1981

Cognitive Predictors of Success of Graduate Nurses on State Board Test Pool Examinations and After Two Years Employment.

Mary Brown Neiheisel

Louisiana State University and Agricultural & Mechanical College

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COGNITIVE PREDICTORS OF SUCCESS OF GRADUATE NURSES ON STATE BOARD TEST POOL EXAMINATIONS AND AFTER TWO YEARS EMPLOYMENT

The Louisiana State University and Agricultural and Mechanical Col.     Ed.D.  1981

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COGNITIVE PREDICTORS
OF
SUCCESS OF GRADUATE NURSES
ON STATE BOARD TEST POOL EXAMINATIONS
AND AFTER TWO YEARS EMPLOYMENT

A dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Education

in
the Department of Extension
and International Education

by
Mary B. Neiheisel
B.S., Incarnate Word College, 1962
M.S., University of Colorado, 1965
May, 1981
DEDICATION

This dissertation is dedicated to Dick, an exemplar of courage and determination, for his love and for his belief in me.
ACKNOWLEDGEMENTS

The writer wishes to express deep appreciation to Dr. J. H. Jones, Jr., Professor of Sociology and Extension Education for his guidance and direction as major professor and graduate committee chairman.

Special recognition and gratitude are given to each member of the researcher's graduate committee: Dr. Bruce Flint, Professor of Extension Education; Dr. Edward W. Gassie, Professor of Extension Education; Dr. Eugene McCann, Professor of Management; and Dr. Virginia Purtle, Professor of Sociology.

Dr. Satish Verma, Associate Professor of Extension Education and Dr. Peter Dickinson, Associate Professor of Statistics were invaluable in their assistance with statistical procedures.

Sincere appreciation is expressed also to each of the graduate nurses who responded to the letter of request and promptly completed and returned the questionnaire.

Deep gratitude is expressed to the writer's parents, Mr. and Mrs. Glen W. Brown, for their love and support.

Finally, the researcher is deeply indebted and grateful to her husband, Dick, for his patience, encouragement, assistance, and skills throughout the years of graduate study.
The friendship of Shannon Turney, M. D., Mrs. Betty Lou Tompkins, and Sister Janet Falgout have been of special value to me. The leonine role model in my life will always be remembered.
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ABSTRACT

The main purposes of this study were to determine the relationships between cognitive predictors and the success of graduate nurses on the State Board Test Pool Examinations and between cognitive predictors and the success of the nurse after two years of employment.

Data were obtained and recorded on appropriate sheets for the first hypothesis and from a mailed questionnaire for the second hypothesis. The population for the first group was the members of five graduating classes of a state university, and data for the second group was from 37.7 percent of the members of one graduating class.

Statistical analyses of the data included correlation coefficients, correlations of forecasting efficiency, Multiple R and regression equations.

Findings

1. The majority of the American College Test scores which represented five of the twelve cognitive predictors were negligibly related to the State Board scores and indicated even less of a correlation with the Employee Success scores.

2. The National League for Nursing scores which repre-
sented an additional five cognitive predictors generally proved to have substantial correlations with State Board scores. The relationships between the National League test scores and the Employee Success scores were negligible.

3. The grade-point averages are weak predictors of State Board test scores and generally are one of the last variables to appear in the regression equations. The relationships between grade-point averages and the success of the graduate in employment is extremely low.

4. The National League for Nursing Maternal-Child test explains the great percentage of the variability in the dependent variables.

5. The correlations between the State Board Test Pool Examination scores and the Employee Success score are low.

Conclusions

The independent variables identified for this study were inconsistent in reliability as predictors of the actual earned scores of the dependent variables. The American College Tests are written prior to college admission and are understandably weak predictors of scores achieved on tests.
related to the nursing curriculum.

The grade-point averages failure to correlate with the dependent variables might be explained on the basis that the grade-point average is a mixture of basic courses as well as nursing courses.

The National League for Nursing test scores as predictors of the dependent variables did prove to be reliable, but the domination of one variable, Maternal-Child Nursing, is an area for further investigation.
CHAPTER I

INTRODUCTION

The prediction of success and the identification of positive predictors for the college student have long been the goals of educators. Nurse educators are no different in the desire to have definite criteria with which to counsel students.

The student nurse faces two goals: (1) success in the nursing curriculum and (2) passing the State Board Test Pool Examinations in order to obtain a license to practice nursing.

Nationwide, the failure rate on the examinations is about 14.0 percent with the majority of the failures in only one of the five sections of the examination. In Louisiana, the failure rate has ranged from 11.7 percent to 20.9 percent during the past five years. The rate of failure for repeaters in Louisiana ranges from 40.0 percent to 50.0 percent.

Realizing their need for licensure and cognizant of the percentage of failure on the State Board Examinations, students who enter nursing curricula are concerned not only about their ability and competency to complete the required courses but also their future success on the State Board Test Pool Examinations. Faculty members are concerned about these
same areas as well as the type of counseling to offer to the students.

