GPA of students admitted climb to a high of 3.54 out of 4.00 which led them to be concerned that there were likely students below the 3.54 level who might make better nurses than those in the 3.54 or higher level based on personal characteristics that were not being measured as part of the admission process. The researchers conducted a pilot study of student applicants ( $n = 30$ ) who were proceeding through the admission procedure, and planned to use the results of the pilot study to make changes in the admission procedure the following year. The current applicants agreed to provide personal

essays and reference letters for research purposes, but the materials would not affect the admission decisions of these candidates.

The personal essay was requested to survey career intentions, special skills, life experiences/philosophies, and motivations for entering nursing, as well as to evaluate students' problem-solving abilities, personal characteristics, and interest in nursing; additionally, reference letters (i.e., letters of recommendation) were requested to evaluate their usefulness in identifying students who were suitable for nursing, and who would likely succeed in completing the program of study as well as performing effectively as a nurse upon graduation. The researchers believed that the letters might also be useful in explaining extenuating circumstances for marginal candidates, and in giving the faculty members outside viewpoints on the candidates. The pilot study proved useful by identifying important details that would improve the research project planned for the following year. Helpful concerns that surfaced were that letters of references should not be written by relatives of the candidates, and that all student identifiers from the collected materials should be removed to prevent faculty members' potential biases when rating students' submissions. An additional change based on information from the results of the pilot study was that GPA was calculated upon the most recent 45 semester hours in an effort to prevent penalizing non-traditional students who could have had a low GPA as a result of failures in courses many years prior to this admission. The 45 hours were required to include at least four of the six required science prerequisites.

In the analysis of the essays and reference letters, cumulative scores were consistent for 90% of the applicants. Tools were fine-tuned by creating Likert scales to score the essays and reference letters. The following year, the essays and letters of reference were used as admission tools to decide which candidates to admit. Faculty members liked the new criteria and believed

that they admitted candidates who were better suited to the nursing discipline. The GPA of the students in the newly admitted class ranged from 3.06-4.00 as compared to the previous range of 3.54-4.00, and some candidates with GPAs above 3.54 were not chosen under the new screening process. The faculty members planned to continue researching the new process in ensuing years. The researchers expressed their belief that having a system that admitted students with wide ranges of capabilities and experiences would ensure that the future nurses produced from this program would assist in creating a more diverse population of nurses who would be better prepared to care for increasingly diverse patient populations.

Sadler's (2003) research on essays stemmed from her concern of the lack of published studies on this topic. The nursing school where she worked had been using essays in the admission process for several years, so she decided to share the knowledge that the faculty members at this particular school had gained through experience. She analyzed data from a retrospective, longitudinal sample of students ( $n = 236$ ) for differences between students who completed the program and those who did not. The students who completed the essays responded to three prompts:

- Describe your health related work.
- Why are you interested in nursing?
- What is a nurse?

All pre-nursing students were required to enroll in a two-credit nursing course their freshmen year. Near the end of that course, students wrote a 250-300 word essay as a step in the application process to the nursing program. Members of the admission committee independently scored each of the essays on five dimensions which focused heavily on writing criteria: organization, focus, development of ideas, standard English usage, and congruency of the ideas

with values, norms, and behaviors of the nursing profession. Content analyses of essays revealed thematic differences between the completers and the non-completers. Completers seemed to better internalize the role of the nurse in comparison to non-completers who externalized nursing as something outside of themselves. The researchers also compared the GPAs of those who completed and those who did not in an effort to ascertain whether GPAs alone would be indicative of attrition. The results, however, showed that there were no significant differences between the GPAs of completers and non-completers. There was a significant difference between the means of the essays, but the researchers were unable to identify a certain point that would predict that a particular candidate would not complete the program. The study concluded that students with an admission GPA above 2.50 on a scale of 4.00 could be successful in the program. The study recommended that future researchers move beyond the evaluation of the writing criteria of the essays to content analysis of the essays.

### **Essays as an Admission Criterion in Other Programs**

Social work and counseling are disciplines that have published considerable research on the benefits, (or lack thereof), of including non-cognitive variables (e.g., interviews and essays) in their admissions processes. Pelech, Stanaker, Regehr, and Jacobs (1999) studied pre-admission data as they related to later problems in the clinical practicum and in classroom studies in a two-year graduate social work program. Pre-admission data for those students identified as having problems were compared with data from randomly selected files of students who were identified as not having problems. Characteristics of students from the problematic group were that they were older than the average student, were more likely to be male, had lower undergraduate GPAs, had more experience in past social service related work, and were rated lower in emotional maturity based on personal statements. The research was a two-part project

that examined the relationship between pre-admission characteristics and sub-academic performances in the social work program.

The second stage of the research involved a blind rating of personal statements and qualitative identification of common themes in the statements of applicants later identified as having cognitive or non-cognitive problems ( $n = 23$ ). Seven of the students had experienced placement break-down, seven had required extended placement, 13 had experienced some type of academic difficulty, and 14 were perceived by at least two faculty members to have problems with interpersonal relationships. Pre-admission characteristics in students who had experienced problems in the program were sex (most were male) and selection from the waiting list of applicants or reapplication for admission. The students having problems were older than the traditional students (i.e., 18-24) and were admitted with substantially lower final-year undergraduate GPAs; moreover, a degree of time had elapsed between completion of their undergraduate programs and the start of their graduate education. Another finding was that students with problems had more work experience than other students in the program, and rated lower on a test for emotional maturity. The researchers concluded that older students might struggle more in the program due to juggling personal and school schedules and demands, difficulty in adjusting to younger classmates, loss of income or employment status, and a false sense of competence. The study suggested that if schools continue to accept students with the characteristics of the students in this program who were experiencing problems, efforts should be made to provide support for these students that would enable them to succeed; furthermore, schools need to admit students that match the amount and types of resources and support available to meet the needs of the population of students that are admitted.

Another social work graduate program objectively scored personal statements during their research that was conducted to assess whether the information in personal statements could help gauge the appropriateness of the candidates for admission (GlenMaye and Oakes, 2002). The researchers discussed the importance of admission decisions, stating that they considered admission committees the gatekeepers for the profession, and agreed with Cole's 1991 study (as cited in GlenMaye and Oakes, 2002) which indicated that "admissions decisions determine the quality and quantity of social work students, and ultimately shape the profession itself through the procession of graduates into professional roles" (p. 67). Another point that the researchers made was that "social work programs often confused criteria with mechanisms for evaluating applicants, and gave as an example a program that will sometimes state that the criteria for admission consisted of interviews or essays, rather than describing the particular qualities that reviewers were looking for within the mechanism of the interviews or essays" (p. 67). They further explained that the purpose of the admission process is to identify the students who are most suitable for the social work profession and possess the potential to complete the program. The study was a continuation of a previous study that had developed and implemented an objective scoring criteria tool for assessing personal statements. The purpose of this second part of the study was to test a refined scoring instrument and evaluate its effectiveness in determining Masters' of Social Work (MSW) candidates suitability through the use of personal statements. The sample was 119 applicants to the MSW program of a single university and GPA outcomes were obtained by determining the GPA at the end of the first year for all students admitted and enrolled. The personal statement raters were 12 full-time faculty members of the school.

The original tool contained five categories: writing proficiency, social work commitment and values, goals for social work career, life experience and motivation, and self-

awareness/reflectiveness. Applicants were asked why they chose social work as a profession, and why they chose the concentration they did. They were also asked to describe key roles, models, and career objectives and goals. The tool was revised from a line-to-line item analysis to a five-point scale with greater specificity of criteria after the first year based on recommendations of the faculty members who rated the personal statements using the instrument. Each of the categories was scored from zero to five with a zero indicating an applicant made no mention of goals in the essay.

Correlations were calculated between undergraduate GPA and personal statement; GPA and work experience; GPA and letter of recommendation; personal statement and experience; and personal statement and letter of recommendation. The correlation between GPA and personal statement scores was significant but weak; the correlation between personal statement and experiences was significant, but also quite weak; the correlation between personal statement and letter of recommendation was not significant; and the correlation between GPA and work experience and between GPA and letter of recommendation were not statistically significant. The study found that undergraduate GPA was positively related to end-of-first-year graduate GPA. There was also a positive relationship between graduate GPAs after one year in school and total admission scores. High academic performance did not necessarily translate into high performance in the clinical setting though, and personal statements were not significantly related to academic success. The study did find, though, that the inter-rater reliability of the scoring of the personal statement was not high, and thus determined the tool was not sufficiently reliable to rate the applicants.

A doctoral level counseling education program surveyed 39 doctoral programs to assess whether the programs used non-academic admission criteria in an effort to assess whether

admission tools were being used that were fair to minority students (Nelson, Richar, & Lancaster, 2003). Twenty-five of the 39 programs returned surveys (64%), revealing that letters of recommendation (25), autobiographies (5), written philosophy statements (14), goal statements (23), structured individual interviews (19), unstructured interviews (10), structured group interviews (4), unstructured group interviews (4), and work experiences (20) were most frequently used. Other miscellaneous criteria reported were live or prepared videotapes of counseling sessions, live role play, on-site written work, inclusion of curriculum vitae, and evidence of professional interests. Faculties reported the most concern about the use of letters of recommendation, but none suggested omitting it. Nonacademic criteria that faculties found helpful were written philosophy statements, personal and professional goal statements, and successful work experiences. Respondents used letters of recommendation, goal statements, and individual interviews to a greater degree than they did other criteria.

A meta-analysis (Siu & Reiter, 2009) reported that the only admission criteria that worked for screening medical student applicants were GPAs, aptitude tests like the Medical College Admissions Test (MCAT), and multiple mini-interviews. The list of admission tools that have not worked included personal interviews, personal statements, letters of reference, personality testing, emotional intelligence, and situational judgment tests. The researchers could not find any clear conclusions that differentiated between overall GPA and science GPA.

The multiple mini-interview (MMI) process has been found statistically significant, but the conclusion is based on small studies only. Conclusions are guarded pending assessment of a sufficiently large cohort. Personal interviews are reported as not working for screening medical students because of the small differences that exist among medical school applicants. The researchers state, “The smaller the difference between individual applicants, the greater the

challenge in differentiating between them, and the less likely there will be wide differences in the admitted applicants' subsequent student performances" (Sui & Reiter, 2009, p. 762). Similarly, the researchers say that letters of reference have not been found to be a valid admission tool indicating they have low validity. Concerns have risen regarding their use that includes a lack of helpful information in the letters, ambiguous terminology, and rater biases which can affect reliability. According to the authors, these statements often are reviewed subjectively and reviewers find it difficult to compare applicants to derive reliable results. Another concern is that applicants often have help from others while composing their statements. The authors further state that personality testing and testing for emotional intelligence do not work because the applicants are not always honest when answering the questions, plus the homogeneity of medical school applicants can interfere with comparison of the results. In spite of the unreliability of non-cognitive variables according to this meta-analysis, the authors do express hope that reliable non-cognitive variables will be found. They mention the MMI and video-based situational judgment testing as beacons of light, but say that more research needs to be done to prove the reliability (or unreliability) of these tools.

### **Section Summary**

In summary, there is not enough research to ascertain whether essays are significant as admission tools to predict student success. The essays do appear to assist faculties in identifying particular non-cognitive qualities (e.g., critical thinking) that may be necessary tools for students in the academic program, and one study did find that students who succeeded in the nursing program described nursing as being internal to themselves as opposed to external. Another significant finding from the literature review was that essay inclusion in the admission process could increase the number of minority students admitted. Males and older students in a social

work program were more likely to have problems adjusting to the student role and had a higher chance of failure. The importance of providing resources to assist these students at risk of failure was mentioned as being important if programs were going to admit these types of students. It is interesting to note that there have been nursing studies that also suggest males may have greater adjustment problems to the student role than female students (Chou, & Lee, 2007; Jefferys, M. R., 2004; Tzeng, Chen, Tu, & Tsai, 2008). Jefferys (2004) suggests that males may fear being perceived as being unmanly and fear being questioned by others about their sexual orientation. The problem may also be complicated by lack of sufficient male role models among nursing professors and among the general nurse population.

