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A Study of Preprofessional Grade Point Average as a Predictor of Success for Physical Therapy Majors at Langston University

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The Edwin P. McCabe Honors Program

Senior Thesis

"A Study of Preprofessional Grade Point Average as a Predictor of Success for Physical Therapy Majors at Langston University"

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Langston University
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A STUDY OF PREPROFESSIONAL GRADE POINT

AVERAGE AS A PREDICTOR OF SUCCESS

FOR PHYSICAL THERAPY MAJORS

AT LANGSTON UNIVERSITY

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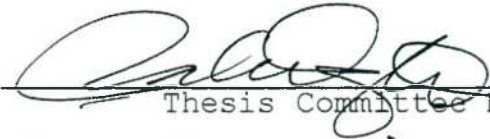
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CHAPTER I

INTRODUCTION

Background of Study

Admission criteria for allied health programs have been studied to determine the success a student will have in a given program. Program admissions committees seek students who will perform the best, didactically and clinically, completing the program and demonstrating the potential to pass the professional exams.

In an effort to determine which students will successfully complete professional health programs, studies have been conducted to help predict which tools of selection are of most value. Included as variables in these studies to predict success in allied health programs are prerequisite grade point average (pre-GPA), science grade point average (sci-GPA), interview scores, Allied Health Professions Admission Test (AHPAT), ACT scores, and other non-cognitive variables.

Problem Statement

This study seeks to determine which variables or combination of variables has been the best predictor of academic success in the professional physical therapy program at Langston University. Various studies of this

type point to pre-professional grade point averages (PPGPA) and pre-science grade point averages (Pre-Sci GPA) as significant predictors of academic success.

This study addresses the following research questions about the graduates of the Langston University physical therapy program (LUPT) from the years of 1989 to 1994:

1. Do students entering the program with a GPA higher than 2.75 have a higher exit GPA than those who enter with a GPA lower than 2.75?

2. Does pre-professional cumulative GPA have a positive or negative correlation with professional GPA?

3. If PPGA shows a positive relationship, can it be used as a guide to predict success in the professional program at Langston University?

Purpose of the Study

Since the Selection Committee at Langston University is faced with a large pool of applicants for its Physical Therapy program, this study was conducted to determine if there is a correlation between pre-professional GPA and the academic success in the professional phase of the physical therapy program at Langston University. It also set out to determine the correlation between these variables. This study also examines other variables such as age, sex, race, previous degree, and school of attendance before entering the program for demographical use and determines if these

factors play an integral role in academic success.

Limitations

This study is limited to eight classes of graduates of the Langston University Physical Therapy Program (1989-1994). It does not include those students who did not graduate, those with adjusted grade point averages (see Appendix D for definition), or those with missing pertinent information (PPGPA, Final GPA, or Incompletes). This study is limited to the students who were accepted into the professional program and therefore cannot determine how well students with less than the minimum required GPA would have performed in the program. Another limitation of this study is that pre-professional GPA is not analyzed to determine grade deficits in non-related subjects of each student which may have affected their GPA. Another factor which is not included in this study is the change in the physical therapy curriculum which occurred in 1994. This change requires Gross Anatomy in the first semester of the Professional Program as opposed to the last semester, which may have an impact on academic success in subsequent semesters.

Organization of Study

The problem statement, research questions, purpose and limitations are presented in Chapter I. Chapter II discusses scientific literature relative to certain variables which may be used to predict success in various

allied health curricula. Chapter III discusses the methodology used in this study. Chapter IV reviews the findings and results of the data collection of this study. Chapter V consists of the summary and conclusions drawn from this study as well as recommendations for further study. A list of definitions and abbreviations used throughout the text is located in the appendices (following Chapter V).

CHAPTER II

REVIEW OF THE LITERATURE

Many studies have been conducted to determine which criteria of admission best predict how well a student will do in a professional allied health program. These studies look at variables such as preadmission GPA, prerequisite GPA, pre-science GPA, degree or non-degree applicant, repeat or first time applicant, interview scores, ACT score, score on the Allied Health Professions Admission Test, previous physical therapy experience, and other nontraditional variables.

As stated in Maynard, Larimore, and Seaton (as cited in Schimpfhauser & Broski, 1976) the question is, "...where the number of applicants exceeds program capacity, how can we select those students who will most likely succeed?" Determining which variables or combination of variables predict academic success has been of importance to professional programs because of the increasing number of qualified applicants. Selection committees have the challenge of selecting students who they feel will successfully complete the program and eventually pass their respective professional examinations.

Traditional variables include grade point average, standardized test scores (i.e. ACT or SAT), and personal

interview scores. In determining which variables are most helpful, factors of validity, reliability, acceptability, and timeliness are important (Schimpfhauser & Broski, 1976). Schimpfhauser and Broski (1976) state the following:

> Reliability implies stability of consistency in measurement from one occasion to another. While validity usually implies that the criterion should measure what is intended to be measured, hopefully, a valid and reliable criterion accurately forecasts a selected measure of success. Acceptability is concerned with the economic and administrative practicality of using the measure. Finally, timeliness implies that the measures are comparable due to their administration at a common referent point in the applicant's career. (p. 36)

These authors further suggest that traditional criteria do not often meet these characteristics because they are not readily comparable, especially when students come from different programs and institutions.

Levine, Knecht, and Eisen (1986) acknowledge that variance in grade point averages among different students may be attributed to differences in the academic demands of the preprofessional colleges and universities attended by the applicants. They state, "Students coming from preprofessional programs with high scholastic standards may have relatively low entering GPA's but may be better

prepared for the rigorous demands of the professional program than those enrolled in programs with lower standards" (p. 149). In her research, Chaisson (1976) reports that numerical grade point averages earned by or assigned to students differ from one course to another, from one instructor to another, and vary according to with whom, where and when the course was taken. Because of this variability, numerical GPA's are therefore not an equivalent measure of ability for each applicant.

One of the most widely cited variables used by selection committees to predict academic success measured by completion, didactically and clinically, of the professional program is preadmission GPA. Balogun, Karacoloff, and Farina (1986) report GPA as relevant and the strongest predictor of academic achievement because "it is tangible evidence of a student's potential for continued academic achievement" (p. 976). According to the data presented by Williams (1984), overall pre-PT GPA is the best predictor of academic achievement in the professional program. The study by McGinnis (1984) suggests that a student's pre-admission GPA may pose as a relative predictor of future academic achievement because it represents past behavior similar to the predicted behavior. In Gartland's (1977) study, the admission criterion used most to predict successful students in sixty (60) physical therapy schools in Canada, Australia, and the United Kingdom was academic performance.

Previous research has shown that GPA does in fact help predict the success of students in various PT programs. In Balogun's (1987) research, pre-admission GPA was found to be the number one predictor of academic achievement in the first year of a professional program, accounting for 47.98% of the total variability. Hahn (1984) also found pre-admission GPA to have a high percentage rate (63%) among the variables used to predict success in a baccalaureate physical therapy program. Consistent with previous studies, Balogun et al (1986) found GPA to be the most powerful predictor of academic performance when studying the physical therapy program at their school.

In a study conducted by Peat, Woodbury, and Donner (1982), admission average was strongly significant in academic and clinical performance. They also found in this study that no other variable observed, including age at entrance, sex, number of years of university experience prior to admission and year of graduation, was related to academic performance. In this study, age was found to have a negative impact on professional average, as did year of graduation. The sex variable was found to have no relationship to any of the dependent variables.

In a study by Wilding, Rheault, Tappert, and Finch (1996), the main purpose was to determine how reliable and valid preadmission variables are in predicting a student's academic success and clinical promise. The variables

included in this research were preprofessional science GPA, preprofessional cumulative GPA, interview score, writing test score and the Watson-Glaser Critical Thinking Appraisal Score. The results of this research are that the only variable that correlates significantly with professional GPA is the Critical Thinking Appraisal Score, information which may prove to be useful to Selection Committees in the future.

Guthrie (1996) describes the use of a mathematical formula in selecting successful students for a physical therapy program. This study was done because "...student selection takes a great deal of valuable faculty and support staff time" (p. S16). This study identifies ten variables which can be utilized reliably and contribute significantly to effective student selection. These variables are the number of hours of physical therapy volunteer experience, hours of physical therapy work experience, repeat applicant, number of physical therapy recommendations, AHPAT Verbal Score, AHPAT Quantitative Score, number of years at a 4-year college, number of college credits, pre-requisite GPA, and cumulative GPA.

A computer program was set up to predict the score an applicant would receive according to the variables listed. This study determined that almost all of the applicants actually selected were ranked in the top 50% of predicted scores by the computer. This study also concludes that

prerequisite GPA and cumulative GPA weighed the heaviest of all variables.