Is it possible to identify the characteristics that enable the graduate nurse to pass the licensing examinations? Are there predictors which might determine a student's probability of success on the examinations and, in turn, provide a set of criteria with which to screen incoming students?

Certainly if valid predictors of success could be discovered, the guidance and counseling of students would be greatly facilitated in preparing them for the licensing examinations.

An additional area of concern is the performance of graduate nurses in their early days of employment. Will they need extensive orientation, supervision, and assistance? Is it possible to determine the competence of a graduate nurse from certain cognitive predictors?

This study is directed toward the determination of predictors of successful completion of the State Board Test Pool Examinations by graduate nurses and the identification of the relationship between academic achievement and the success of the graduate nurse in employment.
Statement of the Problems

This research study proposes to (1) evaluate the validity of cognitive predictors in determining the success of graduate nurses on the State Board Test Pool Examinations and (2) discern the relationship of the cognitive predictors, as evidence of academic achievement, with the success of the graduate nurse in employment.

The Hypotheses

The first hypothesis is that cognitive predictors are not associated with the resulting scores on the State Board Test Pool Examinations.

The second hypothesis is that there is no relationship between cognitive predictors and the success of graduate nurses in their first two years of employment.

Purposes of Study

The purposes of this study are:

1. To ascertain the validity of cognitive predictors in determining the scores of graduate nurses on the State Board Test Pool Examinations.

2. To validate a relationship between cognitive predictors and the success of graduate nurses in their employment status.
Objectives of Study

The objectives of this study are:
1. Identification of reliable predictors for the success of graduate nurses on State Board Examinations.
2. Substantiation of a relationship between cognitive predictors and employee success.

Delimitations

This study is limited to:
1. One college of nursing.
2. Five graduating classes to study predictors of State Board Test Pool results.
3. One graduating class to discern success during the first two years of employment.

Definitions of Terms

1. The cognitive predictors chosen for this study are:
   a. The scores achieved on the four areas tested on the American College Test plus the composite score.
   b. Five scores achieved on the National League for Nursing Achievement Tests.
   c. Last semester grade point average in
the university.
d. Cumulative grade point average in the university.

2. The American College Test, supplied by Educational Services Division, consisting of an English, a mathematics, a social studies, and a natural science test. Scores are determined for the four tests as well as a composite score for a total of five scores.

3. The National League for Nursing Achievement Tests are provided to evaluate the student's achievement at the end of a unit of study. The N.L.N. tests utilized in this study are Community Health; Psychiatric Nursing; Medical-Surgical Nursing: comprehension and application; and Maternal-Child Nursing.

4. The last semester grade-point average is determined for a student for his last semester of enrollment and is based on a four point scale.

5. The cumulative grade-point average is the graduate's final grade-point average upon completion of all required courses at the university and is on a four-point scale.

6. A predictor is a measure to predict a criterion.
7. A criterion is an outcome, in this case the results on the State Board Test Pool Examinations and the degree of success during the first two years of employment.

8. The success in this study indicates that the candidate for licensure scored 350 or above on each of the five sections of the State Board Test Pool Examinations. Success in employment is defined as a percentage score of 78 or greater on the "Weighted Success Form."

9. The candidate for licensure is the graduate nurse who has completed the requirements of the nursing curriculum and has applied to write the State Board Test Pool Examinations.

10. The State Board Test Pool Examinations are composed of five test-sections prepared through the efforts of State Boards of Nursing, the American Nurses' Association Council of State Boards of Nursing, and the National League for Nursing. The tests written by the candidates for licensure are: Medical Nursing, Surgical Nursing, Nursing of Children, Obstetrical Nursing, and Psychiatric Nursing. The passing score is 350 on each test.
Assumptions

The first assumption is that in the population studied, there will be successful and unsuccessful scores by the candidates for licensure on the State Board Test Pool Examinations.

The second assumption is that during the first two years of employment, there will be varied degrees of success by the graduate nurses.
REFERENCES

CHAPTER II

REVIEW OF RELATED LITERATURE

INTRODUCTION

A review of the literature relative to this research proposal revealed a variety and a number of studies related to the identification of predictors of the scores on State Board Test Pool Examinations. Materials available relevant to graduate Nurse competence as related to cognitive predictors were minimal.

The studies were reviewed and categorized as:
1. Predictors of State Board Test Pool Examination results;
2. Academic success in collegiate programs;
3. Recruitment and selection of students;

Predictors of State Board Test Pool Examination Results

Taylor and others reviewed studies done prior to 1965. The primary concern of the survey was the selection and recruitment of nursing students. These authors did find twenty studies related to predicting State Board Test Pool
Examination results. In these studies, the National League for Nursing (NLN) Pre-Nursing and Guidance Test (PNG) proved the highest predictor while the ACE had intermediate correlations with the State Board Test results.