### **Overall Summary**

The era of days when universities can rely on public funding has ceased; as a result, student tuition has become increasingly important to the financial success of higher education institutions. Higher admission numbers and reduced attrition are important indicators in today's university environment as they can make the difference in whether a university remains viable in a competitive environment. As a result of these changes in funding, departmental admission committees have found themselves in a position to influence the viability of their universities. Low minority admissions are also a continued source of concern, especially in the health professions, due to the importance of adequate representation in the professions to provide culturally-competent care to minority patients.

Increased nursing research needs to be conducted to attempt to ascertain which admission tools are the most effective in determining which students are most likely to succeed in baccalaureate nursing programs. There is a paucity of research specific to admissions to baccalaureate nursing education programs in particular, which is especially troubling since BSN

nurses are in high demand due to the extensiveness of their preparation that allows time for them to refine such skills as the ability to think critically as compared to graduates from programs of shorter duration (i.e., associate degree or diploma programs). The increased complexity of the types of conditions with which patients are admitted demands a high level of critical thinking skill and a wide knowledge level to effectively care for the patients. There is also a demand for baccalaureate nurses in primary care environments due to the increased emphasis on preventive care. The baccalaureate nurses' education in community and family nursing make them especially appealing to employers of primary care facilities.

Even though the research on admission criteria for baccalaureate students is inadequate at this point, there are some variables in studies that have been completed that can be tentatively identified as being likely predictors of a greater chance of students' success in nursing programs. Pre-nursing GPAs in the college setting, for example, have been found to be significant of student success in early years of nursing programs, although thus far studies have not proven high school GPAs to be consistently reliable indicators.

Nursing research articles reviewed in this dissertation showed verbal abilities, science, and reading comprehension to be important indicators for success. Surprisingly, student performance in mathematics courses has been found to rank lower than reading as an indicator for success; however, it must be noted that the math variable has been used in only a limited number of nursing studies, as have verbal abilities, science, and reading comprehension.

The ability to deductively reason is a plus for candidates who enter nursing, and testing would be the most likely method to assess this variable. ACT and SAT I examinations are used extensively as pre-admission tests as part of the application to nursing schools. The ACT is an achievement test whereas the SAT I tests students' abilities to reason deductively. It may be

more reasonable for nursing schools to use the SAT I instead of the ACT since critical thinking is such an important aspect of nursing.

Entrance exams specific to nursing (e.g., TEAS, NET, HESI, PAX) are increasingly popular as methods to determine which students will be admitted. More research is needed to determine whether these tests effectively predict the success of nursing students.

There is agreement that minority students do not perform as well on standardized tests as Caucasian students do; thus, many experts are suggesting that non-cognitive tools such as essays and interviews be used to assist in deciding which students are admitted to nursing programs. When faculties rank students based on essays and interviews, minority admissions do increase; however, these students tend to need support and resources (both academic and personal) to be available to assist them to succeed as nursing students.

Non-cognitive variables (e.g., respectfulness, integrity, and social maturity) are undoubtedly important to the success of nursing students; however, the research that studies tools such as interviews and essays are not great enough in number to make assumptions regarding their importance. Despite the small number of studies in this area, there is agreement that non-cognitive variables better predict clinical performance than do academic variables such as GPAs and testing. The research that was reviewed for this study indicated that work experience and service were important variables that could predict students who would be more likely to succeed in nursing programs.

Another interesting factor revealed by the literature review that may be making it difficult for admission committees to differentiate among candidates is that baccalaureate nursing applicants, like medical school applicants, tend to be high achievers as indicated by schools reporting that the lowest pre-admission college GPAs of successful candidates are generally 3.0

or above in spite of lower minimal GPA requirements in most schools. The trend of admitting students with very high GPAs produces more homogenous groups of students when assessed on the admission criteria of grades and testing. Interviews and/or essays may be tools which could combat the homogeneity of the applicants to produce diverse groups of students who would better serve diverse populations as registered nurses.

It is obvious that more studies need to be done to assess which admission criteria are most effective in determining which potential students are most likely to succeed in baccalaureate nursing programs. This study intends to add to the body of knowledge in the field of nursing by describing the admission criteria and graduation rates of baccalaureate programs of 16 peer public universities using quantitative methods. A second phase of the study will consist of qualitative interviews with the chairs of these multi-state nursing programs to determine their views on admission criteria currently used in their programs related to their effectiveness in predicting student success.

A preliminary search of data bases to determine the graduation rates of the study sample resulted in the discovery that individual school graduation rates are not readily available through public data bases. Contrary to expectations, universities do not necessarily calculate graduation rates for individual majors.

An inquiry to the Director of Institutional Research at one of the public universities in the study (Personal Communication, May 13, 2012) revealed that individual program graduation rates are not calculated since the rate would likely be very low as the method involves looking only at the number of students starting in one year and finishing six years later. Calculating the rate becomes more complicated in nursing because many students start in the pre-nursing program, but some enter the AD program as others enter the BSN program, and still others

switch majors after the first year of study. The only thing this research department looks at is the number and percentage of students starting in a particular major and graduating from the university regardless of major.

The National League for Nursing Accrediting Commission (NLNAC) does collect graduation rates from schools of nursing that are accredited through their agency; however, the individual rates are not public information. The agency does release aggregate data of graduation rates via their website (Personal Communication, Dr. Sharon Tanner, Director of NLNAC). The recommendation from Dr. Tanner is that this researcher requests the data from the individual schools of nursing in the study population. This view was also expressed by Dr. Suzette Farmer, Associate Director of NLNAC, and by Dr. Madonna Combs, retired NLNAC surveyor. Dr. Combs emphasized that more than likely confidentiality will have to be assured before the schools will release the data.

The following NLNAC data in Table One (2011 Report to Constituents, 2012) shows that graduation rates in baccalaureate as well as associate and diploma RN educational programs could be higher; thereby, better meeting the predicted demand for more nurses in the future.

Table 1.0. NLNAC Data: Graduation Rate\* by Program Type 2004-2005 through 2009-2010 Academic Years

Type Degree Programs	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Baccalaureate RN	80.6%	79.5%	79.2%	80.1%	78.9%	79.5%
Associate RN	74.3%	74%	73.7%	73.2%	73.7%	73.6%
Diploma RN	73%	70.3%	74.8%	71.2%	75.8%	73.8%
Vocational LPN	72.6%	73.8%	73.1%	71.3%	72.3%	73.2%

Note. \*Graduation rate: The number of students who complete the program within 150% of the time of the stated program length.

Schools of nursing have long battled low graduation rates of students. Research has sporadically been conducted by nursing researchers over the past 30 years, but has not resulted in valid data that are of assistance to schools that desire to increase their graduation rates. The problem of graduating fewer students than desired has gained national attention that has led the National League for Nursing to call for more research to be conducted to better understand how to admit viable candidates to nursing schools. The urgency to discover more about which applicants possess the abilities to succeed is fueled by the projected shortage of nurses caused by the aging of the baby-boomers, and by the switch to managed care, which will create more jobs.

## **Chapter 3**

### **Methods**

#### **Introduction**

The goal of this research was to assist nursing faculties, particularly those in the peer institutions in this study, to ascertain the perceptions of nurse education administrators regarding quantitative and non-quantitative admission criteria that are widely used in nursing schools to admit students, and to assess satisfaction levels of the nurse administrators with their own admission criteria that is currently being used at their schools of nursing. The purpose of this chapter is to explain the methods to be used to collect and analyze the data. The research used both quantitative and qualitative processes to gather data, thus the steps of both methods will be explained.

#### **Research Questions**

The research questions that were addressed in the study are the following:

- To what extent, if any, were quantitative academic admission criteria (i.e., standardized test scores, overall pre-nursing college grade point averages, overall pre-nursing college math grade point averages, overall pre-nursing college science grade point averages, age, sex, socio-economic status, ethnicity, and previous work experience in health related fields) perceived to be predictors of student graduation in selected baccalaureate nursing schools?
- To what extent, if any, were non-quantitative admission criteria [i.e., specific character and/or personality traits (i.e., integrity, hardiness, locus of control, and perseverance) as

measured by interviews, letters of recommendation, resumes, and personal statements] perceived to be predictors of student graduation in selected baccalaureate nursing schools?

- To what extent, if any, were nurse education administrators satisfied with the current admission criteria that are being used to admit nursing students at their individual schools?

### **Sample**

The researcher is a nursing faculty member at a public university in West Virginia. Fifteen peer institutions of the West Virginia school that have four-year baccalaureate nursing programs will serve as the sample for the study. The nursing schools that were asked to participate are public institutions in the following states: Alabama, Illinois, Kentucky, Michigan, Missouri, North Carolina, North Dakota, Ohio, Pennsylvania, Tennessee, Washington, and Wyoming. The determination of peer institutions was accomplished by comparisons of community populations, geographical data, types of degrees offered, numbers of students and faculty members, and degree production by level and mix which was obtained from the research department at the researcher's university of employment.

### **Design and Sources of Data**

#### **Quantitative**

The quantitative phase of the study used a non-experimental, descriptive design. The admission criteria (i.e., GPAs, standardized test scores, interviews, letters of recommendation, essays, and previous work experiences) used by each institution's baccalaureate nursing program were gathered from the institutions' websites and the chairpersons of the individual schools were asked to validate the data as part of an oral interview, described in the next section.

The following questions, using a six-point Likert scale where one will represent the lowest end of the scale and six the highest, were used to survey the sample of chairpersons of the individual nursing programs.

- How satisfied are you with the admission criteria that your nursing program uses?
- How satisfied are you with the graduation rates of your nursing program?
- How well do you believe grades in pre-nursing college English classes predict nursing student graduation?
- How well do you believe grades in pre-nursing college math classes predict nursing student graduation?
- How well do you believe grades in pre-nursing college science classes predict nursing student graduation?
- How well do you believe overall pre-nursing college grade-point-averages predict nursing student graduation?
- How well do you believe standardized admission tests (i.e., ACT, SAT) predict nursing student graduation?
- How well do you believe nursing specific admission tests (i.e., TEAS, HESI, NET, PAX) predict nursing student graduation?
- How well do you believe letters of recommendation predict nursing student graduation?
- How well do you believe personal statements (i.e., essays) predict nursing student graduation?
- How well do you believe candidate interviews predict nursing student graduation?
- To what extent, if any, do you believe previous work experience in health care predicts nursing student graduation?

- To what extent, if any, do you believe a student's integrity affects nursing student graduation?
- To what extent, if any, do you believe a student's perseverance affects nursing student graduation?
- To what extent, if any, do you believe a student's hardiness (i.e., capable of enduring difficult conditions; robust) affects nursing student graduation?
- To what extent, if any, do you believe a student's locus of control (i.e., whether a person feels in control of events or whether the person perceives that others have that control) affects nursing student graduation?
- To what extent, if any, do you believe a student's ethnicity affects nursing student graduation?
- To what extent, if any, do you believe a student's socio-economic status affects nursing student graduation?
- To what extent, if any, do you believe a student's age affects nursing student graduation?
- To what extent, if any, do you believe a student's sex (i.e., female or male) affects nursing student graduation?

### **Qualitative**

The researcher gathered graduation rates from each school via the oral interview. The data were collected by asking each chairperson to provide the graduation data of her nursing program as well as the method by which it is generated. The researcher anticipated that the methods by which the schools collect graduation data may not be uniform, and the number of years that the schools have collected data may vary.

Some schools may not generate graduation rates; however, all schools are accredited either by the NLNAC or CCNE, and these accrediting agencies do collect graduation rates during their surveys which occur once in approximately eight years, depending on the type of accreditation that a school earns; therefore, the graduation rate from the schools' prior surveys were requested from the chairs of each school during the oral interview.

