

PREDICTORS OF SUCCESS IN A GRADUATE PROGRAM
IN RADIOLOGIC SCIENCES

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I am submitting herewith a dissertation written by Linda L. Pearson entitled "Predictors of Success in a Graduate Program in Radiologic Sciences." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Health Education.

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DEDICATION

This research is dedicated to my parents, my son and granddaughters, my siblings, my nieces, and particularly to my son Michael and my father Jesse. My family provided unending support in ways too numerous to list or even fully identify. Michael and Jesse took their support a step beyond and made unselfish sacrifices to ensure the completion of my coursework as well as my research. Their support assured that my dream became a reality. This paper is dedicated to all of them with gratitude and love.

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ABSTRACT

LINDA PEARSON

PREDICTORS OF SUCCESS IN A GRADUATE PROGRAM IN RADIOLOGIC SCIENCES

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The purpose of this study was to determine the relationship between admission criteria and student success in a graduate program in radiologic sciences. The study data were obtained from the only graduate program in radiologic sciences. The participants were 119 students who were accepted into the graduate program in Radiologic Sciences at Midwestern State University in Wichita Falls, Texas. Of the 119 subjects, 84 graduated and 35 did not graduate.

The Pearson Product Moment correlation coefficient was used to determine the correlations between the admission criteria of the Program and the measures of success. The admission criteria were undergraduate grade point average (UGPA) and scores on the Graduate Record Examination in the Verbal and Quantitative sections (GREV and GREQ). These scores were added together (GRET) along with the undergraduate grade point average times a constant to acquire an admission index (AI). These were correlated with the success criteria in the form of graduate grade point average (GGPA) and the student's scores on the Department's Final Competency Examination (FCE).

The findings were not significant, at a p-value of .0768 and .2161 respectively, between UGPA and GGPA or the FCE. The findings were not significant between the GREV and the GGPA at a p-value of .2701. The findings were significant between GREQ, GRET, and AI and the GGPA at levels below .05 for the p-value. The findings were significant between GREV, GREQ, GRET, and AI and the FCE at levels less than .05 for the p-value. The conclusion of this study was that the admissions criteria serve as a useful tool in predicting student success in the Masters of Science in Radiologic Science program at Midwestern State University and the program should continue to utilize these criteria to help ensure student success.

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CHAPTER I

INTRODUCTION

Graduate programs initiate and utilize admission criteria as a strategy to support student success. Few programs have open admission because of resource limitations. Utilizing admission criteria to screen applicants is an attempt to assure that the students accepted into a program will have the skills and foundation commonly considered necessary to support success. Admission criteria for graduate programs found in the literature includes undergraduate grade point average (UGPA) and scores on standardized tests such as the Graduate Record Examination (GRE). The student's UGPA and GRE scores are the most common admission criteria studied by researchers. The literature offers differing viewpoints regarding the ability of these criteria to serve as predictors of success.

The Master of Science in Radiologic Sciences (MSRS) program at Midwestern State University (MSU) is the first, and currently only, graduate program serving the professions of radiologic sciences. The program began as the result of a need expressed by the professional community, followed by a needs analysis conducted by the Midwestern State University Radiologic Sciences program in 1994. The program reviewed and adapted policies and procedures common to other health care graduate programs with emphasis being placed upon graduate health care programs already established at Midwestern State University, such as nursing (N. Bugg, personal communication, August 26, 2002).

The admission policy (MSU Bulletin, 2000-2002) for the radiologic science program is based upon an Admission Index (AI) of 1400 or greater. The AI is comprised of the student's UGPA from the last 60 hours of courses times 200 plus the student's score on the GRE in the Verbal (GREV) and Quantitative (GREQ) sections. The combined scores of the GREV and GREQ are referred to in the study as the GRE total (GRET).

The formula utilized to calculate the AI is as follows:

$$\text{Admission Index} = 200 \times \text{UGPA} + \text{GREV} + \text{GREQ}$$

The Miller's Analogy Test (MAT) may be substituted for the GRE if the UGPA is at least 3.0 in their last 60 hours of undergraduate work and the MAT score is 46 or greater. No conditional admissions will be granted when the MAT score is used. If the student has less than a 46 on the MAT the student is required to complete the GRE.

Admission to the program is unconditional for applicants with an AI of 1400 or more or seeking a second master's degree. Students with an AI of 1300-1399 receive conditional admission. This is converted to unconditional admission when they have a 3.0 GPA on their first 6 graduate hours, or if they repeat the GRE and increase their AI score to 1400, or they take additional undergraduate courses and improve their UGPA enough to increase the AI to 1400. Students are admitted under special status if the AI is below 1300. Special status is granted through application of the student to the Health Science College Admissions Committee (now called Health Sciences and Human Services College Admissions Committee). The committee requires that the student meet specific criteria before receiving unconditional admission. The most common

requirement is successful completion of 9 semester hours of graduate credit (MSU Bulletin, 2000-2002). The student is then converted to unconditional admission status.

Success within the program is a measure of two factors. The first is the student's graduate grade point average (GGPA), which must be a 3.0 or greater. The second is the student successfully completing the Final Comprehensive Examination (FCE) with a score of 60% or greater.

Purpose of the Study

The purpose of this study was to determine the relationship between the MSRS admission criteria and student success. The study utilized correlations between the admission criteria (UGPA, GREV, GREQ, and GRET) and each measure of success (GGPA and FCE scores) individually. Analysis of the relationship between the admission criteria and the measures of success will assist the program in determining the efficacy of the admission criteria to better ensure student success.

Hypotheses and Research Questions

The research posed one question. Does UGPA, GREV, GREQ, and GRET predict GGPA and FCE?

The research project tested ten hypotheses at the .05 significance level. The null hypotheses are as follows:

1. The UGPA has no statistically significant relationship with the GGPA.
2. The UGPA has no statistically significant relationship with the score on the FCE.
3. The GREV has no statistically significant relationship with the GGPA.
4. The GREV has no statistically significant relationship with the score on the FCE.

5. The GREQ has no statistically significant relationship with the GGPA.
6. The GREQ has no statistically significant relationship with the score on the FCE.
7. The GRET has no statistically significant relationship with the GGPA.
8. The GRET has no statistically significant relationship with the score on the FCE.
9. The AI has no statistically significant relationship with the GGPA.
10. The AI has no statistically significant relationship with the score on the FCE.