In 1966, Brandt and others studied the predictors of State Board Test results from theory and practice grades. The predictors used were grades earned in nursing theory, A.C.T. scores, NLN Achievement Test scores, and the G.P.A. The grades received in nursing theory; the natural sciences and social sciences A.C.T. scores; and the NLN Basic Medical-Surgical Test were useful in predicting results.

In 1969, Mueller and others studied the prediction of a student's success or failure on the licensing examination. The predictors used in this study were measures of ability and aptitude which included the Nursing Aptitude Test; rank in high school graduating class; the NLN Achievement Tests; and personality and family background as measured by the Personality Factors Test and from information obtained about the education of the student's parents, occupation of father, birth order, and size of high school graduating class. The results showed that while aptitude and ability had high positive correlations with State Board scores, personality factors showed a low correlation and family background predictors were unrelated.
In 1970, the National League for Nursing Measurement and Evaluation Services studied the correlation between the PNG test results and the State Board Test Pool Examination. The correlation was high with the social studies and the composite scores; the lowest correlation was with the Mathematics and Quantitative Aptitude tests. Another study by the same group in 1970 showed significant correlations between the five sections on the licensing examination and the NLN Achievement Tests; however, the highest correlations were between the licensing examination scores and the Medical-Surgical Achievement tests, Nursing of Children, and Diet Therapy and Applied Nutrition.

Papcum in 1971 indicated the scores on the Maternal and Child Nursing Achievement tests were the best predictor of State Board Test results while the Medical Nursing test produced the lowest correlations.

Backman and Steindler in 1971 related admission criteria to success in the nursing curriculum and the State Board Test results. The predictors used were the Wechler Adult Intelligence Scale, Verbal and Mathematics tests of the Scholastic Aptitude Test (S.A.T.), and the high school rank. The S.A.T. Verbal test and the G.P.A. had higher correlations with the State Board Test results than other predictors.

In 1972, Reed and Feldhusen studied the prediction of State Board Examination scores for Associate Degree
graduates. The predictors utilized were the student's age; S.A.T. Mathematics and Verbal scores; percentile high school rank; age in months squared; the product of age and high school rank; the product of S.A.T. Verbal score and high school rank; the school the student attended; and the interaction of the school the student attended and high school rank. The results showed that the students who entered the nursing curriculum but did not complete it were different from those who entered and completed the curriculum. Significant predictors for passing the State Board Examination were the S.A.T. Verbal score, the second semester G.P.A., and the high school attended.

In 1975, Dubs studied student achievement in school and performance ratings and State Board Examination scores. She found that students' grade point averages and theory grades were highly correlated with their subsequent State Board Examination scores.

Shelley and others in 1976 showed significant correlation between NLN Achievement Tests and the State Board Test Pool Examination scores.

Stronck in 1979 found that grade point averages were highly correlated between National League for Nursing Tests and the State Board Test Pool Examination.

In the studies which have been reported, the NLN Achievement Tests appear to have been used more frequently.
Future studies need to be directed toward cross-validation and consistency in the predictors used.

**Academic Success in Collegiate Programs**

Another research area of similarity and in which research should and could be coordinated is the prediction of success in nursing collegiate programs.

Burgess, in 1969, studied twenty predictors to determine success and found that the pre-nursing G.P.A. and the freshman and sophomore G.P.A. were the most significant predictors. This study was verified in 1972 as the G.P.A. again proved to be the best predictor for collegiate success.

**Recruitment and Selection of Students**

Studies done in this area show definite differences in successful and unsuccessful students. Pavalko, in 1969, indicated that student nurses are recruited from higher than average socioeconomic groups and higher intellectual groups.

Levitt, in 1971, found that non-successful students were those who, on their psychological tests, were more willing to acknowledge psychopathological tendencies; more likely to experience anxiety in manifest symptoms; more inclined to sociopathic behavior; and noticeably less likely to be interested in outdoor activities.
Cognitive Predictors Related to Employee Competence

Dubs, in her study in 1975 also included an investigation of the relationship between academic achievement and graduate nurse competence. She found the highest correlation demonstrated between overall employer ratings and other variables was the correlation with the average of nursing practice grades. Nursing practice grades, in other words, were the better predictor of graduate competence than are nursing theory grades.\(^{17}\)

Thomas, 1977, examined the prediction of success of graduate nurses in graduate education and found the baccalaureate G.P.A. and the GRE verbal and quantitative scores to be valid predictors.\(^{18}\)

Howell, 1978, compared the success of the associate, diploma, and the baccalaureate graduate. He found that the diploma graduate is more competent in technical skills while the baccalaureate graduate is more competent in leadership areas.\(^{19}\)

Behm and Warnock actually studied the relationship between the rank on state board examinations and the rank of associate degree programs. They concluded that state board test pool scores are not an effective measure of program effectiveness.\(^{20}\)
Summary

The literature indicates positive interest and attitudes toward the identification of predictors of success on State Board Test Pool Examinations and also potential on the job-success of graduate nurses.