Thieman, Greer, McCarron, Mely, Woods, and Weddle (1996) assessed the validity of selection criteria used in their physical therapy program. Variables used as predictors were overall and pre-requisite undergraduate GPA, standardized examination scores from the Strong-Campbell Personal Preference Inventory and the Miller Analogies Test, essay, and selection committee scores. Results of this study indicate that overall GPA and prerequisite GPA correlate significantly and that professional GPA correlates with licensing examination scores. This study also conclude that overall pre-admission GPA is a good predictor of professional GPA but not of licensing examination scores. Because this study found that prerequisite GPA and overall GPA predict academic success in the program, the weight of these variables in the selection process has been increased.

Holt and Dunlevy (1992) conducted a study to determine if the criteria used in their Respiratory Therapy program are valid for predicting academic success. The two main variables considered in this study were preprofessional GPA and science-math GPA (SMGPA). It also set out to determine the lowest SMGPA that would assure successful completion if the student's preprofessional GPA was at least 2.2 (on a 4.0 scale) or above. SMGPA consisted of grades in Biology, Physics, Mathematics, and two Chemistry courses.

Other variables considered were interview score, total points from both GPA's and interview and preprofessional GPA points. Results from this study indicate that SMGPA and preprofessional GPA in fact do have the highest correlations with exit GPA. The researchers concluded that based on their findings, only SMGPA and preprofessional GPA need to be considered to predict the exit GPA. Using a regression equation, they also found that to be 95% sure of successful completion in their program, students with an exit GPA of at least 2.59 need a minimum SMGPA of 2.26, provided the student has the minimum pre-requisite GPA of 2.2. They conclude that interview score correlates poorly with exit GPA.

Roehrig's (1988) research was conducted to determine variables which help to predict performance on the licensing exam for physical therapy graduates. Her study examined six variables, and of these only three combinations-- ACT composite with both GPA's (prerequisite and pre-cumulative overall); ACT composite, both GPA's, and interview score; and ACT composite, prerequisite GPA, and interview score correlate significantly. These findings suggest that selection committees can determine success on licensing exam scores by using these combinations. GPA was found to be the number two factor to correlate with the examination score, adding significantly to the multiple correlation.

In a 1994 study by Templeton, Burcham, and Franck,

the criteria evaluated were pre-cumulative GPA[o], pre-cumulative science GPA, pre-admission science GPA's in chemistry, biology, physics, and math, AHPAT scores in reading comprehension, variability, biology, chemistry, and quantitative ability and average AHPAT score. Contrary to previous findings, this research does not report pre-PT cumulative GPA as having a significant correlation with PT final GPA (academic performance). The three factors reported as having the most significance in predicting academic achievement in the PT program are pre-chemistry GPA, pre-physics GPA, and quantitative ability. The researchers do find, however, that for one of the PT classes, precumulative GPA correlates with academic achievement in the program, which is consistent with previous studies. Templeton et al (1994) suggests that PT admission selection committees should not place emphasis on pre-PT GPA or AHPAT scores because, consistent with their findings, these factors do not seem to predict academic achievement in the professional program.

Boyle (1986) studied predictors of success for minority students in a nursing program because she noted that little is known about minority students and predictors for caucasians are not useful for minorities and vice versa. The five variables considered in this study as predictors are entering GPA, ACT scores, high school rank, age, and hours completed prior to admission. These variables were

chosen because as a group they were considered useful in predicting scores.

Results show that ACT scores and entering GPA provide substantial predictive power for success in all of the variables considered in the non-black subgroup but not for the black subgroup. For the black subgroup, high school grade point average showed significance in predicting success. For the entire group, high school rank proved to be a powerful predictor of success. Hours completed prior to admission and age were reported to not be significant in any of the groups.

In predicting successful completion of the program, entering GPA was the only variable which differentiated those students who finished from those who did not finish. The researchers conclude that the higher the entering GPA, the greater the likelihood of program completion. They further conclude that entering GPA does not predict which students will complete the program. These findings suggest that students who perform well prior to entering a professional program will, in most cases, continue to perform well throughout the professional phase.

Traditional admissions criteria utilized at the Ohio State University of Allied Medical Professions include selected grades received in previous college coursework, satisfactory completion of prerequisite courses, results of personal interviews, knowledge of the profession

demonstrated by the student in an interview, satisfactory health evaluation by the University Health Service, and results of standardized test, e.g. ACT/SAT (Schimpfhauser & Broski, 1976). A study in 1976 was conducted by Schimpfhauser and Broski to examine the predictive relationships between three cognitive factors: ACT (when available), preprofessional GPA and the AHPAT and academic success, defined as first year allied health GPA from eleven different programs to determine if there should be any changes to the traditional admissions criteria.

Results of this study demonstrated that for those students with available ACT scores, preprofessional GPA and ACT scores were stronger predictors than the AHPAT in all cases but one. Without ACT scores, preprofessional GPA appeared to be the best single predictor of success. In both groups, ACT and non-ACT, preprofessional GPA led as the best predictor for determining success. The researchers concluded that although ACT, when available, and AHPAT scores do serve as positive predictors of success of allied health professional programs, they are not as predictive as preprofessional GPA.

Other studies have been conducted to determine the relationship of interview scores to predicting the performance of students in professional programs. In the Levine et al (1986) study, two different types of interview, group and individual, were examined to determine which was

more predictive of student performance. These researchers also examined preprofessional GPA and pre-science GPA. The content for individual interviews was knowledge of physical therapy, time management, responsibility, personal strengths and weaknesses, integrity, problem-solving and communicational ability. The content for group interviews was knowledge of physical therapy, motivation, time management, integrity, maturity/judgment, flexibility/rigidity, problem-solving, reaction to peers, reaction to authority figures, ability to modify one's own position, ability to summarize and paraphrase, and communicational ability.

Interview scores, particularly in individual interviews were found to be moderately related to clinical performance as opposed to group interviews, although neither seemed to be significantly correlated with academic or clinical performance. The results also showed that entering science GPA and cumulative GPA correlate only moderately with cumulative GPA in the educational program. Another study which examined interview scores agrees with these findings and concludes that intervies are not helpful in determining success (Holt & Dunlevy, 1992).

Chaisson (1976) stated that "Interviews are expensive and time consuming" (p.11). She also reported that the interview process has been criticized because of the difficulty in avoiding biases on the part of the

interviewer, thus weakening its reliability. The only rationale noted for continuing the use of an interview is that it may help determine skills that grades cannot predict such as responsibility, motivation, interpersonal skills, social awareness, and honesty, although it is hard to determine these skills in a short time (Chaisson, 1976).

Some researchers have been interested in the reliability of nontraditional variables as predictors of success in allied health professional programs. As reported by Chapman (1987) nontraditional variables are identified as noncognitive variables such as self-concept, realistic self-appraisal, ability to deal with racism, preference for long range goals, demonstrated community service, successful leadership, and availability of a strong support person. These variables are defined as those that do not measure the cognitive domain.

In Chapman's 1987 research to determine the relationship of cognitive and noncognitive variables in predicting academic success for students in physical therapy programs, eight hypotheses were addressed to determine which nontraditional variables had a positive correlation with academic success. The variables examined were standardized tests, positive self concept, racism, long range goals, community service, successful leadership, support systems, self-appraisal. This study revealed that there was no significant relationship between academic success and the

cognitive variable of standardized test scores as well as the seven previously named noncognitive variables. This contradicted reports in her review of the literature, which did in fact find that noncognitive variables are useful in predicting success, especially in black students.

Other non-cognitive variables mentioned by Chaisson (1976) are interview scores, letters of recommendations, personality testing, and biographical data, although studies were not conducted on these variables. Boyle (1986) stated in her research that "Noncognitive predictors have been explored, but offer little predictive value above that provided by cognitive predictors." (p. 187) These findings may indicate that more research is needed on noncognitive variables as predictors of success.

Based on the literature review and the purpose of this study, the researcher submits the following hypotheses:

1. There is a significant relationship between preprofessional GPA's and academic success in graduates of the Langston University Physical Therapy Program.

2. There is no significant relationship between the demographical variable of age at program entrance and academic success in graduates of the Langston University Physical Therapy Program.

3. There is no significant relationship between the demographical variable of sex and academic success

in graduates of the Langston University Physical Therapy Program.

4. There is no significant relationship between the demographical variable of race and academic success in graduates of the Langston University Physical Therapy Program.

5. There is no significant relationship between the demographical variable of degree status and academic success in graduates of the Langston University Physical Therapy Program.

6. There is no significant relationship between the variable of site at which pre-requisite coursework was completed and academic success in graduates of the Langston University Physical Therapy Program.

7. There is no significant relationship between the variable year of program entrance and academic success in graduates of the Langston University Physical Therapy Program.