An interview with each chair of nursing or her designee was conducted. The interviews were conducted primarily by telephone (I-phone face-to-face video calling or Skype will be used when feasible). One interview was conducted at an individual school identified by proximity to the researcher's location. Qualitative researchers use questions to guide data collection, but do not rule out other possible data that might come to light as data collection progresses. The researchers start with general questions and allow respondents to tell their stories in a naturalistic, conversational fashion. The researchers encourage respondents to define the important dimensions of a phenomenon and to elaborate on what is relevant to them, rather than being guided by the investigator's notion of relevance (Polit & Beck, 2010). With these guidelines in mind, the following framework was used to guide the interviews for this research project:

- The introduction phase of the interview will involve greetings, introductions, and small talk. A general conversation about admission criteria and graduation rates will ensue.
- The working phase of the interview will begin with the interviewer's presenting the list of admission criteria that the School of Nursing currently uses to admit students, and reviewing the criteria with the chairperson, who will be asked to confirm the criteria that have been collected from the websites are correct. The confirmation component will be

followed by these tentative questions, allowing for the possibility that others may arise as the interview progresses.

- Would you tell me about your experiences using your current admission criteria?
- Are you satisfied with your admission criteria? If so, why? If not, why not?
- To what extent do you believe that your admission criteria accurately predict students' abilities to succeed in the nursing program? Please explain.
- How long have you had the same admission criteria? Are you planning to make any changes to the criteria in the future? (If the chairperson answers yes, the interviewer will ask on what type of evidence the changes are based, what kinds of changes are under consideration, etc.)
- Are you satisfied with your graduation rate?
- How do you calculate your graduation rate? What is your graduation rate?
- In the termination phase, the researcher will ask if there is any other information that the informant would like to share, and then terminate the session with an expression of appreciation.

## **Data Analysis**

### **Quantitative**

A six-point Likert scale was used to measure viewpoints of the chairpersons of the schools regarding admission criteria and graduation rates. Respondents were asked to what extent they agreed with the questions posed in the items, and each of the items was analyzed and scored individually to determine to what extent the participants agreed or disagreed with the criterion's viability as a pre-admission predictor of student success. A score of six represented

the highest possible affirmation of the viability of the criterion, while a score of one represented the lowest. A frequency chart was used as a tool to calculate and report the results.

## **Qualitative**

The qualitative aspect of the research was collected using phenomenological methods. The unit of data collection was individual chairpersons of the nursing programs in the sample, and the data were obtained primarily by telephone interviews focusing predominantly on admission criteria as they relate to graduation rates; however, the respondents were encouraged to answer questions in an unstructured way (i.e., conversational) in an effort to encourage them to express what is relevant from their viewpoints. By listening carefully, the interviewer was able to ask appropriate follow-up questions based on the information that was shared by the respondents. Fullan's (1991) position is that genuine understanding of a particular phenomenon comes only from learning through the lived experience of those who are engaged in it.

As suits a phenomenological examination, Lanigan's approach to analyze the data was used, which is consistent with Merleau-Ponty's method. Lanigan (1998) describes phenomenological analysis as conceived by Merleau-Ponty (1962), widely regarded as the seminal thinker in the field, as a three-step process requiring description, reduction, and interpretation. Each step informs the next in a progressive fashion to yield what Lanigan calls a "systemic completeness" (1988, p. 173).

- The first stage, description, involves a careful reading of or "listening to" the data absent any preconceived categories. The objective at this stage of the analysis is to allow for "the widest possible number" of broad themes to emerge (Nelson, 1989).

- The second step, reduction, extracts from the emerging themes those, which can be seen as constitutive. The aim of reduction, as explained by Cooks and Descutner (1994), is articulating a pattern of experience expressed through the essential elements of the phenomenon under investigation.
- Phenomenological interpretation, then, requires the examination of the primary themes, which emerge to discern those which effectively make explicit (in this case nursing educators' perceptions concerning the nature of admission criteria in relation to student graduation).

The phenomenological process, then, can be seen as one which the whole, examined in the description phase, is reduced to its constitutive themes, which are then recombined and re-examined to establish a deeper understanding of the phenomenon under investigation.

### **Summary**

The findings of this study can assist nursing faculties in discovering what criteria nursing schools are using to admit students and whether the chairpersons of the schools involved in this research believe the criteria accurately predict student success as determined by graduation rates. The study can be relevant to many institutions since it is a multi-site study that collected data in nursing schools in numerous parts of the United States. The research contributed to the body of knowledge that is available on the topic of admission criteria related to nursing student success, and is relevant mostly to baccalaureate programs of study, although associate and diploma schools may benefit as well.

In view of the predicted nursing shortage in the future, it is especially important that research be performed to determine the admission criteria that will best predict student success. Nurses contribute greatly to the health of the citizens of the United States; therefore, it is

important that the numbers and quality of nurses be adequate to meet the needs of future patients.

## Chapter 4

### Results

As stated previously, Lanigan's interpretive model was used to analyze the phenomenological data (i.e., interview results) collected in this research. These results were described in the language of Lanigan's phases of description, reduction, and interpretation. In the first stage of description, the researcher analyzed the experience in the "context of consciousness and pre-consciousness, rather than in terms of assumed boundaries of judgment based on historically generated value norms" (Lanigan, 1988, p. 9). The researcher used the procedure of bracketing to keep internal presuppositions from influencing the description. Polit and Beck (2010) explain bracketing as "the process of identifying and holding in abeyance any preconceived beliefs and opinions about the phenomena under study" (p. 548).

The second phase in Lanigan's phenomenological method is reduction. According to Lanigan (1988), "the goal of this step is to determine which parts of the description are essential and which are not" (p. 12). In other words, the attempt is made to find out exactly which parts of the experience are truly part of the researcher's consciousness and which parts are merely assumed. "The purpose of this step is to isolate the object of consciousness that constitutes the experiences that we have" (Lanigan, 1988, p. 12).

The third phase of Lanigan's (1988) model is interpretation consistent with hermeneutic semiology. Semiology is the study of sign systems or codes; thus, hermeneutic semiology is the specification of the value relationship that unites the phenomenological description and reduction. This step "is an attempt to specify the meaning that is essential in the reduction and description of the conscious experience being investigated" (p. 10). The researcher interpreted and reported the meaning and value contained in the description of the data. The experience of

interpreting the data is a “language event” (Lanigan, 1988, p. 120). The researcher understood the language through her lens based on conscious experiences. Palmer’s (1969) explanation as stated in Lanigan (1988) asserts that “the ground of objectivity lies not in the subjectivity of a speaker, but in the reality which comes to expression in and through language” (p. 120). The hermeneutic experience involves interpretation of objective communication (i.e., not dependent on the mind for existence; actual [Pearsall, 2002]), as well as subjective communication (i.e., influenced by personal tastes or opinions [Pearsall, 2002]). The reality of what is being said came through both verbal and nonverbal language, and the researcher understood the communication in the light of the present situation. “Truth is a moment of understanding in which the text as an expressive event is manifest to perception. Truth is both eidetic and empirical and is synergistically so” (Lanigan, 1988, p. 121).

It is important that the researcher explain her conscious experience as related to that of the respondents. This researcher and her respondents lived in a world of mutual history and discourse (Lanigan, 1988). All parties (i.e., researcher and respondents) actively worked in peer universities that educate students in traditional four-year baccalaureate nursing programs. The discourse and lived environments among nurse educators are akin, which resulted in a favorable environment for a positive language event.

The results of the survey identified which admission criteria the chairpersons of the nursing programs valued the most, and the researcher reduced the number of concepts that could have been included in the interview questions based on the survey responses. Using this technique allowed the chairpersons of the nursing programs in the sample to choose which admission criteria they favored, thereby, selecting the criteria to be included in the interview questions.

Prior to reporting the analysis and interpretation of the data, a review of the research sample was described. A description of the admission criteria and pre-requisite courses currently used by each school in the sample were included in this chapter, as well as a discussion of graduation rates.

### **Sample**

The sample was determined by selecting the peer institutions of this researcher's university of employment. It was reported by the Office of Institutional Research of the researcher's home university that there are 16 peer institutions. The peer institutions, including the researcher's university of employment, are located in the states of Alabama, Illinois, Kentucky, Michigan, Missouri, North Carolina, North Dakota, Ohio, Pennsylvania, Tennessee, Washington, West Virginia, and Wyoming. Prior to sending the survey to the potential participants, the decision was made to omit the chairperson of the researcher's home university from the survey and subsequent interviews in an effort to eliminate potential bias due to the chairperson's familiarity with the researcher. This decreased the population from 16 to a sample of 15 universities. Chairpersons of nursing were asked to complete the survey sent electronically via Survey Monkey. The survey may be viewed in Appendix A. Because the survey was anonymous (i.e., neither personal identification nor IP addresses were collected), there was no way to determine which university chairpersons completed the survey. One chairperson did inform the researcher, however, that she could not complete the survey unless her own University's Institutional Review Board (IRB) approved the research. All other participating universities accepted the IRB approval of the researcher's university of employment. After investigation of the requirements of the school's IRB, the researcher decided not to pursue approval which further decreased the sample from 15-14. Of the 14 chairpersons remaining,

seven responded to the survey. Following the completion of the surveys, the second phase (i.e., the interview process) began with the restoration of the full sample minus the two chairpersons indicated above. At this point, however, two additional chairpersons withdrew from the study due to time constraints, which reduced the sample from 14 to 12. Twelve chairpersons were asked to participate in the interview process, and six (i.e.,  $n = 6$ ) of those chairpersons chose to do so. The interviews concluded with data saturation after the six interviews which were conducted via telephone except for one interview that was completed face-to-face in the chairperson's office at her nursing school.

The data collected by telephone interviews were judged by the researcher to be as informative as the face-to-face interview, although the researcher did recognize that she did not have the advantage of as much nonverbal communication as she would have enjoyed with face-to-face interviews. On a positive note, it is noted by Bluman (2006) that people may be more candid in telephone interviews since there is no face-to-face contact. The interviewer did consider Skyping or using the iPhone face-to-face (i.e., Face Time) method, but decided against those methods due to the fact that the informants were very busy. The researcher was concerned that if she experienced technical difficulty while using these methods, the chairpersons might refuse to continue the interview. The researcher decided to consistently employ audio recording with reliable equipment that she had used in the past.

### **Description of Survey Results**

The survey consisted of a six-point Likert survey format devised to use a semantic differential (SD) scale design to measure viewpoints of the chairpersons of nursing regarding various admission criteria. The selected criteria were identified in the scholarly literature as concepts that had been suggested in past research as potential qualifications and characteristics

exhibited by successful college students in nursing programs as well as other disciplines in the health field (e.g., radiology, respiratory therapy). The survey may be viewed in Appendix A.

Seven out of 14 chairpersons of nursing completed the survey. The results can be located in a frequency chart in Appendix B. The data were classified as ordinal; accordingly, analysis was accomplished through descriptive statistics, and frequency of responses was ranked using the six categories in the survey which ranged from zero to five with zero denoting that the interviewee strongly disagreed that the specific criterion was valuable as an admission tool, and five denoting that the interviewee strongly agreed that the criterion was valuable as an admission tool.

The criteria that ranked as most valued by the seven chairs of nursing were college science grades (i.e.,  $f = 6$ ) and perseverance (i.e.,  $f = 6$ ). The criterion that ranked next in order of the importance was hardiness (i.e.,  $f = 5$ ). The researcher was not surprised to see college science GPA ranked as first in importance as it is used prevalently as an admission criterion by schools. The fact that perseverance and hardiness were ranked as more important than all other criteria that were included in the survey except for the college science grade, however, was a surprise as perseverance and hardiness are not generally used as admission criteria to admit nursing students. The next two criteria that followed after perseverance and hardiness were overall college GPA (i.e.,  $f = 4$ ) and college math grade (i.e.,  $f = 4$ ). Overall college GPA and college math grades are commonly used in nursing schools to admit students; thus, the researcher was not surprised to find them as criteria that the chairs valued. The remaining criteria in order of rank are as follows: Standardized admission tests (e.g., ACT; SAT) (i.e.,  $f = 3$ ), student integrity (i.e.,  $f = 3$ ), locus of control (i.e.,  $f = 3$ ), age (i.e.,  $f = 3$ ), college English grade (i.e.,  $f = 2$ ), previous work experience in health care (i.e.,  $f = 2$ ), nursing specific admission tests (e.g.,

TEAS; HESI) (i.e.,  $f = 2$ ), ethnicity (i.e.,  $f = 2$ ), interview (i.e.,  $f = 1$ ), essay (i.e.,  $f = 1$ ); personal statement (i.e.,  $f = 1$ ), socio-economic status (i.e.,  $f = 1$ ), letter of recommendation (i.e.,  $f = 0$ ), and sex of student (i.e., male; female) (i.e.,  $f = 0$ ). See Appendix C for a list of admission criteria used in the schools of nursing in this research's sample.