The location and the sources of studies are primarily in the west and northwest. Replicate studies are necessary throughout the various geographical areas. The same State Board Test Pool Examinations are administered to the candidate for licensure regardless of the geographical area. The three types of nursing education and the many attitudes of employers toward new graduates support the research in the area of competence of the new graduate.

Identifying success-predictors for the graduate nurse is an area of major importance to the nursing student, the faculty, the employer of the graduate, and to the consumers of health care.
REFERENCES


2. Ibid.


17. Dubs, loc. cit.


CHAPTER III

RESEARCH METHODOLOGY

The two major purposes of this study were to determine the validity of specific predictors for success of graduate nurses on State Board Test Pool Examinations and to determine the relationship between specific predictors and the competence of graduate nurses during the first two years of employment.

Assumptions

1. In the population studied, successful and unsuccessful scores will be achieved on the State Board Test Pool Examinations by the candidates for licensure.
2. Cognitive predictors will vary in quality.
3. Graduate nurses will reply honestly on the questionnaire related to success factors.
4. Scores achieved by the graduate nurses on the success survey will be varied.

Population

The population concerned with the success on the State Board Test Pool Examinations included the members of the
1975, 1976, 1977, 1978, and 1979 graduating classes of a College of Nursing of a Louisiana University. The total population and the number of graduates for each year are shown in Table 1.

### TABLE 1

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF GRADUATES</th>
<th>NUMBER SUCCESSFUL ON STATE BOARD TEST POOL EXAMINATIONS</th>
<th>NUMBER UNSUCCESSFUL ON STATE BOARD TEST POOL EXAMINATIONS</th>
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<tr>
<td>1975</td>
<td>60</td>
<td>57 (95 percent)</td>
<td>3 (5 percent)</td>
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<tr>
<td>1976</td>
<td>92</td>
<td>72 (80 percent)</td>
<td>20 (21.739 percent)</td>
</tr>
<tr>
<td>1977</td>
<td>83</td>
<td>66 (79.518 percent)</td>
<td>17 (20.481 percent)</td>
</tr>
<tr>
<td>1978</td>
<td>117</td>
<td>93 (79.487 percent)</td>
<td>24 (20.512 percent)</td>
</tr>
<tr>
<td>1979</td>
<td>75</td>
<td>66 (88 percent)</td>
<td>9 (12 percent)</td>
</tr>
<tr>
<td>Total</td>
<td>427</td>
<td>354 (82.900 percent)</td>
<td>73 (17.100 percent)</td>
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Graduate nurse success scores are represented by a partial population numbering forty graduates of a 1978 grad-
Data Collection

A number code was utilized to maintain the strictest confidence in collecting the cognitive predictors and the scores on the State Board Test Pool Examinations for the graduates of the five classes. The scores were then treated by statistical tests through the Computer Center at the University of Southwestern Louisiana.

The data for the success of the graduate nurses was collected from the graduates through a questionnaire and from records viewed only by the author. Statistical tests were performed utilizing the facilities of the computer system at the University of Southwestern Louisiana. A success survey questionnaire was formulated and reviewed by three professional nurses. Minor changes were made and a letter of explanation (Appendix A) was written. The letter, the survey questionnaire (Appendix B), and an authorization form (Appendix C) were mailed to one hundred and six graduates on June 1, 1980. Efforts to locate addresses of the remaining eleven graduates were unsuccessful. A self-addressed stamped envelope was enclosed to encourage the return of the questionnaire; and a response was requested by June 21.

By the stated date, 47 percent of the forms had been
returned. In compiling the information, it was found that not all of the graduates could be included in the study because of incomplete scores; not employed in nursing and/or failure to sign the authorization form. Elimination of seventeen percent of the returns prompted a second request for participation in the research. A second letter of request (Appendix D) was mailed on July 4, 1980. Ten more forms were returned, but only eight were used because two persons did not sign the release form. The final partial population of the 1978 graduating class included in this study was forty graduate nurses or 37.7 percent.

Survey Instrument

Utilizing the competencies of the new graduate as delineated by the National League for Nursing, the success questionnaire was formulated. The thirty-five items are grouped according to the competencies designated:

1. Accountability


3. Leadership

4. Research

5. Professional Attributes and Growth

The number of the items related to each category are shown in Appendix E. The items were weighted using a four-
point Likert scale with replies ranging from strongly agree to strongly disagree. In order to discourage a uniform reply on one side of the scale, the items were worded so that the weight of the items varied throughout the questionnaire.

The items numbered 1, 3, 5, 6, 8, 10, 12, 14, 16, 17, 19, 20, 22, 24, 25, 26, 28, and 29 were weighted as follows: A=4, B=3, C=2, and D=1. The items numbered 2, 4, 7, 9, 11, 13, 15, 18, 21, 23, 27, 30, 31, 32, 33, 34, and 35 were weighted as follows: A=1, B=2, C=3, and D=4. The weighting code is shown in Appendix F.