CHAPTER III

METHODOLOGY

Introduction

This retrospective study was conducted to determine if the preprofessional GPA variable is the most valuable variable in selecting students who will successfully complete the LUPT program. The criterion selected for this study was based on the variable used most frequently in previous studies conducted to help predict success in allied health professional programs. The variable used in this study as the main criteria to predict success is preprofessional cumulative GPA.

In the Templeton et al (1994) study, pre-cumulative GPA, pre-cumulative science GPA, pre-admission science GPA's in chemistry, biology, physics, and math, AHPAT scores, and average AHPAT scores were considered. Results of this study are that preprofessional GPA correlates with academic performance for one of the Physical Therapy classes included in the study. Another study listed pre-science GPA as a positive correlant with the physical therapy professional GPA (Rheault & Shafernich-Coulson, 1988). Balogun et al (1986) and Balogun (1987) found pre-admission GPA to be the number one predictor of academic achievement during the first year of professional training. The results of these studies indicate that preadmission GPA does, in fact, is a

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major factor in determining academic success during the professional phase of allied health programs.

Study Population

The population for this study includes 102 graduates of the LUPT program since its second class in 1989 (first class entered in Fall 1987). These students met the researcher's requirements of a minimum preprofessional cumulative GPA of 2.5, program completion, and a complete file (of transcripts of coursework completed). The subjects of this research are graduates of eight physical therapy classes from Fall 1987 to Spring 1993. Two classes, Fall 1986 and Spring 1991, within this time period were excluded because none of the students met the research criteria.

Students not included in this study are those whose files are incomplete (i.e. the data is either inaccurate, incomplete, or unobtainable). Also, those students who had an adjusted GPA or pre-cumulative of less than 2.5 but met the 2.5 GPA through prerequisite coursework (see Appendix D) were excluded because an overall assessment was made of all coursework taken prior to entrance into the program.

This study investigates the relationship between preprofessional cumulative GPA and physical therapy professional GPA. It also considers additional variables such as gender, age, race, previous degree, and sites at which students earned credit for coursework (i.e. Langston University or another university). These additional

variables are used for demographical purposes and comparison between and within groups.

Method of Data Collection

The data for this study were collected through the use of two data collection forms, one group demographics form and one total demographics form, designed by the researcher (see Appendices A, B, C, and D) to systematically record information extracted from the files.

The initial data collection form (Appendix A) included name and social security number (SSN) to identify program graduates with incomplete files (files without final grades listed) during initial data collection. Names and SSN's were included in a written request to the Registrar's office for complete transcripts in order to calculate grade point averages for the study. Access to this information for the research was restricted to the researcher and her committee chairperson. All names and SSN's were blacked out on the transcript after the necessary information was obtained.

Following collection, the data from the initial data collection form was transferred to the final data collection form. The final data collection form contained only group and student numbers as a means of identification for the researcher. The only person having knowledge of the student assignments is the researcher.

The students selected for the study were assigned to eight groups according to the physical therapy class to

which they belonged (see Appendix B). Each group consisted of the students who met the qualifications for the study according to the selected criteria. The students in each group were assigned consecutive numbers according to alphabetical order. The third form, group demographics, was used to record totals of each variable per group. The total demographics form was used to record data from each group on one form.

GPA's were recalculated to assure accuracy. For preprofessional GPA, the retention GPA, if applicable (see Appendix E for definition), immediately prior to entrance into the program was used. Retention GPA is based on the concept of the Forgiveness Policy (see Appendix E) when students have repeated a course. Professional GPA was calculated by averaging the semester grades earned by the student during the professional phase of the program. The final cumulative GPA represents an average of both preprofessional GPA and professional GPA and includes all college coursework completed by the student. To assure accuracy of grade calculations, each grade was computed twice.

Statistical Analysis

Data for each variable has been compared within each group as well as between groups. The statistical analysis for the study was done by the researcher after collecting all the data. The instrument used to make data correlations

is "Basic Statistical Analysis," a computerized statistical analysis program. Descriptive statistics was used to calculate the mean, median, standard deviation, and range of each data set. A Pearson correlation coefficient program was used to show correlations between preprofessional and professional GPA's in each data set. Chart representations show relationships and differences between dependent variable (professional GPA) and independent variable (Preprofessional GPA). Age, sex, race, enrollment site (Langston vs. transfer students) and degree status were also tabulated.

CHAPTER IV

DATA ANALYSIS

Introduction

Chapter IV presents the demographical and correlational information collected during the study. Tables are included to organize and summarize the data.

Demographics

The total study population consisted of 102 graduates of the Langston University Physical Therapy Program from Fall 1989 to Spring 1994. The graduates are grouped into eight groups, depending on the class in which they entered. Two classes, Fall 1986 and Spring 1991, were excluded because of insufficient data. The population was further grouped according to race, sex, age, citizenship, degree status, and school in which their prerequisite courses were taken.

In the total population of this study, twenty-six (25%) graduates were Black, sixty-one (60%) were Caucasian, two were Hispanic (2%), one was Asian (1%), one (1%) was recorded as "other," and eleven (11%) were of unknown ethnic background. Fifty-three (52%) graduates were male and forty-nine (48%) were female. Ninety-two (91%) of the graduates were citizens of the United States and ten (9%) were of unknown citizenship.

At time of entrance into the program, forty-three (42%)

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graduates were in the age group of 18-22, thirty-one (30%) were in the 23-27 age group, fourteen (14%) were in the 28-32 age group, nine (9%) were in the 33-37 age group, four (4%) were in the 38-42 age group, and one (1%) graduate fell into the above 42 age group. Twenty-one (21%) graduates completed all previous coursework at Langston University. Eighty-one (79%) graduates completed their previous coursework at different institutions. Thirty (29%) of the graduates had already earned degrees. Of those thirty degrees earned, sixteen (55%) were science/health related while the remaining fourteen (45%) were not. The number of graduates in each group is listed in Table 1.

Statistics and Correlations

Group One (Fall 1987) consisted of nine graduates. Four of these graduates were male and five were female. Five fell into the 23-27 age group, three into the 28-32 age group, and one into the 33-37 age group. Eight of these graduates were of unknown ethnic background and one was Hispanic. Four had United States citizenship and five were of unknown citizenship. All nine of the graduates were transfer students (see Appendix for definition). Eight had earned previous degrees, five of which were health/science related.

Group Two (Fall 1988) consisted of six graduates, three

Table 1

Demographical Information

Title	Number	Percentage
Race		
Black	26	25
Caucasian	61	60
Hispanic	2	2
Asian	1	1
Other	1	1
Unknown	11	11
TOTAL	102	100
Sex		
Male	53	49
Female	48	48
TOTAL	102	100
Age		
18-22	43	42
23-27	31	30
28-32	14	14
33-37	9	9
38-42	4	4
42+	1	1
TOTAL	102	100
Citizenship		
US	92	91
Unknown	10	9
TOTAL	102	100
Pre-req courses		
Langston	21	21
Transfer	81	79
TOTAL	102	100
Degree Status		
Yes	30	29
Science (of above)	16	55
Not science	14	45

male and three female. Five were in the 18-22 age group and one in the 33-37 age group. Two graduates were Black, three were Caucasian, and one was of unknown ethnic origin. Four were United States citizens and two were of unknown citizenship. Two graduates completed their prerequisite coursework at Langston University and four were transfer students. One student had earned a previous degree which was not science/health related.

Group Three (Fall 1989) consisted of twenty graduates. Twelve were males and eight were females. Four were in the 18-22 age group, eight in the 23-27 age group, four in the 28-32 age group, three in the 33-37 age group, and one in the 38-42 age group. Five graduates were Black and fifteen were Caucasian. Nineteen graduates were citizens of the United States and the other's citizenship was unknown. Five of the graduates were previous Langston students and the other fifteen were transfer students. Ten graduates in this class had previously earned degrees, six of which were science/health related.

Group Four (Fall 1990) consisted of twelve graduates, three males and nine females. Five graduates were in the 18-22 age group, four in the 23-27 age group, two in the 28-32 age group, and one in the 38-42 age group. One graduate was Black, ten were Caucasian, and one had unknown ethnicity. Eleven were from the United States and one's origin was unknown.

One student was a Langston student and eleven were transfer students.   Three students had earned a degree, two of which were science related.

Group Five (Fall 1991) had seven graduates.   Four males and three females comprised this group.   Three were in the 18-22 age range, two in the 23-27 age range, one in the 33-37 age group and one graduate was over 42.   Two graduates were Black, four were Caucasian, and one was Asian.   Six were United States citizens and one's citizenship was unknown.   One was previously from Langston and six were transfer students.   Two had already earned degrees, neither being science/health related.