The questions for the next stage of the research (i.e., interviews) were formulated based upon the results of the surveys. The questions were devised to obtain explanatory data that would add to the richness of the information obtained in the surveys as well as provide a platform upon which the chairpersons could further express their viewpoints on the research topic.

### **Interview Design**

Following the completion of the surveys, the second phase of the research (i.e., interview process) began. The interview questions were formed as broad questions that were not intended to limit the scope of the interviews. The results of the survey were considered as the researcher structured the questions. The researcher was especially interested in the chairpersons' views on perseverance, hardiness, grades in pre-requisite courses, and testing as reflected in the questions below:

- How satisfied are you with the admission criteria that your nursing program uses?
- How satisfied are you with the graduation rate of your four-year traditional program?
- What pre-nursing college grades do you believe are the best predictors (if any) of student graduation from a four-year traditional program of nursing?
- What are your thoughts about using achievement tests (e.g., ACT, SAT) as admission criteria? What are your thoughts about admission tests specific to potential nursing students (e.g., TEAS, HESI) Do you believe they are predictors of student graduation? What are your thoughts about the concept of testing in general to determine admission?

- What are your thoughts about individual student characteristics (i.e., perseverance, hardiness, locus of control) in relation to student graduation?
- If you could have only one admission criterion to select students, what would it be?

In addition to the information generated from these questions, the researcher asked the chairpersons what their schools' graduation rates were and how many years were used to calculate them, as well as asking them what specific criteria they currently use to admit students. The number of years of experience that the chairpersons had worked as nurse educators was also collected.

### **Description of Interview Results**

Phenomenology is the study of the structures of subjective experience and consciousness, and is achieved by collecting narrative materials. Qualitative researchers seek patterns of association as a way of identifying the underlying meaning of the phenomena of interest. Patterns of interconnected themes in the collected data are identified as a means of understanding the whole.

To provide an appropriate framework to guide the analysis of the phenomenological interview data, Lanigan's (1988) approach consistent with Merleau-Ponty's (1962) method was chosen. Lanigan describes phenomenological analysis as conceived by Merleau-Ponty, widely regarded as the seminal thinker in the field, as a three-step process requiring description, reduction and interpretation. Each step informs the next in a progressive fashion to yield what Lanigan calls a "systemic completeness" ( p. 173).

- The descriptive phase involves a careful reading of or "listening to" the data absent any preconceived categories. The objective at this stage of the analysis is to allow for "the widest possible number" of broad themes to emerge (Nelson, 1989, p. 232).

- The second step, reduction, extracts from the emerging themes those, which can be seen as constitutive. The aim of reduction, as explained by Cooks and Descutner (1994) is “articulating ... a pattern of experience expressed through the essential elements of the phenomenon under investigation” (p. 255).
- Phenomenological interpretation, then, requires the examination of the primary themes, which emerge to discern those which effectively make explicit what had formerly been implicit.

The phenomenological process, then, can be seen as one in which the whole, examined in the description phase, is reduced to its constitutive themes, which are then recombined and re-examined to establish a deeper understanding of the phenomenon under investigation.

### **Description Phase**

The interviews took place in the offices of the participants, which caused the atmosphere to be somewhat formal. As previously stated, all except one of the interviews were conducted by telephone, which necessarily limited nonverbal communication; however, the interviewer was able to identify nonverbal nuances such as tone of voice, speed of speech, excitement expressed through word choices uttered by the respondents, willingness to chat during the initiation of the interview, and attitude conveyed at the termination of the interview.

The six chairpersons of nursing who were interviewed were veteran nurse educators with experience ranging from eight years to 30 years (i.e., 8, 15, 18, 21, 28, 30). They worked in nursing programs with student populations ranging from 100 students to 600 students (i.e., 100, 140, 174, 300, 500, 600).

The biggest challenge for the researcher was to identify and fulfill her role during the interview. During the first interview, the researcher conducted the interview in a conversational

manner and freely shared and communicated her thoughts as well as listened to the informant's views. After this interview, the researcher wondered if she had talked too much, and worried that she may have limited the information that she gathered by talking more than she listened, so during the second interview, she was careful to talk less and listen more, which still did not feel "right." The third interview was a face-to-face interview and the researcher and the informant talked freely, both enjoying the exchange of information. After this interview, the researcher realized that the interviews would yield the most information if the interviews were conducted in a conversational manner, recognizing that the researcher would not dominate the conversation, but instead enjoy listening and interjecting her thoughts as appropriate. The remaining interviews were comfortable and felt as if the researcher had found the right balance. The planned questions based upon the previous survey were used to guide the interviews, but the researcher frequently encouraged the respondents to further explore ideas which arose during the exchanges, and the researcher often asked unplanned questions which came to mind based on the conversation during the interviews.

All of the interviewees with the exception of the face-to-face participant were hesitant to engage in small talk at the beginning of the interviews as indicated by their reluctance to respond to introductory conversation. Statements such as "How can I help you?" were said in such a way that the interviewer inferred that the respondents clearly wanted to start the business of the interview promptly. The interviewer concluded that the informants were busy, and although they had graciously agreed to the interview, they did not want to "waste" time, or were uncomfortable participating in "small talk" with a stranger. This occurrence in combination with the interviews taking place in the chairpersons' offices (via telephone) served to make the atmosphere somewhat formal; however, as the conversations ensued, the interviewees did seem

to relax, and by the end of the interviews, the chairpersons often initiated small talk with the interviewer. Another indication that the interviewees relaxed as the sessions progressed was that the interviewees transitioned to their colloquial form of conversation as opposed to formal, proper English as the interviews progressed. The colloquial form of English that the interviewees used is reflected in the description of the conversations.

A prevalent concept that threaded throughout the interviews was that no one criterion could be thought as *the* criterion that could make a difference. Several of the chairpersons were convinced and strongly stated repeatedly that it was a combination of criteria that made the difference. They informed the researcher in a strong voice without hesitation that the successful admission of students involved a blend of criteria. All of the chairpersons who were interviewed are still looking for the right grouping of criteria, as evidenced by the changing of admission criteria during recent years, in an effort to improve the selection of those students who have the attributes to be successful. One chairperson stated, “One must look at a variety of factors, not just one.” When asked which criterion she would use for admission if she could use only one, she expressly stated “I would never do that. I would never tell you one criterion which I think would make the best predictor. I know from my years of teaching that it is a cumulative process. I have seen students with high GPAs struggle and I have seen students with high ACTs struggle. There is no one thing. There isn’t.”

The following section will identify the concepts that were discussed during the interviews in response to the broad interview questions. The researcher has organized this section using the concepts that were discussed during the interviews as headings.

## Grades

### *Sciences*

Grades in pre-nursing science classes (e.g., anatomy, physiology, chemistry, and microbiology) ranked number one (i.e.,  $f = 6$ ) in the survey results, which meant that the chairpersons highly valued pre-nursing science grades as an admission criterion. During the interviews, two of the chairpersons did talk about pre-nursing college science grades when asked their opinion regarding which pre-nursing college grades were the best predictors of college graduation. One of the chairpersons related that there had been a point in the history of her school (i.e., approximately seven years ago) that the success rate of students as defined by NCLEX-RN scores dropped to 64%. She further elaborated that the school had also experienced a higher attrition rate than desired at the same time. The faculty launched an investigation which revealed that college anatomy, physiology, and math courses were related to student success. Students who made C's in these courses were not successful in the nursing program. The chairperson stated, "We saw an attrition issue related to these three courses (i.e., anatomy, physiology, and math). We linked the problem back to those foundational parts and, as a result, we changed our admission criteria." The change required that students have a minimum cumulative 2.5 GPA in the three college courses (i.e., anatomy, physiology, and math) prior to admission to the program. The chairperson related that these changes made a significant difference in student success as NCLEX-RN scores rose and attrition lowered.

Another chairperson also shared that she thinks that college science grades are a predictor as to whether students succeed (i.e., graduate). She explained that her school's admission criteria did currently look specifically at science grades (e.g., anatomy, physiology,

chemistry, and microbiology), as well as overall college GPA during the admission process. She stated that “the candidates for admission are determined by looking at their three highest science grades out of the four that are required. If students have been perfect in their four science courses, they are awarded 16 points, and the remaining students who are admitted will rank between 16 to around 14.5 or 14.6. The 35<sup>th</sup> applicant in the group (i.e., the maximum number of students admitted per semester) would have to have at least two A’s and one B in the sciences to be admitted. When asked how long the school had used this system and whether they were happy with the system, the chairperson stated, “This criterion was implemented in the fall of 2009 and our graduation rate has increased. We are very happy with this process.” She further stated that the graduation rate calculated on a five-year period was 89% for the academic year of 2011-2012. The chairperson expressed that “the students can be very elusive. They come and they go, thus we calculate the rate based on those who graduate from the nursing program within five years after they start their first nursing course.”

### ***Math***

College math grades (i.e.,  $f = 4$ ) did not rank as high as the science grades (i.e.,  $f = 6$ ) in the aforementioned survey, but were selected in the survey by four out of seven chairpersons as criteria that they valued for use in admitting students. Math is included in the overall college GPA criterion used as part of the admission criteria in the vast majority of nursing schools in the research sample. (See Appendix C). Only one school awarded admission points beyond those included in the overall GPA for the required math course.

One chairperson explained, when queried as to which criteria she believes are predictors of student success, that while her school currently uses the college math grade as an admission criterion, she believes that grades in anatomy and physiology are more of a predictor of success than the math grade. Another chairperson related that her school does use the freshmen math

grade as part of the formula used to admit students, along with overall GPA, science requirements, and the TEAS admission examination. The chairperson further related that the preceding combination of criteria was initiated last year, and the faculty members are satisfied with the change thus far.

### ***Overall College Grade Point Average***

The overall college GPA (i.e.,  $f = 4$ ) was mentioned by the chairpersons during the interviews as an important criterion for admission and all the schools do use overall GPA as an indicator for admission to their nursing programs. When asked what criterion they would pick if they could use just one criterion, half of the chairpersons said they would select overall college GPA. One chairperson explained that their applications were arranged according to the student's overall college GPA prior to looking at other criteria resulting in the overall GPA's determining the rank of each student prior to considering other admission criteria.

### **Perseverance, Hardiness, and Locus of Control**

A student's ability to persevere (i.e.,  $f = 6$ ) and her natural hardiness (i.e., robustness; ability to withstand difficult conditions) (i.e.,  $f = 5$ ) were ranked high in the survey as indicators for nursing student success, and the chairpersons had a lot to say about it; yet, it is not presently used as a criterion when determining admission in any of the schools in this multi-site study. One chairperson mentioned that she wished there were a tool that could be used to measure a student's ability to persevere. The chairpersons tended to associate hardiness with perseverance, and tended to discuss the two traits as one.

One chairperson described a current student: "I am thinking of one student who came to see me who had a score of 54% on her first examination in the class. She was sobbing and crying and insisted on staying in the program and working hard to bring that 54% up to a passing grade

for the class. She scored in the 90s on each subsequent test in that class. She poured all of her energy into making those scores. This is a student who persevered. She had drive. Yes, perseverance is an important trait, and I do see students who succeed through perseverance and determination.”