Response

The usable forms returned represent 37.7 percent of the total population of the one hundred and six graduates included in the original mailing.

Data Analysis

The data for each hypothesis was compiled and statistical tests were performed through the computer facilities of the University of Southwestern Louisiana.
CHAPTER IV

ANALYSIS OF DATA

The findings of the study are presented according to the following headings: Correlations between the Cognitive Predictors defined as American College Test Scores, National League for Nursing Achievement Test Scores and grade-point averages and the State Board Test Pool Examination Scores and the Cognitive Predictors relationships with the Employee Success Component and total scores.

First, the correlations between the State Board Test Pool Examination scores and the twelve cognitive predictors were examined. The statistical method utilized was the correlation coefficient and a Pearson $r$ was determined.

The values of the correlation coefficient vary between +1.00 and -1.00. A correlation coefficient of +1.00 or -1.00 represents a perfect relationship between two variables. A correlation coefficient of 0.000 denotes no relationship. The interpretation of $r$ in terms of verbal description is:

1. $r$ from 0.00 to $\pm 0.20$ denotes indifferent or negligible relationship.
2. $r$ from $\pm 0.20$ to $\pm 0.40$ denotes low correlation; present but slight.
3. $r$ from $\pm 0.40$ to $\pm 0.70$ denotes substantial or marked relationship.

23
American College Test Scores

The 1975 American College Test scores (Table 2) show a substantial relationship between English and Psychiatry but low correlations among the other State Board Examination scores, and a low correlation is indicated between Psychiatry and Mathematics and negligible relationship between Mathematics scores and the Medical, Surgical, Obstetrics, and Pediatrics scores of the State Board Examination. A substantial relationship is noted between both the Social Studies and Natural Sciences scores and the Psychiatric and Pediatric scores while the relationship with the remaining three are low. The composite score reveals a substantial correlation with the Psychiatric, Pediatric, and Obstetrical scores and a low correlation with Medical and Surgical scores. The best correlation is with the Psychiatry scores showing a $\gamma$ of 0.5562.

The 1976 American College Test scores (Table 3) reveal a negligible to low correlation of English and Mathematics with the State Board Examination scores. The correlations improve with a low correlation shown with Social Studies and composite scores and all State Board Examination scores from ±0.70 to ±1.00 denotes high to very high relationship.

4. $\gamma$ from ±0.70 to ±1.00 denotes high to very high relationship.
<table>
<thead>
<tr>
<th>American College Test Scores</th>
<th>State Board Test Pool Examinations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>English</td>
<td>0.2643</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-0.0484</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.2901</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.3165</td>
</tr>
<tr>
<td>Composite</td>
<td>0.2726</td>
</tr>
<tr>
<td>AMERICAN COLLEGE TEST SCORES</td>
<td>STATE BOARD TEST POOL EXAMINATIONS</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>English</td>
<td>0.1328</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-0.0931</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.3761</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.4497</td>
</tr>
<tr>
<td>Composite</td>
<td>0.2619</td>
</tr>
</tbody>
</table>
tion scores. The Natural Sciences have a low correlation with the State Board Examination scores with the exception of the correlation with the Surgical scores which is a substantial relationship.

The correlation coefficients for the 1977 graduating class show a definite increase. All the correlations in this group show a substantial relationship (Table 4). The most positive correlation is between the composite scores and Psychiatry, Pediatrics, and Medical Nursing.

The scores of the 1978 graduates (Table 5) indicate substantial correlations between Social Studies scores and all the State Board Examination scores; between the Natural Sciences scores and all the State Board Examination scores with the exception of Pediatrics; between the composite scores and the State Board Examination scores; and between the English and Medical and Psychiatry scores. Low correlations are noted with Mathematics and all State Board Examination scores and between English and Surgical, Obstetrics, and Pediatrics.