Group Six (Spring 1992) consisted of nineteen graduates.   Eight were male and eleven were female.   Eleven graduates were in the 18-22 age group, four were in the 23-27 age group, three in the 28-32 age group, and one in the 33-37 age group.   Seven of this group were Black, eleven were Caucasian and one was classified as "Other."   All nineteen were United States citizens.   Three were Langston students and sixteen were transfer students.   None of the students had previous degrees.

Group Seven (Fall 1992) consisted of eleven graduates. Seven of these were male and four were female.   Five graduates were in the 18-22 age group, four in the 23-27, one in the 28-32 age group, and one in the 33-37 age group. In this group, four were Black, six were Caucasian, and one

was Hispanic. All eleven were citizens of the United States. Three were Langston students and eight were transfer students. Three of the graduates had previous degrees, one science/health related.

Group Eight (Spring 1993) had eighteen graduates, twelve male and six female. Ten were in the 18-22 group, four in the 23-27 group, one in the 28-32 group, one in the 33-37 group, and two in the 38-42 age group. Of these, five were Black, twelve were Caucasian, and one was of unknown ethnic background. All eighteen were from the United States. Six were Langston students and twelve were transfer students. Three had earned previous degrees two of which were science/health related. Table 2 summarizes all group demographics.

The preprofessional and professional GPA's were divided into six groups: 2.50-2.74, 2.75-2.99, 3.00-3.24, 3.25-3.49, 3.50-3.74, and 3.75-4.00. Means, medians, ranges, standard deviations (SD), and correlation coefficient (r) (see Appendix E for definition of terms) were determined for each group.

Nineteen (19%) graduates had preprofessional grades in the 2.50-2.74 range. Twenty-four (24%) had preprofessional grades in the 2.75-2.99 range. Thirty (29%) graduates had preprofessional grades in the 3.00-3.24 range. Thirteen (13%) were in the 3.25-3.49 grade range. Ten (10%) were in the 3.50-3.74 grade range. Six (6%) graduates were in the

Table 2

Groups 1-8 Demographical Information

Group #	1	2	3	4	5	6	7	8
n=	9	6	20	12	7	19	11	18
Variable:								
Sex								
Male	4	3	12	3	4	8	7	12
Female	5	3	8	9	3	11	4	6
GPA Group								
18-22		5	4	5	3	11	5	
23-27	5		8	4	2	4	4	4
28-32	3		4	2		3	1	1
33-37	1	1	3		1	1	1	1
38-42			1	1				2
over 42					1			
Race								
Black		2	5	1	2	7	4	5
Caucasian		3	15	10	4	11	6	12
Hispanic	1						1	
Asian					1			
Other						1		
Unknown	8	1		1				1
Citizenship								
U.S.	4	4	19	11	6	19	11	18
Unknown	5	2	1	1	1			
Prerequisites								
Langston		2	5	1	1	3	3	6
Transfer	9	4	15	11	6	16	8	12
Degree Status								
None	1	5	10	9	5	19	8	15
Degree Earned	8	1	10	3	2	0	3	3
Science/Health:								
Yes	5	0	6	2	0		1	2
No	3	1	4	1	2		2	1

(Note: "10" appears in the left margin adjacent to the 18-22 GPA Group row.)

3.75-4.00 grade range. Table three illustrates this data.

The preprofessional 2.50-2.74 GPA range (n=19) had a mean of 2.631, median of 2.62, range of .240, SD of .070 and correlation coefficient of .084. The preprofessional 2.75-2.99 GPA range (n=24) had a mean of 2.890, median of 2.915, range of .240, SD of .077 and r of .204. The preprofessional GPA range of 3.00-3.24 (n=30) had a mean of 3.106, median of 3.100, range of .210, SD of .059 and r of -.213. The preprofessional 3.25-3.49 GPA range (n=13) had a 3.371 mean value, 3.36 median, .210 range, SD of .077, and r of .290. The preprofessional 3.50-3.74 GPA range (n=10) had a 3.609 mean, 3.610 median, range of .240, .083 SD, and r of .260. The preprofessional 3.75-4.00 GPA range (n=6) had a mean of 3.882, median of 3.885, range of .240, SD of .086, and r of .074. These figures are illustrated in Table 3.

One graduate had a professional GPA of less than 2.50. Three had professional GPA's in the 2.50-2.74 range. Eight had professional GPA's in the 2.75-2.99 range. Nineteen had professional GPA's in the 3.00-3.24 range. Twenty-seven had professional GPA's in the 3.25-3.49 range. Twenty-five graduates had professional GPA's in the 3.50-3.74 range. Nineteen had professional GPA's in the 3.75-4.00 range. This data is displayed in Table 3.

Mean, median, range, and SD were not calculated for the professional GPA group of 2.50-2.74 because only three

graduates fell into that group. The professional GPA range of 2.75-2.99 (n=8) had a mean of 2.891, median of 2.915, range of .190, and SD of .062. The professional GPA range of 3.00-3.24 (n=19) had a mean of 3.091, median of 3.060, range of .240, and SD of .085. The professional GPA group of 3.25-3.49 (n=27) had a mean of 3.368, median of 3.380, range of .240, and SD of .076. The professional GPA group of 3.50-3.74 (n=25) had a mean of 3.603, median of 3.620, range of .230, and SD of .078. The professional 3.75-4.00 GPA range (n=19) had a mean of 3.855, median of 3.860, range of .220, and SD of .070. Table 3 illustrates this data.

Group One had one person in the preprofessional 2.50-2.74 range, three people in the preprofessional 2.75-2.99 GPA range, and five people in the 3.00-3.24 preprofessional range. In the professional GPA groups, Group One had one in the 3.00-3.24, three in the 3.25-3.49, four in the 3.50-3.74, and one in the 3.75-4.00. Group Two had one in the preprofessional 2.50-2.74 category, one in the 2.75-2.99, three in the 3.00-3.24 category, and one in the 3.50-3.74 category. In the professional GPA categories, Group Two had one in the 2.75-2.99, one in the 3.00-3.24, one in the 3.50-3.74, and three in the 3.75-4.00.

Group Three had four people in the 2.50-2.74 preprofessional category, four in the 2.75-2.99, six in the 3.00-3.24, two in the 3.25-3.49, two in the 3.50-3.74, and

Table 3

Grade Statistics and Correlations

GPA Range	2.50- 2.74	2.75- 2.99	3.00- 3.24	3.25- 3.49	3.50- 3.74	3.75- 4.00
Preprofessional:						
n=	19	24	30	13	10	6
Mean	2.631	2.890	3.106	3.371	3.609	3.882
Median	2.620	2.915	3.100	3.360	3.610	3.885
Range	.240	.240	.210	.210	.240	.240
SD	.070	.077	.059	.077	.083	.086
min GPA	2.50	2.75	3.00	3.28	3.50	3.76
max GPA	2.74	2.99	3.21	3.49	3.74	4.00
r**	.084	.204	-.213	.290	.260	.074
min PGPA*	2.51	2.91	2.40	2.92	3.00	2.93
max PGPA*	3.86	3.86	3.86	3.91	3.97	3.97
Professional:						
n=	3	8	19	27	25	19
Mean		2.891	3.091	3.368	3.603	3.855
Median		2.915	3.060	3.380	3.620	3.860
Range		.190	.240	.240	.230	.220
SD		.062	.085	.076	.078	.070
min GPA		2.76	3.00	3.25	3.50	3.75
max GPA		2.95	3.24	3.49	3.73	3.97

* PGPA-professional GPA minimum and maximum values for data
  set
**all groups significant at the .05 alpha level

two in the 3.75-4.00. In the professional categories, one
was in the 2.50-2.74, one in the 2.75-2.99, two in the
3.00-3.24, six in the 3.25-3.49, five in both the 3.50-3.74
and 3.75-4.00 categories. Group Four had three in the
preprofessional 2.50-2.74 category, one in the 2.75-2.99,
three in the 3.00-3.24, three in the 3.25-3.49, and two in
the 3.50-3.74. For professional grades, one graduate was in
the 2.75-2.99 range, three in the 3.00-3.24, three in the
3.25-3.49, two in the 3.50-3.74, and three in the 3.75-4.00.

Group Five had three in the preprofessional 2.75-2.99,
one in the 3.00-3.24, two in the 3.25-3.49, and one in the
3.75-4.00. Professional GPA's in group five demonstrated
two in the 2.75-2.99 category, two in the 3.00-3.24 range,
one in the 3.25-3.49, one in the 3.50-3.74, and one in the
3.75-4.00. Group Six had four in the 2.50-2.74 range, five
in the 2.75-2.99 group, four in the 3.00-3.24 range, two in
the 3.25-3.49 range, three in the 3.50-3.74 range, and one
in the 3.75-4.00. Professional grades in Group Six were two
in the 2.50-2.74, three in the 3.00-3.24, seven in the
3.25-3.49, and six in the 3.50-3.74. This data is
represented in Table 4.