This same chairperson talked about locus of control (i.e., the viewpoint of a person who sees life as within her control or outside of her control). The chairperson was concerned about the current generation of students in relation to their loci of control. She stated, “This generation of students that we currently have, moms and dads fix everything for a lot of these students. The students have no coping skills. It is immediate gratification for these students and they want instant gratification. These students want to know everything to study specifically, and they state that they are shocked when they score low grades since they studied the power point. They want the information handed to them. I feel that it is an external locus of control that we are seeing. The students do not feel that events are within their control. Someone else has to make it happen for them. I believe this goes back to the kind of home they grew up in. Children just are not always prepared to make independent decisions and to be responsible for those decisions. I have actually had mothers call me to complain about their child’s class schedule after the child calls them and complains about having to get up too early to go to a particular class! Many of the children in this generation are not prepared to function without someone else making decisions for them. I think it is a generational issue.”

This same chairperson also spoke about the importance of relationships among students in regard to their success in school. She stated, “We have a group of eight or nine girls who get together for Bible study, and they have formed study groups for their classes that meet regularly. They attend church locally and pray together before their exams. They did not know each other

before meeting in their nursing classes, but have found common bonds. I think it makes a difference. I remember when I was in school and you become close to the other students. One of the girls I went to school with was in my wedding. It is like you are going through a war together. The support that these students provide to one another is invaluable to their success.”

Another chairperson of nursing became excited during the interview when asked about factors such as perseverance and hardiness. She stated, “I think this is something that is very important. It depends on how you describe it. Today, the normal student is not typically the students we dealt with in the past. Today’s students’ are not just out of high school and single with no children. That is not the norm anymore. Hardiness in the sense that students have to persevere through personal issues, as well as whatever their study habits and their own abilities are, certainly adds to it. When I see a student who is having difficulty, it is usually because they have too many things to juggle. Then, you get students these days that have health issues, and in some cases these are mental health issues.”

A third chairperson of nursing had the following comments: “We have a problem here and I figure other areas are having it also. Because of the economic conditions, many of our students work and I would say, hands down, that is the biggest obstacle. They are trying to work, sometimes full-time, and are trying to carry a full-time academic load. Students who just suck it up and live on peanut butter or live at home and do what they need to do to get through school do better [than those who work]. I have a student who gave birth two weeks ago! Now she is asking if she can bring the baby to class. No, she cannot. She should have thought of that nine months ago. I have an accelerated student who has classes in the summer and is due to deliver her baby the middle of the summer. She is wondering what she is going to do. We have several non-traditional students in each class and they have a spouse and kids and some have full-time jobs to

go to. It is these personal struggles; particularly the need to work that affects their success.

Students who are determined to do it and are absolutely passionate about nursing, they do it.”

This chairperson further described another problem that she sees interfering with student success as “those students who sailed through high school and never had to study. In their first few years in college, they memorize and regurgitate, and then, they get to nursing classes and the exams are application-type questions and they crash. I think that this issue is a huge problem because they have no study habits. They never had to study.”

Another chairperson thought that student persistency should rate as the number one admission criterion, but stated, “How do you capture that?” She further stated, “Those who really want to do it and those that say they are going to be a nurse no matter what, they do it; but, how do you measure that?”

Yet another chairperson shared that she is interested in getting students into the program who can succeed, but who also have the attribute of caring. The faculty at this school recently added a written statement from each prospective student as an admission criterion which requires the student to explain why she wants to be a nurse. The score from the essay is calculated into the admission formula that ranks the order in which students are considered for admission. The faculty members believe the written statement will give insight into the student’s thought process and also her writing skill. When asked about perseverance, hardiness, and locus of control, this chairperson stated, “We kind of get at that in our essay. We also get a sense of their perseverance from their freshmen class grades. We feel that those grades give us the opportunity to get at their commitment and perseverance, their ability to stay focused, and really get in and do some hard work, because those freshmen year classes are not easy (e.g., chemistry, anatomy, physiology, and microbiology).”

## Testing

The chairpersons ranked testing (e.g., ACT, SAT, TEAS, and HESI) in the middle range (i.e.,  $f = 3$ ) when completing the survey. They did not value testing as much as grade point averages, perseverance, and hardiness; however, some schools do use testing as an admission criterion, while others do not.

One chairperson noted that her school does use the TEAS and has found it to be a “pretty accurate predictor of success.” This school also uses the critical reasoning portion of the SAT as an admission criterion. When asked about her philosophical views on testing in general to determine admission of students, she stated “I do not think testing predicts student success to a great extent. I think they [admission tests] are hurdles that we have put in there and I do not think they are good predictors, and I think they are terribly biased against cultural diversity; however, until we find something better or we can convince others that we do not need to use the measurement, I think we are kind of stuck with it.”

A second chairperson related that the faculty members at her school were still evaluating how to use the TEAS, but had not, thus far, found it to be a predictor of success. Within the last few years, she related that they were using the TEAS primarily to predict the areas that the students needed to remediate. This school does not currently use the TEAS as an admission criterion that is scored; however, it does use the ACT composite as a scored admission criterion. The chairperson further relayed that she thinks “testing can give you a piece of information that you cannot get from other criteria, but you have to be aware of built-in biases in them; plus, we want to be real careful with the tools we use so we don’t setup students for failure

even before they get in [to nursing school] because we have used criteria that have been shown not to be effective for the population we are recruiting.”

Another chairperson related that her school had just adopted using the TEAS as an admission criterion. She relayed that they had used it in the past to identify students who needed remediation, but she was quick to point out that the testing is just one factor in the overall process. She stated, “We are not admitting on that [TEAS] alone.”

A fourth chairperson did favor the ACT as an admission criterion; however, she believed that it was crucial to find the right score to use. Her school had just increased the minimum ACT composite criterion for admission from 19 to 20; in addition, they recently increased the minimum GPA required for admission from 2.7 to 3.0. She stated that the student who comes in with ACT composite score of 19 still struggles, as demonstrated by the attrition reports that the faculty members routinely perform. The faculty members believe that increasing the ACT composite score to 20 will decrease the attrition rate.

Other chairpersons did not value testing as an admission criterion. One chairperson commented, “I think we should be careful with testing as some students who will make wonderful nurses are not good test takers.” Another chairperson firmly stated, “No, we do not do pre-testing because they have come through two years of academia [higher education classes], and the science courses provide the information that we need. If we did use admission testing, it would have to be a test that is appropriate for the end of the sophomore year in college [This school admits students into nursing at the beginning of their junior year]. The HESI admission test (HESI A2) and the ACT test are designed for the high school level student, which is inappropriate to administer to the sophomore student in college.”

The HESI admission test was not mentioned much by the chairs of nursing who were interviewed as none of them use it as an admission test to admit students. One of the schools used the HESI A2 as a tool to identify students who might need remediation. The same school used the HESI examinations designed as achievement tests that are administered throughout the nursing program to gauge the student's readiness to take the NCLEX-RN, which is administered after graduation but prior to the student practicing as a registered nurse. There were not enough schools in the sample using HESI examinations to make any determination of the satisfaction level of the chairs regarding them.

### **Admission Criteria Used By the Schools**

Admission criteria currently used by the schools in the sample (i.e.,  $n = 12$ ) were collected through their web sites, and via the interviews of the chairpersons who participated (i.e.,  $n = 6$ ). All of the schools in the sample used overall college GPA as one of their admission criteria, and two of the schools in the sample used the ACT composite score as an admission criterion while one school used the critical reasoning verbal score of the SAT. Admission tests designed specifically for nursing applicants were used by five schools with four schools using the TEAS and one school using the HESI A2.

Five schools used the overall GPA of the college pre-requisite courses required specifically for admission to nursing school. Science GPA was used by three schools, and the freshmen college math grade was used by one school. Interviews were used by two schools and written statements (i.e., essays) were used by three schools. A complete list of admission criteria used by the schools in the sample may be found in Appendix C.

### **Pre-requisite Courses Required by the Schools**

Pre-requisite courses required by the various nursing schools in the sample were collected from each school's (i.e.,  $n = 12$ ) website. The following pre-requisite courses were required by all of the schools: English, microbiology, anatomy, and physiology. Other potential course requirements -- chemistry, math, psychology, life science, sociology, life-span development, nutrition, and culture and diversity -- varied among the schools. Courses that were required by at least one of the schools were as follows: English, math, chemistry, microbiology, anatomy, physiology, psychology, life sciences, sociology, life-span development, nutrition, and culture and diversity. A complete listing may be found in Appendix D.

### **Reduction**

The researcher reduced the data by listening to the taped interviews repeatedly as well as reviewing the logs of the interviews innumerable times. Themes that emerged as overriding were those that repeatedly threaded across the interviews. The frequency of the same ideas' being repeated by the various chairpersons was evaluated and reflected upon through consciousness of self and perception of the conversations between self and the respondents (Merleau-Ponty, 1970 as stated in Lanigan, 1988).

The overriding themes that threaded across the interviews were grades, perseverance, hardiness, testing, and the thought that successful admission criteria are most likely combinations of criteria that could never be reduced to one criterion. These themes were determined by the frequency of mention of the data, the strength of the words spoken through objective measures

such as intensity of voice, style of speaking (e.g., exactness of tone when speaking), excitement in voice, and responsiveness to questions and comments made by the interviewer.

### ***Perseverance and Hardiness***

Hardiness tended to be viewed as part of the concept of perseverance. Some chairpersons suggested that perseverance and hardiness could be measured somewhat through the college GPA, which may suggest that only those students who had strong attributes of perseverance and a hardy, robust drive could achieve the higher-than-average college GPA that is required for most nursing schools. As previously stated, one chairperson indicated that being able to score high grades in the college freshmen classes reflected an ability to “stay focused and really get in and do some hard work because these classes are not easy.”

Another chairperson discussed the recent addition of essays to the admission criteria at her school in order to predict success by asking the students to explain why they want to be nurses. The chairperson stated she believed that through evaluation of the essays the faculty members may better understand the students’ thought processes, which could reflect their abilities’ to persevere to graduation.

Yet another school in the sample did advertise to prospective students that they may be called for an interview during the admission process. An interview could be used in a fashion similar to the previously described essay (i.e., to acquire additional information about the applicant that cannot be captured in more objective measures like GPAs or test scores).

Attributes that might be studied from the results of the interviews that could possibly be indicative of student success are hardiness, the ability to persist (i.e., persevere), and to complete goals. When the chairs discussed perseverance and hardiness, they did so with exuberance as their voices became more intense and it was evident that they were interested in the concepts and

believed that they deserved attention when considering students for admission. The numbers of schools that use processes (e.g., essays and interviews) that could ostensibly evaluate a prospective students' ability to persevere are limited; moreover, the number of scholarly studies that have investigated these attributes (i.e., perseverance, hardiness) as admission criteria is limited and inconclusive. The information derived from the interviews of the chairpersons does suggest the need for research of these potential attributes (i.e., perseverance and hardiness).

### ***Grades***

All the schools in the study sample use college grades as admission criteria, and the chairs spoke in firm, certain tones of voice when talking about college grades in relation to students' rates of graduation. It was obvious to the researcher that the interviewees believe that college grades are useful predictors of success in four-year nursing baccalaureate programs. Some chairs reported using overall college freshmen GPA as a criterion, others stated that they use science GPA, and some schools reported the use of both overall and science GPAs to make admission decisions.

In general, schools were not admitting students unless their college GPAs were at least a 3.0, even though the majority of schools had lower minimum GPAs in their handbooks. A few of the chairs mentioned this phenomenon was due to the large number of students who apply and the competitive nature of the admission process, as well as the limited numbers of students who can be admitted due to limited faculties, and limited clinical facilities where students can fulfill their learning needs of applying their knowledge to the care of live patients.