The correlation coefficients (Table 6) show the relationships for the American College Test scores with the State Board scores for the 1979 graduates. The relationships of the English scores with the State Board scores
<table>
<thead>
<tr>
<th>AMERICAN COLLEGE TEST SCORES</th>
<th>MEDICAL</th>
<th>SURGICAL</th>
<th>PSYCHIATRY</th>
<th>OBSTetrics</th>
<th>PEDIATRICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>0.5557</td>
<td>0.4690</td>
<td>0.6481</td>
<td>0.4639</td>
<td>0.5662</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.5720</td>
<td>0.4085</td>
<td>0.5034</td>
<td>0.4145</td>
<td>0.4965</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.5733</td>
<td>0.4204</td>
<td>0.6322</td>
<td>0.4845</td>
<td>0.6173</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.5490</td>
<td>0.4684</td>
<td>0.5527</td>
<td>0.4144</td>
<td>0.5897</td>
</tr>
<tr>
<td>Composite</td>
<td>0.6641</td>
<td>0.5232</td>
<td>0.6891</td>
<td>0.5305</td>
<td>0.6730</td>
</tr>
<tr>
<td>AMERICAN COLLEGE TEST SCORES</td>
<td>STATE BOARD TEST POOL EXAMINATIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>English</td>
<td>0.4314</td>
<td>0.3870</td>
<td>0.4768</td>
<td>0.3825</td>
<td>0.3924</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.3597</td>
<td>0.2873</td>
<td>0.2122</td>
<td>0.2688</td>
<td>0.2768</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.5416</td>
<td>0.5468</td>
<td>0.5641</td>
<td>0.5211</td>
<td>0.4791</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.4660</td>
<td>0.4568</td>
<td>0.4444</td>
<td>0.4177</td>
<td>0.3892</td>
</tr>
<tr>
<td>Composite</td>
<td>0.5286</td>
<td>0.5343</td>
<td>0.5089</td>
<td>0.4748</td>
<td>0.4820</td>
</tr>
<tr>
<td>AMERICAN COLLEGE TEST SCORES</td>
<td>STATE BOARD TEST POOL EXAMINATIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>English</td>
<td>0.4837</td>
<td>0.4923</td>
<td>0.4757</td>
<td>0.4354</td>
<td>0.3599</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.1328</td>
<td>0.2646</td>
<td>0.3153</td>
<td>0.1710</td>
<td>0.2959</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.3894</td>
<td>0.3002</td>
<td>0.4751</td>
<td>0.4447</td>
<td>0.3006</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.3765</td>
<td>0.36694</td>
<td>0.4099</td>
<td>0.3524</td>
<td>0.3306</td>
</tr>
<tr>
<td>Composite</td>
<td>0.4319</td>
<td>0.4426</td>
<td>0.4018</td>
<td>0.5347</td>
<td>0.4513</td>
</tr>
</tbody>
</table>
all indicate substantial correlations with the exception of Pediatrics with which there is a slight correlation. The Mathematics relationships vary from negligible to low. The American College Test Social Studies scores relate slightly with the State Board Medical, Surgical, and Pediatric scores and reveal a substantial relationship with Psychiatry and Obstetrics. The Natural Sciences scores are of low correlation with the exception of Psychiatry which is a substantial relationship. The composite scores all carry a substantial relationship with the State Board scores.

**National League For Nursing Test Scores**

Substantial correlations are revealed between the 1975 National League for Nursing Community Health and Psychiatric scores with State Board Examination scores with the exception of the National League for Nursing Psychiatric score with Medical Nursing (Table 7). The Medical-Surgical Comprehension and Application scores are substantially correlated with the State Board Examination scores, and high correlations are noted with Medical and Pediatrics Nursing. The National League Maternal-Child scores have a high correlation with Pediatrics and substantial correlations with the remaining four tests.

The correlation coefficients for the 1976 graduates
**TABLE 7**

CORRELATION COEFFICIENTS BETWEEN STATE BOARD EXAMINATION SCORES AND NATIONAL LEAGUE FOR NURSING TEST SCORES, 1975

<table>
<thead>
<tr>
<th>NATIONAL LEAGUE FOR NURSING TEST SCORES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.2979</td>
</tr>
<tr>
<td>Community Health</td>
<td>0.4797</td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td>0.7067</td>
</tr>
<tr>
<td>Medical-Surgical Application</td>
<td>0.7161</td>
</tr>
<tr>
<td>Maternal-Child</td>
<td>0.6358</td>
</tr>
</tbody>
</table>
are all substantial between each National League test score and each State Board test score (Table 8). The best correlations in this group are the National League Medical-Surgical Comprehension and Application with the State Board Surgical examination scores.

The correlations for the class of 1977 are shown in Table 9. Substantial correlations are noted between National League Psychiatry, Community Health, and Medical-Surgical Application test scores and the State Board Examination scores. The National League Medical-Surgical Comprehension scores are substantial with all State Board scores with the exception of Obstetrics which shows a high relationship. The National League Maternal-Child scores show a high relationship with Medical and Pediatric State Board Examination scores.

The 1978 graduates also show a high relationship on their National League Maternal-Child scores with the Medical and Pediatric scores (Table 10) but also a high correlation with Obstetrics. All other correlations are substantial with the exception of a high correlation between the National League Psychiatry and the Psychiatry scores of the State Board Examination.