Group One had a preprofessional GPA mean of 2.928,
median of 3.010, range of .650, a SD of .192, and an r of
.399. The minimum preprofessional GPA was 2.53 and the
maximum was 3.18. The professional GPA mean was 3.493,
median was 3.530, range was .710, and SD was .226, with a

minimum GPA at 3.15 and maximum at 3.86. Group Two had a preprofessional GPA mean of 3.048, a median of 3.015, range of 1.030, SD of .300, and an r of .091 with GPA's ranging from 2.57-3.60. Professional GPA's in Group Two showed a mean of 3.525, median of 3.685, range of .930, SD of .353, with a minimum GPA of 2.91 and a maximum of 3.84.

Group Three had a preprofessional mean of 3.125, median of 3.075, range of 1.45, SD of .383, and an r of .344, with GPA's ranging from 2.55 to 4.00. Professional GPA's had a mean of 3.480, median of 3.495, range of 1.40, SD of .364, with a minimum GPA of 2.57 and a maximum of 3.97. Group Four had a preprofessional mean of 3.113, median of 3.160, range of .860, a SD of .283, and an r of -.446. The GPA's ranged from 2.66 to 3.52. Professional grades had a mean of 3.388, median of 3.440, range of 1.040, SD of .342, and minimum grade of 2.82 to a maximum of 3.86.

Group Five had a preprofessional GPA mean of 3.173, median of 3.00, range of 1.14, SD of .377, and an r of -.392, with a GPA range of 2.71 to 3.85. Professional grades had a mean of 3.310, median of 3.220, range of .880, SD of .317 and minimum GPA of 2.93 and maximum of 3.81. Group Six had a preprofessional GPA mean of 3.104, median of 3.100, range of 1.42, SD of .408, an r of .314 and GPA range of 2.50-3.92. Professional values for Group Six had a mean of 3.267, median of 3.380, range of 1.330, SD of .373, and GPA ranging from 2.40-3.73.

Group Seven's preprofessional mean was 3.003, median 2.960, range 1.150, SD .364, and an r .473. The GPA's ranged from a minimum of 2.59 to maximum 3.74. Professional GPA's mean was 3.257, median 3.120, range 1.200, and SD .365, with grades ranging from 2.76 to 3.96. Group Eight had a preprofessional mean of 3.167, median 3.115, range 1.370, SD .339, and an r of .673. The GPA's ranged from 2.59 to 3.96. Professional values for Group Eight were mean 3.457, median 3.435, range .950, and SD .294. The GPA's ranged from a minimum of 3.00 to a maximum of 3.95. Table 4 illustrates these figures.

Group Seven had four in the 2.50-2.74 range, three in the 2.75-2.99, two in the 3.00-3.24, and two in the 3.50-3.74. Professional grades for this group were three in the 2.75-2.99, three in the 3.00-3.24, one in the 3.25-3.49, three in the 3.50-3.74, and one in the 3.75-4.00. Preprofessional GPA's in Group Eight were one in the 2.50-2.74, five in the 2.75-2.99, six in the 3.00-3.24, four in the 3.25-3.49, and two in the 3.75-4.00. Professional grades in this group were four in the 3.00-3.24, six in the 3.25-3.49, three in the 3.50-3.74, and five in the 3.75-4.00 ranges respectively.

There were twenty-six (25%) Blacks in this study. The preprofessional mean was 3.038, median 2.965, range 1.450, and SD .420, and an r of .309. The professional mean for

Table 4

Group Statistics and Correlations

Group	1	2	3	4	5	6	7	8
n=	9	6	20	12	7	19	11	18
Preprofessional:								
2.50-2.74	1	1	4	3		4	4	1
2.75-2.99	3	1	4	1	3	5	3	5
3.00-3.24	5	3	6	3	1	4	2	6
3.25-3.49			2	3	2	2		4
3.50-3.74		1	2	2		3	2	
3.75-4.00			2		1	1		2
Mean	2.928	3.048	3.125	3.113	3.173	3.104	3.003	3.167
Median	3.010	3.015	3.075	3.160	3.000	3.100	2.960	3.115
SD	.192	.300	.383	.283	.377	.408	.364	.339
Range	.650	1.030	1.450	.860	1.140	1.420	1.150	1.370
min GPA	2.53	2.57	2.55	2.66	2.71	2.50	2.59	2.59
max GPA	3.18	3.60	4.00	3.52	3.85	3.92	3.74	3.96
Professional:								
2.50-2.74			1			2		
2.75-2.99		1	1	1	2		3	
3.00-3.24	1	1	2	3	2	3	3	4
3.25-3.49	3		6	3	1	7	1	6
3.50-3.74	4	1	5	2	1	6	3	3
3.75-4.00	1	3	5	3	1		1	5
Mean	3.493	3.525	3.480	3.388	3.310	3.267	3.257	3.457
Median	3.530	3.685	3.495	3.440	3.220	3.380	3.120	3.435
SD	.226	.353	.364	.342	.317	.373	.365	.294
Range	.710	.930	1.400	1.040	.880	1.330	1.200	.950
min GPA	3.15	2.91	2.57	2.82	2.93	2.40	2.76	3.00
max GPA	3.86	3.84	3.97	3.86	3.81	3.73	3.96	3.95
r*	.399	.091	.344	-.446	-.392	.314	.473	.673

*Accepted for Groups 1-6 at the .05 level; rejected for
 Groups 7 and 8 at the .05 and .01 levels respectively.

this group was 3.172, median 3.215, range 1.450, and SD .396.

Sixty-one Caucasians were included in this study. Their preprofessional mean was measured at 3.149, median 3.120, range 1.680, SD .353, and an r .239. The professional mean for this group was 3.443, median 3.440, range 1.210, and SD .309. These figures are shown in Table 5.

There were fifty-three (52%) males in this study. Preprofessional mean was 3.030, median 3.050, range 1.420, SD .317, and r .159. Professional mean was measured at 3.366, median 3.440, range 1.460, and SD .333. Forty-nine (48%) females comprised this group. Preprofessional mean was 3.173, median 3.100, range 1.44, SD .383, and r .284. The professional mean for the female group was 3.433, median 3.425, range 1.390, and SD .366. This data is illustrated in Table 5.

Six age groups were used in this study. Two were not included in the statistics because of low numbers: 38-42 (n=4) and over 42 (n=1). The 18-22 age group (n=43) had a preprofessional mean of 3.213, median of 3.160, range 1.450, SD .383, and an r .461. Professional mean was 3.350, median 3.400, range 1.450, and SD .390. The age group of 23-27 (n=31) had a preprofessional mean of 2.909, median 2.970, range .800, SD .216, and an r .231. The professional mean was 3.499, median 3.510, range .810, and SD .238. This

Table 5

Race and Sex Statistics & Correlations

Variable: n=	Male 53	Female 49	Black 26	Caucasian 61
Preprofessional				
Mean	3.030	3.173	3.038	3.149
Median	3.050	3.100	2.965	3.215
Range	1.420	1.440	1.450	1.680
SD	.317	.383	.420	.353
Min GPA	2.50	2.56	2.55	2.61
Max GPA	3.92	4.00	4.00	3.96
Professional				
Mean	3.366	3.433	3.172	3.443
Median	3.440	3.425	3.120	3.440
Range	1.460	1.390	1.450	1.210
SD	.333	.366	.396	.309
Min GPA	2.40	2.58	2.40	2.76
Max GPA	3.86	3.97	3.85	3.97
r*	.159	.284	.309	.239

*Significant at the .01 alpha level

information is illustrated in Table 6.

The 28-32 (n=14) age group had a preprofessional mean
of 3.096, median 3.020, range 1.170, SD .398, and r .224.
The professional mean was 3.378, median 3.355, range 1.150,
and SD .282. The preprofessional mean for the 33-37 (n=9)
group was 3.162, median 3.130, range .900, SD .347, and r
.449. The professional mean for this group was 3.254,
median 3.310, range 1.57, and SD .477. Table 6 illustrates
this data.

Those students who completed their prerequisite
coursework at Langston University (n=21) had a
preprofessional mean of 3.243, median 3.120, range 1.450,
SD .434, and r .726. Their professional mean was 3.152,
median 3.050, range 1.440, and SD .414. Transfer students
(n=81) had a preprofessional mean measured at 3.057, median
3.020, range 1.420, SD .323, and r .177. Professional mean
was measured at 3.444, median 3.450, range 1.570, and SD
.301. Table 7 shows this information.