### ***Testing***

It was not surprising that the three topics discussed in the preceding paragraphs (i.e., perseverance, hardiness, and grades) strongly threaded through the interviews as the survey

results reflected that the chairs valued these criteria; and it was not unexpected that testing threaded strongly through the interviews as the interviewer often questioned the interviewees about their thoughts on testing. It was unexpected, however, that testing was such a strong criterion that threaded through the interviews since the chairs did not rank it especially high in the survey as a perceived predictor of success.

In contrast to perseverance, hardiness and grades, testing was not necessarily spoken of in a positive light during the interviews; instead the reactions to testing were mixed among the chairs' comments. It was, however, a strong theme which threaded across the interviews in a pervasive manner. Only one chair was convinced that the ACT was a valid indicator of student success, but she believed that a composite score of at least 20 was needed prior to acceptance of students into the nursing program at her school. Another chair mentioned that her school used the SAT verbal score as an admission criterion and she was satisfied that it was an effective predictor of student success.

The TEAS Admission Examination was a prominent topic of discussion. The majority of the chairs who were interviewed required that students take the TEAS prior to admission. Some schools used the TEAS as an admission criterion while others used it to identify weak students who may need to be enrolled in programs that are designed to help students learn time management, study skills, math skills, writing skills, reading skills, etc. Some schools were still evaluating the usefulness of the TEAS test while others were convinced it was effective and were using it to determine admissions along with other criteria. All chairs who were using the TEAS believed it was a good examination to identify potentially weak students.

## **Graduation Rates**

Of the six chairpersons who were interviewed, four provided their graduation rates to the interviewer. The rates ranged from 73% to 94% (i.e., 73, 83, 89, 94). There was no way to use the graduation rates as comparative measures, however, as they are determined by the parameters that the particular schools and universities set for themselves, by rates that are required for accreditation, or rates that are recommended by state boards of nursing

For instance, the graduation rate of 73% was calculated using a time-to-graduation rate of three years, which meant that students would need to graduate within three years from the time of the first sophomore nursing class to be included in the graduation rate. This would not allow for the counting of any students who are in school for extended times in order to repeat failed classes. Two of the remaining rates (i.e., 83% and 89%) were calculated using a five-year time-to-graduation rate, which means that some of the students have two additional years to repeat classes and graduate. Graduation rates will obviously be higher for those schools which calculate five-year as opposed to three-year rates.

The rate of 94% was based on the National League for Nursing Accreditation Commission's (2008) formula (i.e., graduation rate equals the number of students who complete the program within 150% of the time of the stated program length). Some BSN programs allow three years to complete nursing courses, some allow two years, and others may offer a preliminary nursing course the first year of college for pre-nursing majors. As a result, the latter school may count the freshmen year as the first year of nursing school which would result in an NLNAC-expected graduation rate of 150% of four years (i.e., six years). (See Table 1.0 on page

62 of this dissertation for a listing of NLNAC reported graduation rates from the academic year of 2004-2005 to the academic year of 2009-2010.)

### **Interpretation**

This research suggests that overall college GPAs and overall GPA in college science classes' are commonly used to make admission decisions and are valued as valid indicators of student success by the sample in this research study. Even though the respondents to the survey did not rank overall GPA especially high (i.e.,  $n = 4$ ) the strength of the discussions during the interviews convinced the interviewer that the chairs do highly value overall GPA as an indicator of student graduation. These criteria have been found to be reliable in past research studies as well (Byrd, Garza, & Nieswiadomy, 1999; Hayes, 1982; Hayes, 2005; Newton, Smith, Moore, & Magnan, 2007; Westcott C.L., 1997; Wold & Wold, 1990).

The continued use of grades achieved by pre-nursing college students to admit applicants to four-year BSN programs is supported by this study. The research reported in Chapter Two of this dissertation, however, addressed the potential drawbacks of using pre-nursing grades as an admission criterion. The reservations mentioned in previous literature about using grades as an admission criterion included the worry that students can and do manipulate their pre-nursing grades by enrolling in easy classes, exploiting the use of transfer credits, and participating in academic forgiveness programs (Byrd, Garza, & Nieswiadomy, 1999; Wold & Wold, 1990). In spite of these reservations, overall college GPA and overall science grades (e.g., chemistry, anatomy, physiology, and microbiology) continue to be found, both in research and in practice, as valid indicators for nursing student success (i.e., graduation).

Of great interest to this researcher were the characteristics displayed by the chairpersons when discussing the concepts of perseverance and hardiness as admission indicators. The

chairpersons often talked in excited tones when discussing these concepts. During some interviews, this was the only time that the chairpersons showed genuine interest in the topic of admission criteria. One of the chairpersons bemoaned the fact that no instrument is available to measure the concepts of perseverance and hardiness in perspective nursing students; however, another chairperson related that the strength of these criteria (i.e., perseverance and hardiness) is reflected in the overall college GPA; additionally, the chairperson believed that they could be measured using essays as the instrument.

There was agreement among all the chairpersons that persistence and hardiness do make a difference as to whether students graduate. Among the particulars that the chairpersons mentioned in relation to these concepts were that the traditional college students of today are different than students of the past. Another chairperson talked about the students' lack of responsibility regarding their personal lives. She gave an example of a student who is pregnant; as a result, "she will struggle with issues such as child care." A third chairperson talked about the fact that, unlike in past years, the majority of today's students (i.e., both traditional and non-traditional) work, sometimes full-time, in addition to carrying a full class load; plus, she discussed how their perseverance and hardiness will make a difference as to whether they can carry their work-loads in school, on-the-job, and in their personal lives.

Along with overall college GPA, math (i.e.,  $f = 4$ ) ranked between the high and medium ranges; however, the chairs did not show interest in math during the interviews so the interviewer determined that it should not be counted as high as overall GPA as an indicator for success. In a matter-of-fact tone, one chairperson did mention math. She stated that the faculty members at her school had determined through their internal auditing process that students who made C's in

math, anatomy, and physiology classes were likely to succeed; however, she thought that anatomy and physiology were more important indicators than math.

Several indicators ranked in the medium range (i.e.,  $f = 3$ ) in the survey (i.e., standardized admission tests [e.g., ACT; SAT], student integrity, locus of control, and age). By placing these indicators in the medium range, the chairpersons did not entirely rule them out as useful admission criteria, nor did they rank them as important as other criteria that they ranked higher (i.e., college science GPA, perseverance, hardiness, college math grade, and overall college GPA).

The remaining indicators were ranked between the range of zero and two, which was the low end of the range. The indicators in the lower ranges were college English, previous work in the health field, nursing specific admission tests (e.g., TEAS; HESI), and ethnicity, all of which ranked  $f = 2$ . The remaining indicators that ranked in the  $f = 1$  range were interviews, essays, socio-economic status; and the indicators that ranked in the  $f = 0$  range were letters of recommendation and sex of the student.

It is interesting to note that even though this study found that interviews and essays were not as highly valued in nursing as admission measures as other criteria (e.g., overall grade point average and science grades), some disciplines do value interviews and essays, particularly disciplines such as social work, counseling, and education (GlenMaye and Oakes, 2002, Murphy, Klieger, Borneman, and Kuncel, 2009, Nelson, Richar, and Lancaster, 2003, Pelech, Stanaker, Regehr, and Jacobs, 1999), which has motivated this researcher and her dissertation committee members to raise the question of why these differences exist.

Social workers and counselors are people-oriented, act as advocates for their clients, and assist in finding appropriate resources to assist their clients navigate crisis in their lives. Nurses

also treat the responses of their patients' social, mental, and spiritual well-being. Treating their physical well-being, however, requires a strong background in the fields of science (e.g., anatomy and physiology), as well as psychology, sociology, and philosophy. The strong emphasis on the sciences in the nursing field likely explains the differences between admission criteria valued in nursing as compared those used to fields such as social work, counseling, and education.

The admission criteria favored by nursing schools may be more similar to those used by medical schools as opposed to those used in social work, counseling, or education. Siu and Reiter (2009) reported that the list of admission tools that have not worked in the past in medical schools are personal interviews, personal statements, letters of reference, personality testing, emotional intelligence, and situational judgment tests. This list of admission tools that were not highly valued in Siu and Reiter's study are similar to those reported in this researcher's study: interviews, essays, socio-economic status, letters of recommendation, and the sex of the students were not highly valued in the views of the nursing chairpersons who served as the sample for this study.

As it is well-established in the general education research that students' socio-economic status exerts a powerful influence on achievement (Walpole, M., 2003, Zhang, L. & Postiglione, G. A., 2001), it seems odd that the participants in this study did not perceive it to be a relevant criterion to student success in nursing. Perhaps further study in this direction would yield some valuable findings related to this criterion.

Testing as a criterion for admission was discussed during the interviews; however, the discussions did not indicate that the vast majority of the chairpersons would rank testing as a valued criterion. Conclusions related to testing as discussed by the chairpersons were that "some

students who do not test well will make wonderful nurses.” The majority of chairpersons were reluctant to use testing as a primary criterion for admission to the nursing programs. Most of the schools that were using testing geared to nursing students (e.g., TEAS; HESI) were not basing their admission decisions on the results of these tests; instead they were using the tests to identify those students who might need remediation in particular topics such as math or verbal reasoning. Only one chairperson declared that she did value the ACT, but she was adamant that to be considered as a valid admission criterion, the ACT scores needed to be high (e.g., a composite score of 20 or higher). This same chairperson, when asked to identify the admission criterion that she would choose among all others, stated overall college GPA as the priority criterion.

The lack of interest in using testing as an admission criterion was supported strongly by one chairperson who pointed out that these tests (e.g., ACT, SAT, TEAS, and HESI) are not designed for college students in their freshmen or sophomore years (the college years that students’ applications to nursing programs are typically reviewed). She opined that until a test is developed that would measure the readiness of college students (as opposed to high school students) for nursing school that she would not be interested in using testing as an admission criterion. It should be noted that the vast majority of the schools in the study do not admit high school students directly into their nursing programs, instead admitting students as pre-nursing majors and then requiring them to apply to the nursing program once they have completed the pre-requisite college courses.

In summary, the interviews revealed that through the interviewees’ lived consciousness gained through their many years of experience as nurse educators, the admission criteria that were identified as the most reliable were overall college GPA, overall GPA in college science classes’, perseverance, and hardiness. All the chairpersons agreed that no one criterion could be

used to make admission decisions because it is more likely that it is a combination of criteria that predict success.

### **Overall Summary**

All in all, the student characteristics that were perceived to be the best predictors for nursing student success and thus the preferred criteria for admission decisions, were overall college GPA, college science GPA, and the qualities of perseverance and hardiness. A student's responsibilities outside of the school setting may make a difference in her success, depending on her perseverance and hardiness, which are thought to have been developed through her past personal and work experiences.

There is a need to identify the admission criteria that will best predict students' abilities to complete bachelor of science nursing programs, particularly in view of the impending nursing shortage that is predicted in the future and the lower than desired graduation rates as evidenced by the reports from accrediting agencies (e.g., NLNAC). Schools continue to struggle with the goal of identifying the attributes of students that best predict their success (i.e., graduation). All chairpersons of nursing who were interviewed in this study agreed that there is no one criterion that could be used as *the* primary admission criterion; instead, it is likely a combination of criteria that predict success. Schools are still searching for these elusive criteria. There may be criteria that predict success that are unique to each school of nursing, since practices in the student populations may differ due to the ever-evolving cultures that exist in the particular schools and communities. Participants in this study, however, shared the view that overall GPA, GPA in science courses, and the qualities of perseverance and hardiness are the most likely predictors of student success.

## **Chapter 5**

### **Summary, Conclusions, Discussions, Implications, Recommendations**

#### **Purpose**

The purpose of this mixed-methods study (i.e., non-experimental, descriptive, and phenomenological) was to study admission criteria of four-year basic baccalaureate nursing (BSN) programs to determine the criteria that are being used to admit students, and to identify the admission criteria believed to be the most likely predictors of the success (i.e., graduation) of students as determined by program chairpersons. The chairpersons of nursing who were chosen as the population for the study were identified as those who lead nursing programs housed in peer universities.