Definition of Terms

1. Admission Index (AI) - the student's UGPA from the last 60 hours times 200 plus the student's core on the GREV and GREQ ($AI = 200 \times UGPA + GREV + GREQ$).
2. Final Comprehensive Examination (FCE) - the written comprehensive examination given students in the MSRS program upon completion of didactic course work. The student must score a 60% or greater with results recorded as Pass or Not Pass. Students in the Not Pass status may repeat the examination during the next semester.
3. Graduate Grade Point Average (GGPA) - the student's average grade on their graduate course work upon graduation.
4. Graduate Programs - any higher education program that provides post degree educational instruction and with the end result of success including a graduate degree.
5. Graduate Record Examination (GRE) - an examination given to students applying to graduate school. It is divided into testing sections.

6. Graduate Record Examination - Quantitative (GREQ) - the student's score on the quantitative portion of the GRE. The quantitative section tests basic mathematical skills.
7. Graduate Record Examination – Total (GRET) - the sum of the student's scores on the GREV and GREQ. It is utilized to determine the AI for the student.
8. Graduate Record Examination – Verbal (GREV) - the student's score on the verbal portion of the GRE. The verbal section is intended to determine the students' ability to review, analyze, and evaluate information for analysis.
9. Radiologic Sciences - all imaging and therapeutic disciplines utilizing radiations (both ionizing and nonionizing) to create diagnostic images and apply healing therapies. These disciplines include radiography, radiation therapy, nuclear medicine, sonography and all of their advanced practices such as computerized tomography.
10. Undergraduate Grade Point Average (UGPA) - the student's average grade on the last 60 hours of their undergraduate course work.

Limitations and Delimitations

There were no limitations to the study. The study was delimited by the following:

1. The students had graduated with a GPA of 3.0 or more and scored 60% or more on the FCE.
2. The population was inclusive of all students admitted to the MSRS program.
3. The dependent variable in the form of FCE was based upon a test that has not been checked for reliability and validity.

Assumptions

The assumptions were as follows:

1. The records reviewed were accurate.
2. The program prepared students to successfully complete the FCE.
3. The records of all students admitted to the program were made available to the researcher.

Background and Significance

Review of the literature indicates that the most commonly researched admission criteria are UGPA and GRE scores (Fenster, Markus, Wiedemann, Brackett, & Fernandez, 2001). The literature provides support for the usefulness of these criteria in predicting graduate success. However, the research also indicates these criteria do not serve as predictors of graduate success and therefore are poor criteria for admission to graduate programs. A literature review revealed no research studies related to Radiologic Sciences and predictors of success in graduate programs. This dearth of information regarding the ability of the admission criteria selected by the MSRS program to serve as a predictor of student success in graduate programs in radiologic sciences provides the rationale for conducting research on the subject.

The education of entry-level radiologic science practitioners has been the focus of radiologic science educational programs. However, the environment in which health care is delivered has evolved to be more complex and business like in its practice. This is the environment in which radiologic science professionals now practice. These environmental changes have resulted in a change of the standards for administrators and

directors of radiology departments in both a clinical and educational setting. The standards initially elevated to the baccalaureate level but have now been raised to the master's level. This change in the preferred academic credentials of directors stimulated the development of a master's of science program at MSU. This is currently the only master's program in the United States and as such has an obligation to provide leadership and guidance as additional programs develop. This study will provide the profession with its initial review of the usefulness of the most common admission criteria utilized in graduates programs and can serve as a springboard for future research as the degree matures and expands to additional Universities.

CHAPTER II

REVIEW OF THE LITERATURE

Admission criteria vary across graduate programs. This literature review will discuss quantitative criteria utilized, particularly UGPA and GRE scores as analyzed in this study. The review will also present research regarding the use of the Graduate Management Admission Test (GMAT) and Miller Analogies Test (MAT).

Admission to graduate programs is seldom open. Program faculty members through a committee action typically determine admission to a graduate program. The committee will consider a variety of factors documenting the student's academic history as well as their professional and personal history. The applicant's history is presented in various forms such as UGPA, GRE, MAT, and GMAT scores, letters of recommendation, grades in specific undergraduate courses, work experience, research experience, student reflections in writing, and interviews (Frazier & Edmonds, 2002; Grinnell & Kyte, 1979).

Admission Criteria

The MSU master's program adopted admission criteria used across the University's colleges. They are the utilization of UGPA and GRE scores to determine a numerical admission index. The scores on the GRE are broken into specific areas, verbal, quantitative, analytical, and some disciplines have a subject or specialty test for their discipline. The most commonly utilized GRE categories are the verbal and quantitative (Fenster et al., 2001). Ainslie et al. (1976) stated that 40% of graduate

programs use GRE scores as a part of their admission criteria. The most common admission criteria considered within the literature reviewed for this study is UGPA and GRE scores (Hoefer & Gould, 2000). The use of these criteria is an attempt by programs to fill limited student positions within a graduate program of education with individuals who have the best chance of successful in the form of GGPA, completion of some type of final competency assessment, and ultimately graduation. Consequently there has been considerable research regarding the usefulness and predictability of these admission criteria (Abedi, 1991). The most common areas of graduate study conducting research on the effectiveness of UGPA and GRE scores to predict student success are psychology, education, and business.

Graduate Record Examinations

The GRE is a battery of tests in Verbal Reasoning, Quantitative Reasoning, Analytical Writing, and Subject Tests. A fee is charged for taking the test, generally paid by the student. The Educational Testing Service (ETS) administers the test, scores completed tests, and delivers scores to the student and institutions designated by the student. The GRE was developed by ETS to serve as a predictor of first-year graduate school grades and not intended to predict GGPA (Goldberg & Alliger, 1992).

GRE - Verbal

The Verbal Section of the General Test has 30 questions and the student is allotted 20 minutes to complete this section. The Verbal Section is intended to analyze the students' ability to comprehend written material in the form of analysis and evaluation. The student is also expected to identify relational aspects found in writings.

The scoring range for this area of testing is 200-800 with 10-point increments (Educational Testing Services, 2002).

GRE - Quantitative

The Quantitative Section has 28 questions and the student is allotted 45 minutes to complete this section. Its purpose is to determine the student's basic mathematical skills along with their ability to problem solve in a quantitative arena. The scoring range for this area of testing is 200-800 with 10-point increments (Educational Testing Services, 2002).

GRE - Analytical

The Analytical Writing Section contains 2 writing tasks and the student is allotted a total of 75 minutes to address the writing tasks, 45 minutes to present a perspective on an issue and 30 minutes to analyze an argument that has been presented. This section is not intended to assess any type of content knowledge, but is to assess the student's ability to think critically and then present their thoughts in the form of analytical writing. The scoring range for this section is 0-6 with one-half point increments. The Analytical Writing Section was changed October 1, 2002 although its format and purpose have similar descriptions to the Analytical section utilized prior to October 1, 2002 (Educational Testing Services, 2002).