Those who earned a degree (n=30) had a preprofessional
mean of 3.036, median of 3.050, range 1.00, SD .281, and r
-.054. This group had a professional mean of 3.493, median
of 3.485, range of 1.040, and SD of .275. Of these degrees,
sixteen (55%) were science- or health- related. The
preprofessional mean for this subgroup was 2.963, median
3.010, range .850, and r -.367.

Table 6

Age Statistics & Correlations

Age Range	18-22	23-27	28-32	33-37
n=	43	31	14	9

Preprofessional

Mean	3.213	2.909	3.096	3.162
Median	3.160	2.970	3.020	3.130
Range	1.450	.800	1.170	.900
SD	.383	.216	.398	.347
Min GPA	2.55	2.50	2.59	2.72
Max GPA	4.00	3.30	3.76	3.62

Professional

Mean	3.350	3.499	3.378	3.254
Median	3.400	3.510	3.355	3.310
Range	1.450	.810	1.150	1.570
SD	.390	.238	.282	.477
Min GPA	2.51	3.05	2.82	2.40
Max GPA	3.96	3.86	3.97	3.97
r*	.461	.231	.224	.449

*Rejected at the .01 level for the 18-22 age group; accepted at the .01 level for all other age groups.

Professional mean was 3.530, median 3.585, range .850 and SD .258. Fourteen (45%) individuals had earned degrees which were not science- or health- related. The preprofessional GPA mean was 3.125, with a median 3.160, range 1.00, SD .325, and an r of .912. The professional mean was 3.452, median 3.470, range 1.040, and SD .297. Those who did not have a previous degree (n=72) had a preprofessional mean of 3.121, median of 3.100, range 1.500, SD of .382, and r .346. The professional mean for this group was 3.353, the median 3.380, the range 1.570, and the SD .371. This data is presented in Table 7.

Table 7

Prerequisite Site & Degree Status

Statistics and Correlations

Variable	Langston	Transfer	Previous Degree			
			No	Yes	Sci	non
n=	21	81	72	30	16	14

Preprofessional

Mean	3.243	3.057	3.121	3.036	2.963	3.125
Median	3.120	3.020	3.100	3.050	3.010	3.160
Range	1.450	1.420	1.500	1.000	.850	1.000
SD	.434	.323	.382	.281	.213	.325
Min GPA	2.55	2.50	2.50	2.62	2.67	2.62
Max GPA	4.00	3.92	4.00	3.62	3.52	3.62

Professional

Mean	3.152	3.444	3.353	3.493	3.530	3.452
Median	3.050	3.450	3.380	3.485	3.585	3.470
Range	1.440	1.570	1.570	1.040	.850	1.040
SD	.414	.301	.371	.275	.258	.297
Min GPA	2.40	2.40	2.40	2.93	3.01	2.93
Max GPA	3.97	3.97	3.97	3.97	3.86	3.97
r	.726	.177	.346	-.054	-.367	.912

*Rejected at the .01 level for Langston, no previous
 degree earned, and non-science related degrees;
 accepted for all other groups at the .01 level.

CHAPTER V

SUMMARY AND CONCLUSIONS

This retrospective study was conducted to determine if preprofessional GPA can be used to predict how well a student will perform in the professional phase of the Langston University Physical Therapy Program. Other variables considered were race, sex, age at admission to the program, whether or not the student had earned a degree prior to program admission, year of entrance, and school at which the student did prerequisite coursework (Langston or a different institution). Review of the literature indicates that preprofessional grades can in fact help predict the academic success of students in the professional phase. Academic success is determined by successful completion of the program and GPA at the end of the program.

This study examines the relationship between preprofessional GPA and professional GPA among 102 graduates of the Langston University Physical Therapy Program. Students who met the criteria set by the researcher were chosen for the study. Students were not used if their file was incomplete, therefore the data may not represent the actual results if all students were used.

The data in this study were computed using descriptive statistical analysis for the mean, median, range, and

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standard deviation. The Pearson Product Correlation
Coefficient was used to determine the relationship between
preprofessional and professional GPA's in each data set.
Numbers and percentages were calculated by the researcher.

Correlations were made between preprofessional and
professional GPA's in six categories. In this study
population, the graduates were divided into eight groups
according to the year they were admitted to the program.
Six GPA range groups were identified. The only two races
for which correlations were made were Blacks and Caucasians
The other categories were too low for correlations. Six
ranges of age were used to identify correlations between age
of student at the time of admission and academic success.
Correlations were not performed on two age ranges because of
low numbers in those categories. Correlations were made
between Langston students and transfer students. Students
who had previously earned a degree were examined,
subdividing those with science/health related degrees and
non-science/health related degrees.

Seven hypotheses were addressed based on the literature
review. These hypotheses focus on the correlation between
preprofessional and professional GPA's of six categories.
These categories include each group, race, sex, age at
entrance, degreed or non-degreed prior to entrance, and
prerequisite coursework.

Hypothesis One stated there is a significant

relationship between preprofessional grades and academic success. This hypothesis was examined by looking at six GPA ranges. Correlations of each group demonstrated that each GPA group had positive correlations except for the 3.00-3.24 GPA group. This group had a negative correlation of -.213. Of the GPA groups of 2.75-2.99 (r=.204), 3.25-3.49 (r=.290), and 3.50-3.74 (r=.260), all had low but positive correlations. A positive but insignificant correlation was noted in the 2.50-2.74 (r=.084) and 3.75-4.0 (r=.074) ranges. It is interesting to note that most preprofessional GPA's remained in the same corresponding professional group except for the 2.50-2.74, which had a professional GPA mean of 3.295, the 2.75-2.99 range with a professional GPA mean of 3.403, and the 3.75-4.00 range, which in fact had a lower professional range of 3.670. The probability for this data set was significant at the .05 alpha level.

Professional GPA's demonstrated that only three individuals were in the 2.50-2.74 range; one was below this mark. Eight graduates had professional GPA's in the 2.75-2.99 range with a mean of 2.891. Nineteen were in the 3.00-3.24 range with a mean of 3.091. The largest group, 3.25-3.49 (n=27) had a mean of 3.368. The 3.50-3.74 range contained a large proportion (n=25) of the professional GPA's with a mean of 3.603. Nineteen students were in the 3.75-4.00 range with a mean of 3.855. Eighty-eight percent of the population had a professional GPA above 3.00 level.

Based on these correlations, findings suggest that preprofessional GPA is related to professional GPA but not significantly, thus confirming the hypothesis. In most of the cases, the students' preprofessional GPA did not predict the professional GPA group they would fall in. Seventy-nine percent (n=15) of the 2.50-2.74 range (n=19) had professional GPA's over 3.10. All but one student in the 2.75-2.99, 3.25-3.49 and 3.75-4.00 group (n=24, 13, & 6 respectively) had a professional GPA over 3.00. Five students in the 3.00-3.24 range (n=30) had averages below 3.00. All students in the 3.50-3.74 (n=10) range had averages above 3.00.

Hypothesis Two stated there is no significant relationship between the variable of age at time of entrance and academic success. Six age groups were identified: 18-22, 23-27, 28-32, 33-37, 38-42 and over 42. Correlations were not made between the 38-42 and the over 42 groups because the numbers were too low. The 18-22 (n=43) age group had a preprofessional GPA mean of 3.213, a professional GPA mean of 3.350, and the correlation between these two sets was .461. The 23-27 (n=31) group had a preprofessional GPA mean of 2.909 and a professional mean of 3.499. The correlation between these GPA's was .231. The preprofessional GPA mean for the 28-32 (n=14) group was 3.096, with the professional GPA mean being 3.378. The correlation in this set was .224. Preprofessional mean for

the 33-37 age group was 3.162 and professional mean was 3.254 with a correlation of .449.

All age groups had a positive and significant correlation between preprofessional and professional GPA's. In the 23-27 age group all professional GPA's were above 3.05. These findings do not agree with previous studies that reported that older students perform less well than younger students (Holt & Dunlevy, 1992). It also does not agree with the study by Boyle (1986), who concluded that age did not correlate with academic success positively or significantly. Therefore the hypothesis is rejected for the 18-22 age group at the .01 alpha level because a significant positive relationship is noted between age at time of entrance with all other age groups at the .05 alpha level.

Hypothesis Three stated that there is no significant relationship between sex and academic success in the program. Fifty-three subjects in this study were males and forty-nine were females. The male group had a preprofessional mean of 3.030 and a professional mean of 3.366. The correlation in this set was .159. The female group had a preprofessional mean of 3.173 and a professional mean of 3.433. The correlation was .284.