With the exception of Maternal-Child Nursing and Obstetrics, the relationships between each of the National
### TABLE 8

**CORRELATION COEFFICIENTS BETWEEN STATE BOARD EXAMINATION SCORES AND NATIONAL LEAGUE FOR NURSING TEST SCORES, 1976**

<table>
<thead>
<tr>
<th>NATIONAL LEAGUE FOR NURSING TEST SCORES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.4847</td>
</tr>
<tr>
<td>Community Health</td>
<td>0.4479</td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td>0.5325</td>
</tr>
<tr>
<td>Medical-Surgical Application</td>
<td>0.5827</td>
</tr>
<tr>
<td>Maternal-Child</td>
<td>0.5504</td>
</tr>
<tr>
<td>NATIONAL LEAGUE FOR NURSING TEST SCORES</td>
<td>STATE BOARD TEST POOL EXAMINATIONS</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.5766</td>
</tr>
<tr>
<td>Community Health</td>
<td>0.6229</td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td>0.6382</td>
</tr>
<tr>
<td>Medical-Surgical Application</td>
<td>0.6243</td>
</tr>
<tr>
<td>Maternal-Child</td>
<td>0.7451</td>
</tr>
</tbody>
</table>
## TABLE 10

**CORRELATION COEFFICIENTS BETWEEN STATE BOARD EXAMINATION SCORES AND NATIONAL LEAGUE FOR NURSING TEST SCORES, 1978**

<table>
<thead>
<tr>
<th>NATIONAL LEAGUE FOR NURSING TEST SCORES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.5835</td>
</tr>
<tr>
<td>Community Health</td>
<td>0.5149</td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td>0.5465</td>
</tr>
<tr>
<td>Medical-Surgical Application</td>
<td>0.5733</td>
</tr>
<tr>
<td>Maternal-Child</td>
<td>0.7132</td>
</tr>
</tbody>
</table>
League scores with the State Board scores of the 1979 graduates are substantial (Table 11). The National League Maternal-Child score shows a high relationship with the State Board Obstetrics score. The next highest relationship is between the National League Maternal-Child and the State Board Surgical Nursing scores at $r = 0.6970$.

**Grade-Point Averages**

The correlations between the State Board Examination scores and the last semester grade-point average for 1975 range from negligible to substantial (Table 12) with the highest correlation with Medical Nursing. The correlations improve with the cumulative grade-point averages with all showing a substantial relationship except with the State Board Surgical score which is a low correlation.

The last semester and the cumulative grade-point average for the 1976 graduates all indicate low correlations (Table 13).

The relationships of the last semester grade-point averages with the State Board Examination scores vary from negligible to low for the 1977 graduates (Table 14) while the cumulative grade-point averages all denote a substantial correlation.

The data for the 1978 graduates indicate substantial
<table>
<thead>
<tr>
<th>NATIONAL LEAGUE FOR NURSING TEST SCORES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatry</td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>0.5084</td>
<td>0.6310</td>
<td>0.6725</td>
<td>0.5476</td>
<td>0.5537</td>
<td></td>
</tr>
<tr>
<td>Community Health</td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>0.5850</td>
<td>0.5016</td>
<td>0.4523</td>
<td>0.5792</td>
<td>0.4758</td>
<td></td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>0.5906</td>
<td>0.5888</td>
<td>0.6331</td>
<td>0.5861</td>
<td>0.5234</td>
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</tr>
<tr>
<td>Medical-Surgical Application</td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>0.4839</td>
<td>0.6100</td>
<td>0.5960</td>
<td>0.5381</td>
<td>0.5138</td>
<td></td>
</tr>
<tr>
<td>Maternal-Child</td>
<td>Medical</td>
<td>Surgical</td>
<td>Psychiatry</td>
<td>Obstetrics</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>0.6215</td>
<td>0.6970</td>
<td>0.5491</td>
<td>0.6757</td>
<td>0.6898</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12
CORRELATION COEFFICIENTS BETWEEN
STATE BOARD EXAMINATION SCORES AND
GRADE-POINT AVERAGES, 1975

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.4230</td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.4263</td>
</tr>
</tbody>
</table>

### TABLE 13
CORRELATION COEFFICIENTS BETWEEN
STATE BOARD EXAMINATION SCORES AND
GRADE-POINT AVERAGES, 1976

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.2823</td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.3470</td>
</tr>
</tbody>
</table>
correlations between the final semester grade-point averages and the State Board scores with the exception of Obstetrics which is a slight correlation (Table 15). The cumulative grade-point averages correlate on the substantial positive side with the State Board scores.

For the class of 1979, the relationship between the final semester grade-point average and the State Board scores are substantial with the exception of Psychiatry and Pediatrics which show a low correlation (Table 16). The cumulative grade-point averages correlate substantially with the State Board scores.

The data for the population was combined and correla-
TABLE 15

CORRELATION COEFFICIENTS BETWEEN
STATE BOARD EXAMINATION SCORES AND
GRADE-POINT AVERAGES, 1978

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.5291</td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.5117</td>
</tr>
</tbody>
</table>

TABLE 16

CORRELATION COEFFICIENTS BETWEEN
STATE BOARD EXAMINATION SCORES AND
GRADE-POINT AVERAGES, 1979

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.4261</td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.4745</td>
</tr>
</tbody>
</table>
tion coefficients computed for the independent variables with the dependent variables. The correlations with the American College Test English scores and the State Board scores are low except for Psychiatry which shows a substantial correlation; Mathematics scores are low; Social Studies correlations are substantial; Natural Sciences and composite correlations are substantial except for low correlations between these two and Obstetrical scores; and the composite score with Surgical Nursing (Table 17).