GRE – Subject Test

The ETS also offers a Subject Test for the following areas of study: Biochemistry, Cell and Molecular Biology, Biology, Chemistry, Computer Science, Literature in English, Mathematics, Physics, Psychology. Each subject test is divided

into categories and the numbers of questions vary according to category with the smallest number of questions, 66, being found in the Mathematics Test and the largest number of questions, 230, being found in the Literature in English Test. Scores on the Subject Tests come in two forms. One is the raw score and the second is the scaled score. Students are allowed 2 hours and 40 minutes for their particular subject test (Educational Testing Services, 2002). Researchers such as Capps and DeCosta (1957) report that the subject or specialty tests administered by GRE are the best predictors of student success in a graduate program. House and Johnson (1993) found that the subject test in psychology did a better job of predicting graduate grades for selected psychology courses. There is no subject test for radiologic sciences.

Effectiveness of the GRE in Predicting Success

The majority of published research indicates that the components of the GRE most commonly used for admissions are the GREV, the GREQ, and/or a combination of these sections total scores (Frazier & Edmonds, 2002; House & Johnson, 2002). The Subject Test (GRES) is next in frequency of use in admission criteria. The majority of the studies reviewed for this research were reporting on the GREV and GREQ but the GRES is acquiring closer scrutiny (Lollis, Einstein, & Brewer, 1987). House and Johnson (2002) reviewed the effect of GRE scores on grade performance on 236 professional psychology students by comparing GRE scores to grades in various graduate courses. Their findings were that in general the scores on the GRES for Psychology were significantly correlated with the performance of the student in certain graduate

psychology courses. The GRE Technical Manual reports a correlation of $r=.32$ for the Advanced Psychology subject test (Kuncel, Campbell, & Ones, 1998). This is a greater correlation than reported for the GREV and GREQ. Findings in an earlier study of graduate education majors by Capps and DeCosta (1957) were in agreement and stated that the GRES is the best single predictor of success in graduate school with a correlation of $r=.49$. Roznowski (1998) states that correlations between the GRE and graduate performance range between .3 and .5.

Goldberg and Alliger (1992) conducted a meta-analysis on the validity of the GRE in predicting success in graduate school for psychology students. They found a stronger relationship between GREQ scores and graduate course grades than with the GREV or GRET with its ability to predict quantitative course grades having a variance of .4-.34. One important finding was that the GRE demonstrated greater variance on comprehensive exam performance than any other criteria considered in their meta-analysis. This was the only study found that utilized the comprehensive exam performance as an indicator of success.

Studies as far back as 1979 (Grinnell & Kyte) indicate that the GRE predicts success in the form of GPA at the end of the first semester of graduate work. However, Grinnell and Kyte's study, conducted on graduate students in social work, placed a greater emphasis on the student's ranking in the A-Trait anxiety exam for predicting success.

A study by Fenster et al. (2001) used 206 graduate students in forensic psychology. They performed linear regressions on GREV, GREQ, and UGPA and found

a correlation of .63 with GGPA. They found substantial relationships between GGPA and each of these variables with the correlations for the GREV being $r=.56$ and GREQ being $r=.48$. These relationships indicate that the correlation between GRE scores and GGPA were moderately significant and that GRE scores demonstrate usefulness in predicting student success.

Ainslie et al. (1976) found a weak correlation between GGPA and GRE scores except for two subgroups in graduate nursing, psychiatric and community health. These subgroups had a moderate association between GGPA and GRE scores. Numerical findings were not provided in the report of the study. Brown and Weaver (1979) conducted a study of graduate journalism students and found that GREV had little usefulness in predicting graduate school success. They found that GREQ was a better predictor of success for students with no professional or academic experience in journalism, but neither demonstrated significant predictability. Thornell and McCoy (1985) reviewed education, humanities, fine arts, and math/science subgroups of 462 graduate students at Delta State University. Their composite findings for all subgroups showed the GREQ to be less predictive of GGPA with a correlation of $r=.29$ while GREV had a correlation of $r=.47$ and GRET a correlation of $r=.43$. The GREQ was less significant in each subgroups findings than the GREV and the GRET. Borg (1963) found that the GRE had little predictive validity for graduate education students and that there was no difference between the predictive abilities of GREV and GREQ with the exception of the GREV showing a little discrimination at lower GGPA levels.

Ineffectiveness of GRE in Predicting Success

The research related to the ineffectiveness of GRE in predicting success for graduate students was as substantive as that supporting the predictability of GRE for graduate success. Oldfield and Hutchinson (1996) found that GRE accounted for 10% or less of the variance in course grades for graduate students. A study by House and Johnson (1993) found that GRET was not predictive of degree completion by the subjects but some components of the GRE were useful. The score in GREV for professional psychology students had predictability usefulness while it failed to be useful in predicting success for students in general/experimental psychology. Blanchard (1977) stated that the GRE has no predictive ability and recommended that its use be abandoned.

Graduate Management Admission Test and Miller Analogies Test

Graduate programs for business have two types of graduate examinations at their disposal. One is the GRE and the other is the Graduate Management Admission Test (GMAT). The studies utilized for this research were focused on the GRE as a predictor of success. However, one study correlated the GRE and GMAT to GGPA. They stated that the GRE had greater predictability of success than the GMAT (Nilsson, 1995) for graduate business students. Nilsson (1995) found that the Pearson Product-Moment correlation coefficient revealed a correlation between GRE and GGPA of $4.0 = .449$ while the GMAT correlation was much weaker at $4.0 = .231$.

Wesche, Courtney, and Hausken (1984) from Seattle Pacific University compared the MAT, GRE, and UGPA as predictors of success in the form of GGPA. They utilized graduate students across disciplines admitted to graduate programs at the University

between the years of 1973 and 1985. Their findings were that UGPA and GRE were both better predictors of student success in the form of GGPA than the MAT. The GRE had a correlation of $r=.4033$, UGPA had a correlation of $r=.2526$, while the MAT had a correlation of $r=.1502$. They concluded that “internal and personal forces as dedication, determination, and latent interest are also determinants of success in a professional degree track” (p. 7). They were uncomfortable with such quantitative criteria being the singular elements for screening graduate applicants and that there should be processes for circumventing them when necessary. DeCato’s (1982) study had less impressive findings for the MAT with a correlation of $r=-.06$ while the correlation on GREV was $r=-.09$ and GREQ was $r=-.01$. Ainslie et al. (1976) cited a study by Eckhoff that was published in 1966 by *Psychological Measurement* regarding graduate students in psychology. The study found a higher correlation between GGPA and the MAT than for GRE scores. The literature is diverse in oppositional directions regarding the subject.