Results of this data indicate that sex has a low positive, but insignicant correlation with academic success. The female group (r=.284) had a slightly higher preprofessional and professional mean and correlation than

the male group (r=.159). Therefore, the hypothesis is accepted at the .05 level, between the preprofessional and professional GPA groups in both sexes.

Hypothesis Four stated there is no significant correlation between race and academic achievement. There were twenty-six Blacks and sixty-one Caucasians in this population in which correlations were made. The Black group had a preprofessional mean of 3.038 and a professional mean of 3.172. The correlation between GPA's was .309. The Caucasian group had a mean preprofessional GPA of 3.149 and a mean professional GPA of 3.443. The correlation was .239.

Both groups had a positive correlation between preprofessional and professional GPA's. The Black group had a higher correlation number, which might be due to the lower number of subjects in this group as compared to the Caucasian group. Another reason the Caucasian group's correlation may be lower than the Black group is that the range between preprofessional and professional GPA's is so wide. Therefore, the hypothesis that there is no significant relationship between race and academic success is accepted because both have positive but not significant relationships at the .05 level.

Hypothesis Five stated there is no significant relationship between degree status and academic success. Seventy-two subjects had not earned a degree prior to program entrance. The preprofessional mean for this group

was 3.121, the professional mean was 3.353, and the correlation was .346. Thirty students had previously earned degrees before entering the program. The preprofessional mean for this group was 3.036 and the professional mean was 3.493. The correlation for this data set is -.054.

Sixteen (55%) of the thirty degrees were health- or science- related and the other fourteen (45%) were not. Preprofessional mean for the science-related group was 2.963 and the professional mean for this group was 3.530. The correlation was -.367. The subjects with degrees that were not science-related had a preprofessional mean of 3.125, a professional mean of 3.452, and a correlation of .912.

Based on the data results, it appears that students without previous degrees had a positive but insignificant correlation (r=.346) with academic success.
Those who had earned a degree had a negative correlation (r=-.054) with academic success. Those with a science-or health-related degree also had a negative correlation (r=-.367). Those with a degree not related to science or health had a insignificant positive (r=.912) relationship to academic success at the .01 alpha level.

Given this information, one would assume that those students who earned a degree that was not science-related had a higher rate of academic success than those with science-related degrees and those without a previous degree. One assumption for this big correlational difference could

be that the number of these subjects is low compared to
those without degrees. Another assumption is that a
science- or health-related degree has no impact on how well
a student will perform during the physical therapy
professional program. Based on this data, the hypothesis is
rejected for those with no previous degree as well as those
with a non health-related degree at the .01 alpha level.
The hypothesis is accepted for the previous degree and the
science/health-related degree groups at the .05 alpha level.

Hypothesis Six stated there is no significant
relationship between success and the site at which
prerequisite coursework was completed prior to program
entrance. Twenty-one graduates completed their prerequisite
coursework at Langston University. Eighty-one completed
their coursework at other institutions. Preprofessional GPA
mean for the Langston students was 3.243, professional GPA
mean was 3.152, and the correlation was .726. The transfer
student group had a preprofessional mean GPA of 3.057, a
professional mean GPA of 3.444, and a correlation of .177.

Results of this data indicate that Langston students
had an insignificant positive correlation (r=.726) with
academic success as compared to transfer students (r=.177).
This difference may be due to the difference in numbers of
both groups. The variance can also be attributed to the
range between preprofessional and professional GPA's in both
groups. The Langston students' GPA mean decreased from

preprofessional to professional, and the transfer students' GPA mean increased from preprofessional to professional. Therefore, the hypothesis is rejected for Langston students at the .01 level but accepted at the .05 level for transfer students. This indicates there is no difference in prerequisite coursework location.

Hypothesis Seven states there is no significant relationship between year of entrance into the program and academic success. There were eight groups each representing the year of entrance into the program.

Group One (Fall 1987, n=9) had a preprofessional mean of 2.928, a professional mean of 3.493, and a correlation of.399. Group Two (Fall 1988, n=6) had a preprofessional mean of 3.048, a professional mean of 3.525, and a correlation of .091. Group Three (Fall 1989, n=20) had a preprofessional mean of 3.125, a professional mean of 3.480 and a correlation of .344. Group Four (Fall 1990, n=12) had a preprofessional mean of 3.113, a professional mean of 3.388, and a correlation of -.446. Group Five (Fall 1991, n=7) had a preprofessional mean of 3.173, a professional mean of 3.310, and a correlation of -.392. Group Six (Spring 1992, n=19) had a preprofessional mean of 3.104, a professional mean of 3.267, and a correlation of .314. Group Seven (Fall 1992, n=11) had a preprofessional mean of 3.003, a professional mean of 3.257, and a correlation of .473. Group Eight (Spring 1993, n=18) had a preprofessional

mean of 3.167, a professional mean of 3.457, and a correlation of .673.

Results of this data indicate that all groups except two had positive correlations between variables. Groups Four and Five both had negative but significant correlations ($r=-.446$ & $-.392$, respectively). Group Two had a positive but insignificant correlation ($r=.091$). Groups One, Three and Six all had positive and significant correlations between PPGPA and professional GPA and academic success. The variance in all these correlations could be due to possible curriculum changes, instructor changes, grading system, methods of instruction, or departmental changes. Groups One and Eight had professional GPA's of 3.0 and above. The hypothesis is therefore rejected for Group Seven at the .05 level and Group Eight at the .01 level. It is accepted for all other groups at the .05 alpha level.

The variable citizenship was recorded but not measured because 92% were United States citizens, while the remaining 8% were of unknown citizenship. Therefore, a comparison could not be made on this variable.

Conclusions of this study can only be drawn about the graduates of the Langston University Physical Therapy Program. It represents only a sample of the entire population; therefore, the data may be skewed. Generalizations can be made, however, since it does represent a sample of the total population.

This data does not, however, measure how well students performed who were not accepted into the program and cannot show a comparison between those selected and those not selected. It also does not compare those selected who did not complete the program. Therefore, all students in this study did have academic success in that they did complete the program.

Future studies on the Langston University Physical Therapy Program should investigate how well preprofessional and professional GPA's predict performance on the State Board Examination. Other studies might compare professional grades since the curriculum change which placed Gross Anatomy as the first course in the curriculum. Another study might consider the relationship between pre-science GPA and academic success, making a comparison between pre-science before Physics was added as a pre-requisite. Since Langston University has recently added PT observation hours and personal interviews to the selection process, a study evaluating the effectiveness and predictive value these variables have on academic success should be performed. One very important requirement in making the research possible and effective should be that all student and graduate files be maintained as completely as possible.

APPENDICES

APPENDIX A

Initial Data Collection Form

```
Name:_____
SSN:_____
DOB:_____AGE: 18-22    23-27        28-32
                                     33-37    38-42        OVER 42
SEX: M    F
RACE:   Black   Caucasian    Asian    Native American
        Hispanic       Other
CITIZENSHIP:  U.S.  Other
PROGRAM ENTRANCE YEAR:_____
GRADUATION
YEAR:_____
PREVIOUS DEGREE_____ SUBJECT_____
PRE-CUM GPA:   2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
FINAL CUM GPA: 2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
PT GPA:        2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
Name:_____
SSN:_____
DOB:_____AGE: 18-22    23-27        28-32
                                     33-37    38-42        OVER 42
SEX: M    F
RACE:   Black   Caucasian    Asian    Native American
        Hispanic       Other
CITIZENSHIP:  U.S.  Other
PROGRAM ENTRANCE YEAR:_____
GRADUATION
YEAR:_____
PREVIOUS DEGREE_____ SUBJECT_____
PRE-CUM GPA:   2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
FINAL CUM GPA: 2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
PT GPA:        2.50-2.74_____   2.75-2.99_____   3.0-3.24_____
               3.25-3.49_____   3.50-3.74_____   3.75-4.0_____
```

APPENDIX B

Final Data Collection Form

GROUP:_____NUMBER_____
ENTRANCE YEAR:_____GRADUATION YEAR:_____
DOB:_____ SEX: M___ F___ CITIZENSHIP:U.S.___OTHER_____
AGE: 18-22___ 23-27___ 28-32___ 33-37___ 38-42___ OVER 42___
RACE: BLACK___ CAUCASIAN___ ASIAN___ HISPANIC___ OTHER___
PREVIOUS DEGREE: YES___ NO.___
IF YES, SCIENCE/HEALTH RELATED: YES___ NO___
PRE-CUM GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
PT GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
LANGSTON____ TRANSFER____

GROUP:_____NUMBER_____
ENTRANCE YEAR:_____GRADUATION YEAR:_____
DOB:_____ SEX: M___ F___ CITIZENSHIP:U.S.___OTHER_____
AGE: 18-22___ 23-27___ 28-32___ 33-37___ 38-42___ OVER 42___
RACE: BLACK___ CAUCASIAN___ ASIAN___ HISPANIC___ OTHER___
PREVIOUS DEGREE: YES___ NO___
IF YES, SCIENCE/HEALTH RELATED: YES___ NO___
PRE-CUM GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
PT GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
LANGSTON____ TRANSFER____