The researcher was prompted to research this topic because of the lower than desired graduation rates that some nursing schools experience, in terms of how they may affect the impending nursing shortage that is being predicted in the future. If more students could be retained in nursing schools, it would mitigate the predicted shortages of nurses, thereby positively affecting the future health of United States citizens.

The overall research questions used to guide the study were as follows:

- To what extent, if any, are quantitative academic admission criteria (i.e., standardized test scores, overall pre-nursing college grade-point averages, overall pre-nursing college math grade-point averages, overall pre-nursing college science grade-point averages, age, sex, socio-economic status, ethnicity, and previous work experience in health related fields) perceived to be predictive of student graduation in selected baccalaureate nursing schools?

- To what extent, if any, are non-quantitative admission criteria (i.e., specific character and/or personality traits [i.e., integrity, hardiness, locus of control, and perseverance] as measured by interviews, letters of recommendation, resumes, and personal statements) perceived to be predictive of student graduation in selected baccalaureate nursing schools?
- To what extent, if any, are nurse education administrators satisfied with the current criteria that are being used to admit nursing students at their individual schools?

### **Methods**

The methods used to gather information were surveys of the chairpersons of the nursing divisions of the peer institutions followed by telephone interviews. The information gathered in the surveys guided the formation of the questions for the interviews. The survey information was analyzed using frequencies of responses, and the data garnered from the interviews were analyzed by using Lanigan's (1988) framework which consisted of identifying themes in the multiple interviews.

### **Results**

The admission criteria that the study revealed were most valued by the chairpersons of nursing as predictors of student success were college science GPA, overall college GPA, perseverance, and hardiness. Studies found in the nursing literature do support college science GPA as a measure to admit nursing students (Alden, 2008; Bolan & Grainger, 2003; Byrd, Garza, & Nieswiadomy, 1999; Hayes, C., 2005; Salvatori, 2001). The typical courses used to determine science GPA are college chemistry, anatomy, physiology, and microbiology. The chairs of nursing that were surveyed ranked college science GPA as the top predictor of student success, and the themes identified in the interviews do support the finding.

Interestingly, only a few schools in the sample of this study use science GPA as a separate criterion; rather, it is measured in the overall college GPA. All schools in the sample, however, do require chemistry, anatomy, physiology, and microbiology as part of the pre-requisites required prior to admission. One chairperson did relate that the faculty members at her school weighted the science grades heavily in the admission process, and were very satisfied with the results as the graduation rate of students had increased since the inception of this change, which occurred four years ago. This school did not include testing as part of the admission criteria, instead using only science GPA and overall GPA as the admission criteria.

The use of overall college GPA was supported in this research study and is also strongly supported in a historical, longitudinal search of the nursing literature in spite of extraneous variables (e.g., transfer credits, academic forgiveness programs, and enrolling in easy classes) that may be hard to control for in studies. Extensive research of overall GPA consistently supports its usefulness as an admission criterion that effectively predicts student success (Bolan & Grainger, 2003; Byrd, Garza, & Nieswiadomy, 1999; Hayes, 1982; Hayes, 2005; Newton, Smith, Moore, & Magnan, 2007; Salvatori, 2001; Westcott, C. L., 1997; Wold & Worth, 1990).

The importance of perseverance and hardiness emerged as strong themes that could possibly be used as criteria to admit nursing students if there were tools available that could quantify these criteria during the admission process. Past nursing research that has studied these criteria using students in undergraduate programs as populations or samples is scarce in the scholarly literature (Jefferys, 2004, Sadler, 2003); however, there have been studies published in the general education literature that are pertinent to the qualities of perseverance and hardiness in relationship to general college graduation rates (Lifton, Seay, McCarly, Olive-Taylor, Seeger, & Bigbee, 2006); (Lifton, Seay, & Bushko, (2004); Lifton, Seay, & Bushko (2000). The results of

the multi-site survey conducted by Lifton et.al (2006) involving 1,432 first-year university students supported Lifton's previous studies (2004, 2000) that hardiness is a predictor of student graduation. Lifton, however, suggests that hardiness be used as a measurement to direct students who score low in the hardiness category to seek remediation programs to increase their chances of a timely graduation, as opposed to denying admissions (2006).

Other potential nursing student admission criteria (i.e., age, sex, socio-economic status, ethnicity, previous work experience in health related fields, integrity, interviews, letters of recommendation, resumes, locus of control, and personal statements) did not emerge as strong criteria worthy of use in the admission criteria profiles used to admit nursing students. It was suggested by some of the chairpersons interviewed that interviews and personal statements (i.e., essays) might be appropriate tools to measure perseverance and hardiness traits.

It is worth noting that testing did not rank strongly in either the surveys or the interviews. Five out of 12 schools in the sample do use admission tests specific to nursing students, but the majority of them do not use the scores to determine admission; instead they use these tests as measures to identify students who may need remediation. Only two schools in the sample used either the ACT or the SAT as an admission criterion, which attests to the hesitancy of schools to use these tests as measures to determine admission.

A few of the chairpersons shared their thoughts about testing and the diversity of students admitted. They believed that testing, either ACT/SAT or tests specific to nursing (e.g., TEAS, HESI), does limit the number of minority students who are admitted, and they were against testing for this reason. In addition, one chairperson stated that some students who would make wonderful nurses are just not good test-takers.

The answer to the third research question regarding whether the chairpersons were satisfied with their admission criteria is affirmative; they were satisfied, even though many were still experimenting with the criteria used in their admission panels in an effort to find the right “mix.” Most chairpersons, however, had seen their schools’ graduation rates increase with the changes. The primary criterion used by the schools was overall college GPA. Testing was not used as much as one might expect, with only six schools out of 12 using some type of testing, and some of those schools using testing solely to identify weak students who might need to enter remediation programs.

### **Recommendations and Limitations**

This study supports the use of overall college GPA and overall science GPA for use as criteria in screening potential students for admission to four-year basic baccalaureate programs. The innate qualities of perseverance and hardiness were also found to be predictors for use as admission screening for these students, although the difficulty of quantifying these qualities was acknowledged. There is literature that supports the use of GPAs, both overall and science, as admission criteria; however, there is little scholarly literature that has studied the use of perseverance and hardiness as admission criteria. This researcher strongly recommends more studies be done on the concepts of perseverance and hardiness in relationship to nursing students and their success in baccalaureate schools of nursing.

This study was a multi-site study with a large geographical area included in the sample which crossed many social, economic, political, historical, and cultural streams (E. Lassiter, personal communication, November 5, 2013). In light of the need for more studies on perseverance and hardiness, this researcher recommends that future researchers consider research

on populations with similar socio-cultural and economic characteristics (e.g., Appalachian, New England).

More qualitative research needs to be performed on the topic of nursing student success in view of the finding in this study which suggests that perseverance and hardiness may be important factors to consider when admitting students. Ethnographies would be especially helpful as these researchers spend time in the environments where students live, work, and attend school; hence, they would be able to determine the dynamic cultures that exist between and among the student populations of the schools, and their effects on the qualities of perseverance and hardiness.

The time constraints of the chairpersons of nursing did create limitations in this research by limiting the number of chairs who were willing to participate in the study. In future studies, faculty members as well as students could be included in the interviews, which would broaden the range of information; and provide varying viewpoints on the problem of faculties successfully selecting admission criteria that will predict the success of students. Focus groups of chairpersons, faculty members, or students could be interviewed at national conferences (e.g., National League for Nursing, Student Nurses Association) to collect data in an environment where the interviewees would not be distracted by work demands.

### **Implications**

In view of the results of the longitudinal study of the scholarly literature that was conducted as part of this study, overall college grade point average is likely a valid predictor of student success. This researcher recommends that each baccalaureate nursing school assess its admission panel with this finding in mind. Testing when used as a criterion to admit students may result in a low population of diverse students which, in turn, could result in a low number of

diverse registered nurses who are caring for patients. This study suggests that caution be used with admission testing due to the strong possibility of minority students' failing to gain admission. The use of science GPA is also supported by this study and is supported in the scholarly literature, albeit not as strongly as overall GPA. More research needs to be done on the use of science GPA as an admission criterion.

Hardiness and perseverance emerged as likely predictors of student success in this study. There are few studies on these topics, however, and the researcher urges that more research be conducted to ascertain whether these qualities are important criteria to use when determining admission. Qualitative studies are particularly needed to try to answer the broad question of why students fail. Ethnographies would be especially beneficial since the researchers would be interacting with the students; thus, they would be able to study cultural and socio-economic differences that could relate to hardiness and perseverance.

On a different note, more uniformity and transparency are needed in the information that schools, state boards of nursing, and accreditation agencies collect. It is difficult to conduct valid multi-site research, particularly quantitative research, when the data that are available differ widely from state to state, from school to school, and among accrediting agencies. More studies are needed that include both quantitative and qualitative research on this topic, but until data become more uniform and transparent, it may be hard to conduct the needed research, particularly quantitative research using multi-sites.

## **Conclusions**

The chairpersons who participated in the interviews unanimously agreed that the admission criterion that would best predict success of students would likely be a combination of criteria. The criteria of overall science GPA, overall college GPA, perseverance, and hardiness

were perceived in this study to be predictors of student success based on the lived experiences of the chairs who participated in the surveys and/or interviews. These criteria do not necessarily represent the best combination of criteria that every school should use, but they have been identified as important criteria to be considered as faculty members select the criteria that best suit the populations in their schools and communities.

This study's results did not support testing as an admission criterion. A longitudinal study of the literature yielded the same results. The variability of the results in the literature leads the researcher to caution that testing when weighted heavily in admission panels likely does not consistently predict student success, and may, in fact, result in less admission of minority students. This could, in turn, result in disproportionate numbers of minority registered nurses caring for patients in the future.

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## **APPENDIX A**

## Survey

### Students in Baccalaureate Nursing Programs: Do Admission Criteria Predict Student Graduation?

*Directions:* On a scale of 0-5, with 0 representing the lowest score (i.e., not at all) and 5 the highest score, please answer the questions below.

Criteria	0 (Lowest score)	1	2	3	4	5 (Highest score)
How satisfied, if at all, are you with the admission criteria that your nursing program uses?						
How satisfied, if at all, are you with the graduation rates of your nursing program?						
How well, if at all, do you believe grades in pre-nursing college math classes predict nursing student graduation?						
How well, if at all, do you believe grades in pre-nursing college science classes predict nursing student graduation?						
How well, if at all, do you believe grades in pre-nursing college English classes predict nursing student graduation?						

How well, if at all, do you believe overall pre-nursing college grade-point-average predicts nursing student graduation?						
How well, if at all, do you believe standardized admission tests (i.e., ACT, SAT) predict nursing student graduation?						
How well, if at all, do you believe nursing specific admission tests (i.e., TEAS, HESI, NET, PAX) predict nursing student graduation?						
How well, if at all, do you believe letters of recommendation predict nursing student graduation?						
How well, if at all, do you believe personal statements (i.e., essays) predict nursing student graduation?						
How well, if at all, do you believe candidate interviews predict nursing student graduation?						

To what extent, if any, do you believe previous work experience in health care predicts nursing student graduation?						
To what extent, if any, do you believe a student's integrity affects nursing student graduation?						
To what extent, if any, do you believe a student's perseverance affects nursing student graduation?						
To what extent, if any, do you believe a student's hardiness (i.e., capability to endure difficult conditions; robust) affects nursing student graduation?						
To what extent, if any, do you believe a student's locus of control (i.e., feeling oneself in control of events as opposed to feeling that others have that control) affects nursing student graduation?						

To what extent, if any, do you believe a student's ethnicity affects nursing student graduation?						
To what extent, if any, do you believe a student's socio-economic status affects nursing student graduation?						
To what extent, if any, do you believe a student's age affects nursing student graduation?						
To what extent, if any, do you believe a student's sex (i.e., female or male) affects nursing student graduation?						