Undergraduate Grade Point Average as Predictor of Success

Fenster et al. (2001) supported the use of UGPA in predicting the future success in their study of forensic psychology students. They found that UGPA was useful in predicting GGPA at graduation with a correlation of $r=.39$ for UGPA in predicting GGPA upon graduation. A meta-analysis conducted by Kuncel, Hezlett, and Ones (2001) found that UGPA had a correlation in the form of $r=.28$ for all graduate students studied and had the following findings for four general graduate categories: in Humanities $r=.16$, in Social Science $r=.29$, in Life Science $r=.26$, and in Math-Physical Sciences $r=.38$. A study by the University of Minnesota (Sime, 1978) had similar

findings for nursing students with an *r* of .45 between UGPA and GGPA. However Brown and Weaver (1979) of Indiana University found a weaker correlation of .27 for UGPA and GGPA for journalism students. Covert and Chansky (1975) found a weak correlation of .25 between UGPA and GGPA.

Stricker and Huber (1967) of Adelphi University found that the UGPA was only predictive for their psychology students when the grade point average was calculated strictly from undergraduate psychology courses. They found a correlation of -.62. This adds another consideration in the contemplation of the effectiveness of UGPA in predicting graduate program success. The question arises as to whether or not the UGPA utilized in admission procedures should be cumulative, only on the last portion of their undergraduate course work, or only on courses directly related to the graduate profession to which the student is applying.

Ainslie et al. (1976) conducted a study reviewing various admission criteria. Their finding was that UGPA was only weakly associated with GGPA in general.

Abedi (1991) states that it is difficult for students with a UGPA less than a 3.0 to be accepted into a prestigious graduate program so one must investigate the effectiveness of this criterion in predicting graduate academic success. He conducted a study utilizing graduate students from UCLA graduates school for three academic years (1981-1982, 1983-1984, and 1985-1986). His findings were that UGPA had no significant relationship with graduate academic success. De Cato (1982) of Hahnemann University of Health Sciences had comparable findings in his study with a weakly negative correlation of -.11.

Other Factors Influencing Success in Graduate School

There are a variety of studies regarding factors that can predict success in graduate school. Quantitative factors, such as UGPA and GRE scores, are the most commonly used by graduate programs. Brown and Weaver (1979) noted in their study of graduate journalism students that graduate schools should utilize more non-quantitative admission criteria to predict success. Some suggestions were analysis of personality traits and self-confidence as noted in biographies and interviews. They believed that these factors could be more predictive of success in graduate education than UGPA or GRE scores. Abedi (1991) stated that factors such as the field of study selected and a variety of demographic variables (age, gender, & ethnicity) were stronger predictors of success than UGPA.

Ainslie et al. (1976) cited a study by Lannholm from 1968 regarding graduate nursing programs. Lannholm found that 83% of graduate nursing programs require letters of reference/recommendation as a component of the admission process. Ainslie et al. also cited a study by Taylor from 1966 that concluded that successful graduate students in nursing have a strong public service orientation. However, Ainslie et al. also cited a study by Burns from 1970 that stated that personality and attitudes are not commonly used as a part of admission criteria.

Lavin (1965) conducted research regarding the study habits and attitudes of graduate students in general. The study concluded that high levels of performance at the graduate level were associated with better study habits and the student's attitude

regarding education. Kibrick again validated this same principle in a study in 1966 (Ainslie et al., 1976).

Gender is one variable reported in the literature. Kirchner (1993) found that gender alone was not able to predict success for graduate students enrolled in his universities teaching program. Gender, as a factor in graduate school success, was studied by House (1994). He found the following correlations for GGPA and GRE scores. For both genders, and at a p-value of $<.01$, he reported GRET with an $r=.250$, GREV with an $r=.275$ and GREQ with an $r=.18$. When broken down by gender, at the same p-value, he found GRET for women at $r=.274$ and for men it was $r=.257$. For GREV he found $r=.283$ for women and $r=.269$ for men. The values for GREQ were $r=.213$ for women and $r=.202$ for men. He stated that all the correlations were significant but that the correlations between GGPA and GRE scores were stronger for women than men. However, Kirchner concluded from his study of graduate education majors that there was no significant correlation based upon gender between GGPA and GRE scores.

Age is another factor for predicting graduate school success that has been researched. Matthews & Martin (1992) found that age considered as a demographic variable in and of itself would not accurately predict success in their graduate education program but did play an important role related to the validity of the GRE. The study determined that, in general, the first year graduate school grades for students who were older than 30 years of age were underpredicted by the GRE when these students admission credentials were in the low to moderate range. The GRE also underpredicted the grades of younger graduate students (up to 30 years of age) who had high entering

credentials. Ainslie et al. (1976) found in his study that GREV had greater predictability for older students than younger students. House (1998) stated that in his study regarding the ability of GRE scores to predict GGPA he found no difference between older students (25 or older) and younger students (24 and younger).

Kuncel et al. (1998) found that GRE was a valid predictor of graduate school success when viewed based upon discipline of study. However he did state that his study found the GREQ was a better predictor of GGPA than GREV ($r=.37$ for GREQ compared to $r=.25$ for GREV). The study also validated the usefulness of GRES scores in predicting graduate school success. They found that GRES best predicted GGPA at all ages with a better prediction result for first year grade point averages in older or non-traditional students than for younger or more traditional students. Sampson and Boyer (2001) found a high correlation between first year grade point averages and GRE scores, as did Onwuegbuzie, Slate, and Schwartz (2001).

The review of the impact of differing admission criteria based upon ethnicity is another area of study. Sampson and Boyer (2001) noted that GREV, age, major, and UGGP had significant correlations with first year graduate grade point averages for minorities. They cited studies by House from 1989, Kaczmarek and Franco from 1986, and Scheuneman from 1987 that ethnicity has an impact on the performance on the GRE. The issue of test equity has even resulted in a restructuring of the GRE exam by Educational Testing Service (ETS). Sampson and Boyer further noted that ETS itself states that GRE scores are less predictive of academic success for minorities in graduate

school. This must make the consideration of a wider variety of admission criteria essential in graduate schools.

The diversity of studies and conclusions make it difficult to determine what will predict success for students entering a graduate program. The literature both supports and denies the effectiveness of most admission criteria, including UGPA and GRE scores, in predicting success. The studies reviewed had low to moderate correlations (less than .5) between the variables.