GROUP:_____NUMBER_____
ENTRANCE YEAR:_____GRADUATION YEAR:_____
DOB:_____ SEX: M___ F___ CITIZENSHIP:U.S.___OTHER_____
AGE: 18-22___ 23-27___ 28-32___ 33-37___ 38-42___ OVER 42___
RACE: BLACK___ CAUCASIAN___ ASIAN___ HISPANIC___ OTHER___
PREVIOUS DEGREE: YES___ NO___
IF YES, SCIENCE/HEALTH RELATED: YES___ NO___
PRE-CUM GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
PT GPA: 2.50-2.74___   2.75-2.99___   3.0-3.24___
                3.25-3.49___   3.50-3.74___   3.75-4.0___
LANGSTON____ TRANSFER____

APPENDIX C

Group Demographics Collection Form

GROUP #_____ ENTRANCE YEAR_____
NUMBER OF SUBJECTS IN GROUP_____
MALES_____ FEMALES_____
18-22_____ 23-37_____ 28-32_____
33-37_____ 38-42_____ OVER 42_____
BLACKS_____ CAUCASIANS_____ HISPANICS_____
ASIANS_____ OTHER_____ UNKNOWN_____
UNITED STATES_____ UNKNOWN_____
LANGSTON_____ TRANSFERS_____
PREVIOUS DEGREES_____ SCIENCE/HEALTH_____
PRE GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____
PT GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____

GROUP #_____ ENTRANCE YEAR_____
NUMBER OF SUBJECTS IN GROUP_____
MALES_____ FEMALES_____
18-22_____ 23-37_____ 28-32_____
33-37_____ 38-42_____ OVER 42_____
BLACKS_____ CAUCASIANS_____ HISPANICS_____
ASIANS_____ OTHER_____ UNKNOWN_____
UNITED STATES_____ UNKNOWN_____
LANGSTON_____ TRANSFERS_____
PREVIOUS DEGREES_____ SCIENCE/HEALTH_____
PRE GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____
PT GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____

GROUP #_____ ENTRANCE YEAR_____
NUMBER OF SUBJECTS IN GROUP_____
MALES_____ FEMALES_____
18-22_____ 23-37_____ 28-32_____
33-37_____ 38-42_____ OVER 42_____
BLACKS_____ CAUCASIANS_____ HISPANICS_____
ASIANS_____ OTHER_____ UNKNOWN_____
UNITED STATES_____ UNKNOWN_____
LANGSTON_____ TRANSFERS_____
PREVIOUS DEGREES_____ SCIENCE/HEALTH_____
PRE GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____
PT GPA 2.50-2.74____ 2.75-2.99____ 3.0-3.24____
        3.25-3.49____ 3.50-3.74____ 3.75-4.0____

APPENDIX D

Total Demographics Form

NUMBER OF SUBJECTS_____

MALE_____%_____ FEMALE_____%_____

18-22_____%_____23-27_____%_____28-32_____%_____

33-37_____%_____38-42_____%_____OVER 42_____%_____

BLACK_____%_____CAUCASIAN_____%_____ HISPANIC_____%_____

ASIAN_____%_____OTHER_____%_____UNKNOWN_____%_____

UNITED STATES_____%_____ UNKNOWN_____%_____

LANGSTON_____%_____ TRANSFERS_____%_____

PREVIOUS DEGREE_____%_____

OF THOSE: HEALTH/SCIENCE YES_____%_____ NO_____%_____

APPENDIX E

Definitions

1. Correlation- Any existing relationship between factors, does not indicate causation, but shows the extent to which variations in one factor correspond to variations in one or more other factors.

2. Correlation coefficient (r)- A number representing the extent of relation between factors.

3. Cumulative GPA- A calculation of grades including all coursework taken by a student.

4. Dependent variable- Something that is being measured, the value of it "depends" on a change in another item.

5. Forgiveness Policy- A grading policy which is relevant when a student has retaken a course. The first grade is "forgiven" and is not included in the cumulative GPA.

6. Hypothesis- An assumption to be tested that states a relationship between two or more variables.

7. Independent variable- Something that can be measured, a change in it could be the cause of the dependent variable.

8. Langston student- A student in this study who took all of their pre-requisite courses at Langston University.

9. Mean value- The average of values in a data set.

10. Median value- The middle value in a data set, there is as many above the median as below the it.

11. Nontraditional variable- A variable which does not measure the cognitive domain.

12. Preprofessional (preadmission) GPA- The grade point average that a student has before entering into the professional phase of the physical therapy program.

13. Pre-requisite GPA- The grade point average the student has by only averaging the required courses for the physical therapy program.

14. Professional GPA- The GPA a student has earned during the coursework of the physical therapy program alone.

15. Range- The difference between the largest and smallest values in a set of data.

16. Retention GPA- The GPA which incorporates the Forgiveness Policy. The course(s) which was retaken is not included in this average.

17. Standard deviation (SD)- Measures the average deviation of scores from the mean; another measure of variance.

18. Traditional variable- A variable that measures cognitive domain.

19. Transfer student- A student that completed their pre-requisite coursework at a different school from where they completed their professional coursework.

20. Variable- Any quantity or quality subject to change in value or character.

WORKS CITED

Balogun, J. A. (1987). Predictive validity of the allied health professions admission test. Physiotherapy Canada, 39(1), 39-42.

Balogun, J. A., Karacoloff, L. A., and Farina, N. T. (1986). Predictors of academic achievement in physical therapy. Physical Therapy, 66(6), 976-80.

Boyle, K. K. (1986). Predicting the success of minority students in a baccalaureate nursing program. Journal of Nursing Education, 25(5), 186-191.

Chaisson, G. M. (1976). Student selection: Logic or lottery. Journal of Allied Health, Spring 1976, 7-16.

Chapman, D. M. (1987). Nontraditional variables as predictors of academic success for students enrolled in baccalaureate level physical therapy programs. Doctoral dissertation, University of Iowa, 1987.

Gartland, G. J. (1977). Synopsis of a study of admissions criteria for physical therapy programs. Physiotherapy Canada, 29(1), 6-10.

Guthrie, M. (1996). Student selection: Use of a mathematical formula to assist in the process. Abstract. Physical Therapy, 76(5), S16.

Hahn, B. M. (1984). Predictors of success in a baccalaureate physical therapy program. Abstract. Physical Therapy, 64(5), 743.

Holt, T. B. and Dunlevy, C. L. (1992). The use of preadmission criteria to predict academic success in a 4-year respiratory care curriculum. Respiratory Care, 37(5), 439-443.

Levine, S. B., Knecht, H. G., and Eisen, R. G. (1986). Selection of physical therapy students: Interview methods and academic predictors. Journal of Allied Health, May 1986, 143-151.

McGinnis, M. E. (1984). Admission predictors for pre-physical therapy majors. Physical Therapy, 64(1), 55-8.

Peat, M., Woodbury, M. G., and Donner, A. (1982). Admission average as a predictor of undergraduate academic and clinical performance. Physiotherapy Canada, 34(4), 211-214.

Rheault, W., and Shafernich-Coulson, E. (1988). Relationship between academic achievement and clinical performance in a physical therapy education program. Physical Therapy, 68(3), 378-80.

Roehrig, S. M. (1988). Prediction of licensing examination scores in physical therapy graduates. Physical Therapy, 68(5), 694-8.

Schimpfhauser, F. T. and Broski, D. C. (1976). Predicting academic success in allied health curricula. Journal of Allied Health, Winter 1976, 35-46.

Templeton, M. S., Burcham, A., and Franck, L. (1994). Predictive study of physical therapy admission

variables. <u>Journal of Allied Health,</u> <u>23</u>(2), 79-87.

Thieman, T. J., Greer, K., McCarron, A., Melz, W., Woods, L., and Weddle, M. (1996). Assessing admissions criteria for predicting success in a master of physical therapy program. Abstract. <u>Physical Therapy,</u> <u>76</u>(5), S11.

Wilding, J., Rheault, W., and Tapper, S. (1996). Prediction of academic success and clinical promise in a physical therapy program. Abstract. <u>Physical Therapy,</u> <u>76</u>(5), S60.

Williams, A. K. (1984). Predicting academic achievement in a physical therapy program. Abstract. <u>Physical Therapy,</u> <u>64</u>(5), 727.

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    National Band Sorority, Delta Sigma Theta, Sorority,
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    Recipient, OPTA & APTA Minority Scholarships Recipient.