## **APPENDIX B**

## Frequency Table

### *Quantitative Survey Results-Frequency of Responses*

Category (Listed in order of highest to lowest frequency of responses in 5-4 category)	Frequency of responses. Range <b>5- 4</b> (Highest possible scores: The higher the score the more likely to make a difference in student success)	Percentage	Frequency of responses. Range <b>3-2</b> (Middle range scores that indicates the respondent does not have strong feelings as to whether the variable is important or not)	Percentage	Frequency of responses. Range <b>1-0</b> (Lowest possible scores: The higher the score the more unlikely to make a difference in student success)	Percentage
College science GPA	6	85.7	1	14.3	0	0
Perseverance	6	85.7	1	14.3	0	0
Hardiness	5	71.5	2	28.6	0	0
College math grade	4	57.1	3	42.9	0	0
Overall college GPA	4	57.1	3	42.9	0	0
Standardized admission tests, e.g., ACT; SAT	3	42.9	3	42.9	1	14.3
Student integrity	3	42.9	4	57.2	0	0
Locus of control	3	42.9	4	57.2	0	0
Age	3	42.9	2	28.6	2	28.6
College English Grade	2	28.6	5	71.4	0	0
Previous work experience in health care	2	28.6	5	71.4	0	0
Nursing-specific admission tests, e.g., TEAS; HESI	2	28.6	5	71.5	0	0

Ethnicity	2	28.6	4	57.2	1	14.3
Candidate interviews	1	14.3	3	42.9	3	42.9
Essays; Personal statements	1	14.3	2	28.6	4	57.2
Socio-economic status	1	14.3	5	71.5	1	14.3
Letter of recommendation	0	0	2	28.6	5	71.4
Sex of Student	0	0	1	14.3	6	85.7

## **APPENDIX C**

### Admission Criteria Used By Study Sample

	Overall College GPA	Admission Test Specific to Nursing	Math Grade	Science Grade	Critical Reasoning and Verbal Score of SAT	ACT Composite Score	Interview	Essay	Pre-requisite Nursing Classes GPA
School One	Yes	Yes TEAS	Yes	Yes	No	No	No	No	No
School Two	Yes	Yes TEAS	No	No	Yes	No	No	No	No
School Three	Yes	No	No	Yes	No	Yes	No	No	No
School Four	Yes	No	No	Yes	No	No	No	No	No
School Five	Yes	No	No	No	No	No	No	No	Yes
School Six	Yes	Yes TEAS	No	No	No	Yes	Yes	Yes	No
School Seven	Yes	No	No	No	No	No	Yes	No	Yes
School Eight	Yes	Yes HESI A2	No	No	No	No	No	No	Yes
School Nine	Yes	No	No	No	No	No	No	No	Yes
School Ten	Yes	No	No	No	No	No	No	Yes	No
School Eleven	Yes	No	No	No	No	No	No	Yes	No
School Twelve	Yes	Yes TEAS	No	No	No	No	No	No	Yes

## **APPENDIX D**

### Pre-Requisite Courses Required by 4-year Nursing Programs in the Study

Schools	1	2	3	4	5	6	7	8	9	10	11	12
English	Yes											
Algebra	Yes	No	Yes									
Chemistry	Yes	No	Yes									
Microbiology	Yes											
A & P	Yes											
Psychology	No	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	Yes
Life Sciences	Yes	No										
Sociology	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes
*Life-Span Development	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No	No
*Nutrition	No	Yes	No	Yes	No	Yes	Yes	Yes	No	No	No	No
Culture and Diversity	No	No	No	No	Yes	No						

\*This table measured only those courses offered as pre-requisites to the beginning nursing courses. Many schools (marked as no on above chart) do offer these courses concurrently with beginning nursing courses.

## **APPENDIX E**

## Letter from Institutional Review Board



**Office of Research Integrity**  
Institutional Review Board  
401 11th St., Suite 1300  
Huntington, WV 25701

FWA 00002704

IRB1 #00002205  
IRB2 #00003206

November 29, 2012

Barbara Nicholson, PhD  
Leadership Studies

RE: IRBNet ID# 385074-1

At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Nicholson:

**Protocol Title:** [385074-1] Perceptions of Nursing Education Administrators Regarding the Relationship of Admission Criteria to Student Graduation

**Expiration Date:** November 29, 2013

**Site Location:** MUGC

**Submission Type:** New Project                      APPROVED

**Review Type:** Exempt Review

In accordance with 45CFR46.101(b)(2), the above study and informed consent were granted Exempted approval today by the Marshall University Institutional Review Board #2 (Social/Behavioral) Chair for the period of 12 months. The approval will expire November 29, 2013. A continuing review request for this study must be submitted no later than 30 days prior to the expiration date.

This study is for student Joy Cline.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral/Educational) Coordinator Michelle Woomer, B.A., M.S at (304) 696-4308 or woomer3@marshall.edu. Please include your study title and reference number in all correspondence with this office.

## Curriculum Vitae

Joy Cline  
1807 Washington Boulevard  
Huntington, WV 25701  
[clinejoy@marshall.edu](mailto:clinejoy@marshall.edu)

### CURRENT WORK:

#### **2010-Present**

Associate Professor in the Baccalaureate Nursing program on the Huntington campus of Marshall University. The courses taught are listed as follows:

- Fundamentals of Nursing I (sophomores)
  - Teach & Coordinate Class
  - Teach Clinical Labs
- Fundamentals of Nursing II (sophomores)
  - Teach Clinical Labs
- Professional Nursing Practice (seniors)
  - Teach & Coordinate Class
- Contemporary Nursing (RN-BSN Students/E-Course)
  - Teach & Coordinate Class

Areas of teaching expertise are nursing management, hospital finance, professional issues, fundamentals of nursing, and medical-surgical nursing.

Active in serving the university through committee work.

- Member, School of Nursing, Undergraduate Academic Program
- President, College of Health Professions Faculty Organization
- Member, Marshall University Faculty Personnel Committee
- Member, College of Health Professions Promotion and Tenure Committee

#### **2003-2010**

Marshall University (MU) College of Health Professions, Point Pleasant, West Virginia campus, Assistant Professor & Coordinator of Distance Nursing Bachelor of Science Program.

Job entailed teaching Huntington and Point Pleasant students in classroom and clinical settings, advising students, and coordinating the distance learning program at the Pt. Pleasant campus. Coordination of the program included hiring faculty, coordinating clinical sites for students, assisting with accreditation surveys, and assuring that quality of the distance curriculum was maintained.

## **PREVIOUS WORK EXPERIENCE:**

Vice President for Patient Care Services, Pleasant Valley Hospital, Pt. Pleasant, WV (1993-1998).

Thirty-five years' experience in hospital nursing, including positions of staff nurse, head nurse, supervisor, nurse specialist, director of nursing, and vice president of patient care services. Experienced in various specialties of acute care nursing, including medical-surgical, emergency room, critical care, obstetrics, cardiac rehabilitation, enterostomal therapy, and risk management.

## **EDUCATION:**

Marshall University Graduate College  
South Charleston, WV  
Ed.D, 2013

Bellarmino University  
Louisville, KY  
MSN, 1998

Cleveland Clinic School of Enterostomal Therapy  
Cleveland, OH  
Diploma, Enterostomal Therapy, 1987

Marshall University  
Huntington, WV  
BSN, 1986

Charleston General Hospital School of Nursing  
Charleston, WV  
| Diploma, RN, 1966

## **LICENSES & CERTIFICATIONS**

WV RN license # 1840  
Certified CPR Provider  
Certified Advanced Geriatric Specialist (AGES)

## **PAST EMPLOYERS:**

Pleasant Valley Hospital, Pt. Pleasant, WV  
Cabell-Huntington Hospital, Huntington, WV  
Guthrie Hospital, Huntington, WV  
St. Mary's Hospital, Huntington, WV  
Boone Memorial Hospital, Madison, WV

Charleston General Hospital, Charleston, WV

**PROFESSIONAL MEMBERSHIPS:**

American Nurses Association

National League for Nursing

West Virginia League for Nursing

West Virginia Nurses Association

Treasurer, 2007-2009

Executive Board Member, 2007-2009

Approver Unit Co-Chair, 2007-2009

Approver Unit Reviewer, 2006-2011

Golden Key International Honor Society, MU Chapter, 2009-Present.

Sigma Theta Tau, Nu Alpha Chapter, 1998 - Present.

Pinnacle, Honor Society of Nursing, 1998

Honor Society of Phi Kappa Phi, 2011-Lifetime membership

**SCHOLARLY ACTIVITY:**

2013 National League for Nursing Education Summit, “Raising the Roof/Advancing the Nation’s Health”, Washington, D.C. , September 18-21.

2012 QSEN National Forum, “Innovation to Transformation”, Phoenix, AZ, May 30-June 1, 2012.

National League for Nursing State Conference, Anita Finkelman, “A Perfect Storm or Perfect Opportunity: Where Will We Go With Nursing Education”, Flatwoods, WV, May 16, 2012.

AGES Certification, West Virginia Geriatric Education Center, Morgantown, WV, March, 2012.

Meti-Man Training, Point Pleasant, WV, May 13, 14, 2010.

Review for Certification for Nurse Educators, Huntington, WV, April 23, 2010.

Nurse Unity Day, WV State Capitol, Charleston, WV, January 27, 2010. Accompanied 73 MU nursing seniors to the State Capitol to learn about the legislative process and how it affects nursing practice.

Update on ANCC Accreditation Standards for Providers of Continuing Education, *Organized the all day conference and taught majority of educational sessions*, Charleston, WV, October 13, 2009.

2009 Accreditation Symposium, “Planning & Evaluating Continuing Nursing Education & The Changing CNE Environment”, Philadelphia, PA, July 34 & 14, 2009.

West Virginia League for Nursing Annual Meeting & Workshop, “Bridging the Gap between Education & Practice”, *Participated as speaker for panel discussion*. Huntington, WV, April 18, 2009.

Stimulation for Dummies: Incorporating Simulation into Healthcare Education, Dr. Pamela Jefferies, St. Mary’s Medical Center for Education, Huntington, WV, May 12, 2009.

“Recognition if not Realization: Tipping the Scales in Favor of Social Justice in Pre-Service Programs”. *Juried Co-Presenter at Break out Session*, National Conference of Professors of Education Administration (NCPEA), Chicago Illinois, 2008.

Qualitative Research “The Success and Failure of Student Nurses in a Baccalaureate Program of Study, Ethnography,” *Juried Poster Presentation*, National Conference of Ethnographic and Qualitative Research in Education (EQRE), Cedarville, Ohio, 2008.

Quantitative Research, “Does Admission Criteria Used to Admit Nursing Students Correlate with Success?” *Presenter*, Marshall University College of Health Professions, Faculty Brown Bag Luncheon Meeting, 2008.

National League for Nursing Summit, 2008, “The Power of Diversity in Education: Embracing Difference in Heritage and Thought”, San Antonio, Texas, Sep. 17-20, 2008.

## **HONORS:**

Phi Alpha Phi, 2011.

Nominee, Hedrick Teaching Award, Marshall University, 2009.

Golden Key International Honor Society, 2009.

West Virginia Nurse Association (WVNA) Nurse of the Year Award, 2008.

Sigma Theta Tau International Honor Society of Nursing, 1998.

Outstanding Enterostomal Therapy Nurse of the Year Award, Wound, Ostomy, and Continence Nursing Society, 1993.

President, Wound, Ostomy, and Continence Nursing Society (WOCN), MidEast Region, 1993.

Pinnacle, National Nursing Honor Society, 1998.

Most Creative Enterostomal Therapy Nurse of the Year Award, WOCN, MidEast Region, 1992.

Best Marketing Program, WOCN National Award, 1988, 1989, 1990.

Dow Hickam Wound, Ostomy & Continence Nurse President’s Award, 1992.

Employee of the Month, Pleasant Valley Hospital, Point Pleasant, WV, 1990.

Registered Nurse of the Year, Pleasant Valley Hospital, Point Pleasant, WV, 1990.

## **RESEARCH INTEREST:**

Nursing student success verses failure in Bachelor of Science programs.