CHAPTER III

METHODOLOGY

The study is retrospective and non-experimental in design. The methodology for this study will be discussed in this chapter and will include its population, the procedures for acquiring the population, the data collection instrument, the collection of the data, and the statistical techniques used to treat the data.

Simple statistical findings are only reported for the demographic information because they are beyond the scope of this study. The data were retrieved from three central locations. The first location, the Master of Science in Radiologic Science student folders, contained the most abundant information. All of the student's demographic information and admission information was obtained from these folders by using the student's name. The students' University identification number was acquired at this time. The folders were located in the MSRS department office and the researcher reviewed each folder individually and recorded the pertinent information. The student's GGPA was acquired utilizing MSU's Student Information System (SIS) with the student's University identification number. The student's academic record was then accessed and the GGPA retrieved from this record. The student's score on their FCE was located on the student's actual examination booklet. All of the examination booklets were located in a file in the MSRS Program Director's office. The researcher used the students name to acquire the information and record it. The researcher then recorded the pertinent information from these 3 sources onto the data collection form and assigned each student

an identification number. The documents that contained the students' name and University identification number were then destroyed. Each student was assigned a random identification number.

All study information was entered into a database organized by the student's research number. The recorded data were then uploaded into the SAS program. The following demographic information was not a part of the data analyzed by SAS: gender, ethnicity, baccalaureate major, current employment, and home state. Correlations for the GGPA and FCE scores were compiled with all the study related data.

Population and Sample

The study population included 119 students who applied to the Master of Science in Radiologic Science program at Midwestern State University (Appendix A). No sampling method was employed because all members of the population were accessed. This is the only Masters program for Radiologic Science in the United States. All of the students had complete application student folders located in the office of the MSRS program at MSU and transcripts that were accessible through the Universities on-line Student Information System (SIS).

Protection of Human Subjects

The researcher applied for and received an exemption from review by the Human Subjects Review Committee at MSU based upon the criterion that the researcher was limiting the research to the collection and study of data from existing documents and records, and that the data would be collected in such a manner as to ensure that the subjects can not be identified directly or indirectly through identifiers linked with the

subjects. The researcher then applied for and received an exemption from the Institutional Review Board at Texas Woman's University based upon the fact that the researcher had already had the research reviewed and approved by the Human Subjects Review Committee at MSU.

Data Collection Procedures

The researcher sent a letter to the chair of the Radiologic Sciences program at MSU stating the research intent and requesting access to the information needed for the study. The chair responded in written form (Appendix A) and afforded the researcher full access to any and all records retained by the program on students accepted into the MSRS program at MSU. The chair also approved the researchers access to the student's graduation information located on SIS.

The researcher reviewed all the student folders in the MSU radiology office who had been accepted into the graduate program. There were 119 completed folders for students admitted to the program. Eighty-four of the students graduated from the program between 1997 and 2001.

The data collected were divided into 3 categories: demographic information, admission criteria, and graduation criteria (Appendix B). Demographic information included age, gender, ethnicity, major, year of graduation, current employment, years of work experience, home state, and the student's major on their bachelor's degree. The admission criteria information acquired was UGPA, GREV, GREQ, GRET, and AI. The graduation criteria information acquired was GGPA and FCE scores.

Study data was obtained from student records in the form of department records and transcripts. The department's student folders were reviewed to retrieve demographic information at the time of admission such as age, gender, ethnicity, MSRS major, employment, years of work experience, home state, and the degree and major held by the student. These files also provided the admission criteria profiles for the students in the form of UGPA, GREV, GREQ, GRET, and AI. Success information of GGPA was obtained from the students' transcript through SIS. The students' FCE score were acquired from the actual FCE's located in the program coordinator's office. The researcher had full access to all student information needed for the study.

The researcher reviewed student folders and retrieved most of the demographic data and all admission criteria data. The student's transcript was then accessed through the use of their social security number (student identification number) on SIS. The student's GGPA and year of graduation was obtained from the transcript and recorded on the data collection form. The student's FCE was obtained and actual scores were recorded on the data collection form. The researcher performed all data collection and its accuracy is the full responsibility of the researcher.

Instrumentation

The researcher developed a data collection form (Appendix B) to record the necessary information from the students' records. The form is divided into 3 areas and has a place to record an identification number for the student so that all identifying information such as name and student identification number in the form of the student's social security number are absent. Section one of the form contains the following

demographic information: age, gender, ethnicity, major in the program (Administration or Education), year (of graduation), current employment, years of work experience, home state, and bachelor major. Section two of the form contains the following admission criteria: UGPA, GREV, GREQ, GRET, and AI. Section three of the form contains the following graduation criteria: GGPA and FCE. A blank in the demographic section for year of graduation indicates that the student did not complete the program and therefore will not have any information recorded under the graduation criteria of the form.

Additionally the researcher compiled a separate alphabetical listing of students' names, their social security numbers, and research numbers. This was necessary in the event the researcher recorded information incorrectly and needed to recheck the data retrieved from the students files. It was also necessary for the researcher to have the student's social security number in order to retrieve the students' graduation information and deposit the information on the correct data collection form. This listing was destroyed once all relevant data was retrieved and recorded on the data collection form. The data collection form does not contain any information that can directly or indirectly identify the subject and these are the only documents retained by the researcher. All other documents that might or might not have information identifying the subjects were destroyed.

Treatment of Data

The data were analyzed using the Statistical Analysis System (SAS), Software Release 6.12. Correlations between the variables were acquired using the Pearson Product Moment correlation coefficient followed by analysis of variance. The analysis of

variance was measured with the t-test for variables with two categories and 3+ ANOVA for variables with more than two categories. Multiple regression analysis was performed for selected numerical variables. Each variable has 2- 3 categories.

Summary

The data collected were comprehensive and provided an overview of the study population. Data analysis was performed based upon collaboration between the researcher and a statistician. The researcher is solely responsible for the interpretation and conclusions from the data. The researcher will retain the anonymous data records for a five years in the event the data is needed for future research.

CHAPTER IV

FINDINGS

The purpose of this study was to determine the relationship between the admission criteria utilized by the MSRS program and student success. The admission criteria includes the following: UGPA, GREV, GREQ, and AI. The measures of student success are in the form of GGPA and scores on the FCE. The study population was comprised of 119 students who were admitted to the MSRS program at MSU. Because the MSRS program is the only Radiologic Sciences master's program in the United States and data on all students previously admitted were available, no sampling method was employed.

The data were analyzed with SAS. The project tested one research question and ten hypotheses at the .05 significance level. This chapter presents the statistical findings in the form of means and correlations. The independent variables are UGPA, GREV, GREQ, and GRET. The dependent variables are GGPA and FCE scores.

Population Characteristics

The dates of graduation ranged between 1997 and 2001. The average age for the students was 34.56 with the minimum age being 22 and maximum age being 55. Data from a total of 119 student records were utilized in this study. There were 53 men and 66 women. The program has an administrative tract and an education tract. There were 62 administration majors, 50 education majors, and 7 unknown majors. There were 95 Caucasian students, 11 Hispanic students, 8 Asian students, 3 African American students,

1 American Indian student, and 1 of unknown ethnicity. The average years of experience in radiologic sciences for the students was 9.69 years with the range being 1 year of experience to 31 years of experience.

Means were obtained for some variables on all 119 students to determine if there was statistical significance that should be reviewed in future studies. These will now be presented.

The mean of the FCE scores for administrative majors were 73.63 and slightly less for education majors at 72.75. The p-value was .8477. The mean difference between the administration and education majors for FCE was slight at .875.

The FCE mean based upon gender was 74.0 for females and for males it was 71.81. The p-value was .1706. The difference between the means based upon gender for FCE was greater than for major at 2.2. See Table One for a summary of the findings.

Table One

| FCE Means and p-values | | |
|------------------------|-------|---------|
| | Mean | p-value |
| Administration | 73.63 | |
| Education | 72.75 | .8477 |
| Men | 71.81 | |
| Women | 74.0 | .1706 |

The mean GGPA for administrative majors was 3.85 and for education majors 3.85 with a p-value of .0362. The GGPA mean by gender were 3.87 for women and 3.83 for men with a p-value of .4273. The GGPA mean difference for graduates was slightly greater based upon gender at .034. See Table Two for a summary of these findings.

Table Two

GGPA Means and p-values

| | Mean | p-value |
|----------------|------------|---------|
| Administration | 3.845625 | |
| Education | 3.8491944 | .9362 |
| Men | 3.86448837 | |
| Women | 3.8289024 | .4273 |

The means based upon the student's working environment were performed with p-values being calculated between the groups to determine if there was any statistical significance. Table Three presents the means based upon employment for FCE.

Table Three

Employment History

| | FCE Mean | GGPA Mean |
|-----------------------|----------|-----------|
| Clinical Environment | 73.28 | 3.84 |
| Education Environment | 72.58 | 3.88 |
| Student | 68.0 | 3.8 |
| Other | 71.0 | 4.0 |

The p-values between FCE means for each of the work environments are presented in Table Four. The smallest relationship was between student and clinical environment at .3241.

Table Four

p-values for FCE

| | Clinical Environment | Education Environment | Student | Other |
|-----------------------|----------------------|-----------------------|---------|-------|
| Clinical Environment | | .6995 | .3241 | .7607 |
| Education Environment | .6995 | | .4025 | .8345 |
| Student | .3241 | .4025 | | .7415 |
| Other | .7607 | .8345 | .7415 | |

The p-values between GGPA means for each of the work environments are presented in Table Five. The smallest p-value is between student and other at .4168.

Table Five

p-values for GGPA

| | Clinical Environment | Education Environment | Student | Other |
|-----------------------|----------------------|-----------------------|---------|-------|
| Clinical Environment | | .4465 | .7819 | .4302 |
| Education Environment | .4465 | | .6014 | .5494 |
| Student | .7819 | .6014 | | .4168 |
| Other | .4302 | .5494 | .4168 | |

The means for admission criteria for students who graduated and those who did not graduate were reviewed. Table Six presents the means and p-values for admission criteria between the 84 students who graduated and the 35 students who did not graduate.

Table Six

Admission Criteria means and p-values Between Graduated and Not Graduated Students

| | Graduated | Not Graduated | p-value |
|------|-----------|------------------|---------|
| UGPA | 3.36 | 3.28 | .3140 |
| GREQ | 468.39 | 418.07 | .0208 |
| GREV | 430.244 | 375.48 | .0037 |
| GRET | 894.9 | 793.55 | .0030 |
| AI | 1567.62 | 1442.71 | .0029 |

The difference between UGPA for students who graduated and those who did not graduate was .087 with a p-value of .3410. The difference between the GREQ scores for students who graduated and those who did not graduate was 50.33 points and had a p-value of .0208. The difference between the GREV mean scores 54.76 with a p-value of

.0037. The difference between the GRET means is 101.36 and has a p-value of .0030.

The difference in AI means is 124.94 and has the most significant p-value of .0029.

The GGPA was correlated for none categorical demographic information. The r for age was -.13636. The r for date of graduation was .40735. The r for years of experience working in the radiologic sciences was .12837. The correlation for Date of Graduation was $r=.440735$ had a p-value of .0001. However, this would only indicate that some classes performed better in the form of GGPA and FCE than other classes and their n would be too small to establish statistical significance. See Table Seven for the correlations between GGPA and non-categorical demographic information on the 84 students who graduated from the program.

Table Seven

GGPA Demographic Correlations and p-values

| Variable | Correlation (r) | p-value |
|---------------------|---------------------|---------|
| Age | .13636 | .2164 |
| Date of Graduation | .40735 | .0001 |
| Years of Experience | .12837 | .2445 |

The r for age was .02016. The r for year of graduation was .09841. The r for years of experience working in the radiologic sciences was -.0330. See Table Eight for a summary of these values.

Table Eight

FCE Demographic Correlations and p-values

| Variable | Correlation (r) | p-value |
|---------------------|---------------------|---------|
| Age | .02016 | .8556 |
| Date of Graduation | .09841 | .3731 |
| Years of Experience | -.0330 | .7657 |

Statistical Analysis

Correlations were performed for GGPA and FCE with the independent variables of age, graduation date, years of experience, UGPA, GREV, GREQ, GRET, and AI. The correlations were with the Pearson Product Moment correlation coefficient (r) and the statistical significance (p-value) was also acquired.

GGPA

The GGPA for students was correlated with the independent variables for the 84 students that completed the program. The r for UGPA was .19651. The r for GREV was .12321. The r for GREQ was .33552. The r for GRET was .26461. The r for AI was .30579. Table Nine provides each correlation for GGPA along with its p-value.

Table Nine

GGPA & Admission Criteria Correlations & p-values

| Variable | Correlation (r) | p-value |
|----------|---------------------|---------|
| UGPA | .19651 | .0768 |
| GREV | .12321 | .2701 |
| GREQ | .33552 | .0021 |
| GRET | .26461 | .0163 |
| AI | .30579 | .0052 |

FCE

The scores on the FCE were correlated for the 84 students that completed the program. The probability for error was also obtained. The r for UGPA was .13807. The r for GREV was .58227. The r for GREQ was .48391. The r for GRET was .62965. The r for AI was .58796. Table Ten provides admission criteria correlations with FCE along with its p-value.

Table Ten

FCE and Admission Criteria Correlations and p-values

| Variable | Correlation (<i>r</i>) | p-value |
|----------|--------------------------|---------|
| UGPA | .13807 | .2161 |
| GREV | .58227 | .0001 |
| GREQ | .48391 | .0001 |
| GRET | .62965 | .0001 |
| AI | .58796 | .0001 |

The correlations for these variables related to FCE ranged between .13807 for UGPA and .62965 for GRET. The p-value for UGPA is .2161. The p-values for the other variables, GREV, GRQ, GRET, and AI were .0001. The correlations were in the moderate range.

Summary

The data provided an overview of the student population for the MSRS program and the levels of success for each graduating student. Demographically the population spanned the breadth of ages common to the workforce. The divisions between areas of study were fairly evenly distributed between majors with administration having a slightly larger percentage of students. The ethnicity of the population was predominately Caucasian. The average years of experience indicated a solid foundation of knowledge regarding the profession. In general the results were consistent with that found in the literature.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

This chapter will present a summary of the study and its findings, the conclusion of these findings, and recommendations for future research. The study was conducted on 119 students who were admitted to the MSRS program at MSU. Out of the 119 students, 84 graduated and 35 did not graduate. The hypotheses provided an opportunity for review of each admission criterion with each measure of success for the 84 graduates. All hypotheses were tested at the .05 significance. Correlations up to $r=.25$ were considered weak. Correlations between $r=.26$ and $.50$ were considered moderately significant. Correlations in excess of $r=.50$ were considered significant for the purpose of this study (Polit & Hungler, 1987; Glass & Hopkins, 1996).

Conclusions

1. The UGPA has no statistically significant relationship with the GGPA. (NOT REJECTED)
2. The UGPA has no statistically significant relationship with the FCE. (NOT REJECTED)
3. The GREV has no statistically significant relationship with the GGPA. (NOT REJECTED)
4. The GREV has no statistically significant relationship with the scores on the FCE. (REJECTED)

5. The GREQ has no statistically significant relationship with the GGPA.
(REJECTED)
6. The GREQ has no statistically significant relationship with the FCE.
(REJECTED)
7. The GRET has no statistically significant relationship with the GGPA.
(REJECTED)
8. The GRET has no statistically significant relationship with the score on the FCE. (REJECTED)
9. The AI has no statistically significant relationship with the GGPA.
(REJECTED)
10. The AI has no statistically significant relationship with the FCE.
(REJECTED)

Discussion and Implications

Graduation information in the form of GGPA and FCE scores was collected on each of the 84 graduates from the MSRS program. Data related to admission criteria were collected on all 119 students admitted to the program in the form of UGPA, GREV, GREQ, GRET, and AI. Data related to success were collected on all 84 students who graduated from the program. Various demographic information was also collected to provide a general picture of the study population.

Demographics

The individuals in the study population graduated from the MSRS program at MSU between 1997 and 2001. The students took 4 core courses that comprise 12 credit hours. Next they selected a focus of curricular interest for the remainder of their education. The areas of focus, or tracks, provide the students with a major in administration or education. Each track has 18 hours devoted to the particular area of focus plus 6 hours of electives. Each student will graduate with 36 graduate credit hours.

The students come from varied practice backgrounds. Eighty-four (70.6%) of the students worked in a clinical setting, 32 (26.9%) in an education setting, 2 (>2%) were students, and 1 (>1%) was identified as other. The employment background of the students did not demonstrate statistical significance between the groups for either FCE or GGPA as evidenced in Table Four and Table Five of Chapter 4. The impact of work background to student success does not need further analysis.

Approximately 62 (52%) of the students were administration majors, 50 (42%) were education majors, and 7 (6%) had undeclared majors. All of the undeclared majors were from the group of 35 that graduated. Selection of major was not a predictor of success in the MSRS program (see Table One and Table Two in Chapter 4) and does not merit further analysis.

The study population had 53 (44.5%) men and 66 (55.5%) women. There were no significance differences in success in the form of FCE or GGPA between genders (see Table One and Table Two, Chapter 4) and this demographic variable does not merit further analysis.

Ninety-five (80%) of the students were of Caucasian ethnicity, 11 (9%) were of Hispanic ethnicity, 8 (7%) were of Asian ethnicity, 3 (3%) were of African American ethnicity, 1 (>1%) were of American Indian ethnicity, and 1 (> 1%) were undeclared. Statistical analysis was not run on this variable because the numbers for non-Caucasian students was so low.

There was no statistically significant correlation between the variable of age and GGPA or FCE scores. There was no statistically significant correlation between the variable years of experience and GGPA or FCE scores. There was no statistically significant correlation between the variable date of graduation and FCE. The variable date of graduation did have statistical significance with GGPA and a moderate correlation. This only indicates that one year of graduates had better GGPA's than the other years of graduates and does not merit further study.

Not Graduated Students

Admission criteria for not graduated students were analyzed for statistical significance with graduated students (See Table Six in Chapter 4) and the variable UGPA and was not significant. The scores on the GREQ, GREV, GRET, and AI were significantly different between students who graduated and those who did not graduate and merits further review. The variable UGPA lacked significance because it has such a narrow numerical margin even if the full spectrum of GPA possibilities were examined. Considering that the lowest UGPA recorded was 2.42 and the highest was 4.0, the scoring margin for UGPA is very slight. The difference between UGPA for graduated and not graduated students was .087 and had a p-value of .314. The differences between

all GRE scores and AI scores were much larger and had statistical significance. The difference between the two GREQ mean scores between those who graduated and those who did not graduate was 50.33 points. The difference between GREV mean scores was a little higher at 54.76. The overall difference in GRE scores, GRET, was 101.36. This difference had a much greater impact on the overall AI, which demonstrated a difference of 124.94 between the means of the graduated students versus the not graduated students.

Study Questions

The data were analyzed utilizing SAS and the correlations presented in Chapter 4. Table Nine and Table Ten (Chapter 4) provide a summary of the findings. The admission criteria, and independent variables, were UGPA, GREV, GREQ, GRET, and AI. The measures of success, and dependent variables, were GGPA and FCE scores.

The correlations between GGPA and the admission criteria were analyzed. For UGPA the p-value was .0768 with $r=.19651$. For GREV the p-value was .2701 with $r=.12321$. The admission criteria UGPA and GREV were not statistically significant with GGPA. These findings support Hypotheses 1 and 3. The rest of the admission criteria related to GGPA were statistically significant. The variable GREQ had the strongest correlation at $r=.33552$ ($p=.0021$) and AI was next at a correlation of $r=.30579$ ($p=.0052$). The variable GRET had a slightly smaller correlation of $r=.26461$ ($p=.0164$). These findings indicate that the admission criteria GREQ, GRET, and AI had a moderate impact on the student's success in the form of GGPA. They do not support Hypotheses 5, 7, and 9.

The correlations between FCE and the admission criteria were more promising in their results. The variable UGPA was the only one that lacked statistical significance and has little value in predicting success for the student in the form of FCE scores. This supports Hypothesis 2. The other admission criteria, GREV, GREQ, GRET, and AI were statistically significant at a p-value of .0001 for each of them. The correlations were all significant with the weakest being GREQ at $r=.48391$. Next in strength is GREV at $r=.58227$. Third in strength is AI at $r=.58796$. The strongest correlation was for GRET at $r=.62965$. These findings do not support Hypotheses 4, 6, 8, and 10.

The findings support the use of the admission criterion GREV, GREQ, GRET, and AI by the MSRS program at MSU. They indicated that these criteria predict success for the students weakly in the form of their GGPA and significantly in the form of their scores on the FCE.

Meaning and Importance of Findings

The findings indicate that students from varied work settings perform equally well overall. The students also perform equally well in both areas of focus, or tracks, for the program. There was no difference in success based upon gender and the minority numbers were too small to permit review based upon ethnicity. This is of value to the program under study and for future programs that might be developed at other institutions because it indicates that the curriculum is meaningful as well as balanced between the two primary work settings common to the students as well as between the program tracks.

The findings related to GRE scores and the use of an admission index indicates that the program has meaningful admission criteria that can predict success, particularly related to the FCE. This also tells the program that the FCE is reflective of the learning by the student while in the program. This information is of value to the program in validating their current practices and in providing support for continuation of their current admission strategies. The information will be useful to future programs when establishing their admission criteria. It will also provide the impetus for future programs to carefully correlate their competency examination with the curriculum provided.

Recommendations

The following are the recommendations for future study based upon the results of this study.

1. Conduct a study in 5-10 years to review the influence of GREQ on graduation from a master's program in radiologic sciences.
2. Conduct a study in 5-10 years to review the influence of GREV on graduation from a master's program in radiologic sciences.
3. Conduct a study in 5-10 years to review the influence of GRET on graduation from a master's program in radiologic sciences.
4. Conduct a study in 5-10 years to review the influence of AI on graduation from a master's program in radiologic sciences.

The area of graduate programs in radiologic sciences is a new area of review related to predictors of success. Graduate programs in health careers in general and radiologic sciences specifically have few published studies related to admission criteria

and student success and provide infinite resources for future research. The literature currently provides some information regarding research into admission strategies that incorporate criteria not numerically based such as interviews, extemporaneous writings, and practice experience within the profession for which the degree is based. Future studies have the potential to address a multitude of areas that are utilized in various graduate programs to determine admission including those previously mentioned as well as other areas that were not statistically significant in this study because of low numbers such as ethnicity. Future research is the key to maintaining high standards for graduate programs as well as providing graduate programs with a diverse array of factors upon which to base admission.

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APPENDICES

APPENDIX A

Permission to Review Documents



**MIDWESTERN STATE UNIVERSITY
RADIOLOGIC SCIENCES PROGRAMS**
3410 TAFT BOULEVARD - WICHITA FALLS, TEXAS 76308-2099
(940)397-4575/1-866-575-4305/FAX (940)397-4845
Internet: <http://hs2.mwsu.edu/radsci>

September 3, 2002

Linda Pearson
Department of Health Studies
College of Health Sciences
Texas Woman's University
Denton, TX

Dear Ms. Pearson,

I am in receipt of your letter of September 1, 2002. You are granted permission to retrieve information related to graduates of the Master of Science in Radiologic Science Program. The student records will be available to you in the Department and through the Registrar's office at any time after receipt of this letter. The information identified in your Data Collection Form can be retrieved from the student's Department records and the registrar's office. Thank you for your assurance of confidentiality and anonymity. Please do not hesitate to contact me if you have questions during your search of the student's records.

Sincerely,

Dr. Nadia Bugg, Chair and Professor, Radiologic Sciences
Department of Radiologic Sciences
College of Health Sciences and Human Services
Midwestern State University
3410 Taft Blvd
Wichita Falls, TX 76308

September 1, 2002

Dr. Nadia Bugg, Chair and Professor, Radiologic Sciences
Department of Radiologic Sciences
College of Health Sciences and Human Services
Midwestern State University
3410 Taft Blvd
Wichita Falls, TX 76308

Dr. Bugg,

I am a graduate student in the Department of Health Studies, Texas Woman's University. I am preparing to conduct a research study to fulfill the requirement for my doctoral degree under the supervision of my major advisor, Dr. Mary Perry-Shaw. I am proposing to study the correlation between admission criteria and student success in a Master's program in Radiologic Sciences.

As you recall from our previous conversations, I will need access to student records to retrieve information pertinent to this study. The records include the students final record, located in the Department of Radiologic Sciences, and the students degree including their graduate grade point average and date of graduation, located in the registrar's office. The information to be retrieved includes demographic information, such as age, gender, ethnicity, as well as the students' admission information (such as undergraduate grade point average and GRE scores).

I will assign students a number and will then record their information on the enclosed Data Collection Form. This will ensure anonymity to the students utilized in the study. I ensure you that all information retrieved for this study regarding the students, the program and its administration, and the University will remain confidential. I will need to begin data retrieval on October 10, 2002 if this is convenient.

Thank you for agreeing to permit me to utilize your resources for my research. Please feel free to contact me if you have questions or suggestions.

Sincerely,

Linda Pearson, Graduate Student
Department of Health Studies
College of Health Sciences
Texas Woman's University
Denton, TX

APPENDIX B

Data Collection Form

**DATA COLLECTION FORM FOR STUDY:
PREDICTORS OF SUCCESS IN A GRADUATE PROGRAM IN RADIOLOGIC SCIENCES**

ID Number: _____

Demographic Information

Age: _____

Gender: _____

Ethnicity: _____

Major: _____

Graduation: _____

Year: _____

Current: _____

Employment: _____

Yrs Wk Exp.: _____

Home State: _____

Bachelor: _____

Major: _____

Admission Criteria

UGPA: _____

GREV: _____

GREQ: _____

GRET: _____

AI: _____

Graduation Criteria

GGPA: _____

FCE: _____