The correlations of the National League for Nursing tests with the State Board scores are all substantial relationships (Table 18). The highest correlations are between the National League Psychiatry scores and the Psychiatry scores of the State Board and between the National League Maternal-Child and Pediatric and Medical State Board scores.

The correlation coefficients between the last semester grade-point averages and the State Board scores denote low correlations except with Psychiatry and Pediatrics which indicate negligible relationships (Table 19). The cumulative grade-point averages reveal substantial correlations.

In summary, the highest correlations for the American College Test scores with the State Board Test Pool scores are the 1977 composite scores with Medical, Psychiatry, and Pediatrics. The highest correlations between the National
### TABLE 17

**CORRELATION COEFFICIENTS BETWEEN STATE BOARD EXAMINATION SCORES AND AMERICAN COLLEGE TEST SCORES, 1975-1979**

<table>
<thead>
<tr>
<th>AMERICAN COLLEGE TEST SCORES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>English</td>
<td>0.3601</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.2519</td>
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<td>Social Studies</td>
<td>0.4748</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.4532</td>
</tr>
<tr>
<td>Composite</td>
<td>0.4412</td>
</tr>
<tr>
<td>NATIONAL LEAGUE FOR NURSING TEST SCORES</td>
<td>STATE BOARD TEST POOL EXAMINATIONS</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Psychiatry</td>
<td></td>
</tr>
<tr>
<td>Community Health</td>
<td></td>
</tr>
<tr>
<td>Medical-Surgical Comprehension</td>
<td></td>
</tr>
<tr>
<td>Medical-Surgical Application</td>
<td></td>
</tr>
<tr>
<td>Maternal-Child</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 19**

**CORRELATION COEFFICIENTS BETWEEN STATE BOARD EXAMINATION SCORES AND GRADE-POINT AVERAGES, 1975-1979**

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>STATE BOARD TEST POOL EXAMINATIONS</th>
<th>Medical</th>
<th>Surgical</th>
<th>Psychiatry</th>
<th>Obstetrics</th>
<th>Pediatrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.2781</td>
<td>0.2632</td>
<td>0.1840</td>
<td>0.2971</td>
<td>0.1860</td>
<td></td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.5080</td>
<td>0.4893</td>
<td>0.4792</td>
<td>0.4761</td>
<td>0.4982</td>
<td></td>
</tr>
</tbody>
</table>

League scores are Medical-Surgical Comprehension and Application with the 1975 Medical and Pediatric State Board scores and Maternal-Child with Obstetrics and Pediatrics, National League Psychiatry with State Board Psychiatry and Pediatrics, National League Medical-Surgical Comprehension with Psychiatry and Obstetrics, Medical-Surgical Application with Psychiatry, and Maternal-Child with Medical, Surgical, and Pediatrics for 1977. For 1978, the correlations are high between National League Psychiatry and State Board Psychiatry and, likewise, between National League Maternal-Child with the State Board Medical, Surgical, Obstetrics, and Pediatrics scores. Again, in 1979, the Psychiatry of the National
League correlates high with the State Board's Psychiatry, and high correlations are noted between the National League Maternal-Child and the State Board Surgical, Obstetrics, and Pediatrics scores.

The grade-point averages do not show a high correlation until 1979, and this is one high relationship between the cumulative grade-point average and Surgical Nursing.

The single independent variable correlating most frequently with the dependent variables is National League Maternal-Child Nursing.

**Correlation of Forecasting Efficiency**

To determine the predictive efficiency of the $Y$'s in each of the tables, the formula $E = 1 - \sqrt{1 - \gamma^2}$ was used. $E$ is the coefficient of forecasting efficiency or the coefficient of dependability. Because the correlation must be 0.87 or above in order for the forecasting efficiency to be greater than 50 percent, the decision was made to compute coefficients of forecasting efficiency for only the correlations greater than 0.6000 for the combined scores of the five classes or the two highest correlations if less than 0.6000.

The highest coefficient of forecasting efficiency of the American College Test scores are the Social Studies and
the composite score. The Social Studies efficiency for predicting Medical Nursing scores is 13.22 percent, and the composite score efficiency for predicting the Pediatrics scores is 12.27 percent.

The forecasting efficiency of the National League Psychiatry test for the State Board Psychiatric test is 23.93 percent. The dependability of the National League Maternal-Child test for the State Board tests in Medical, Obstetrics, and Pediatrics is 23.59 percent, 22.83 percent, and 23.59 percent respectively. All other National League tests have a less than 20 percent forecasting efficiency; however, the forecasting efficiency of Medical-Surgical Application with Medical Nursing is 19.56 percent.

The greatest forecasting efficiency for the grade-point averages was a 4.51 percent of the last semester grade-point average for Obstetrical Nursing and 13.86 percent of the cumulative grade-point average for Medical Nursing.

**Multiple Correlations and Regression Equations**

The stepwise regression program, B.M.D., \( \Phi^2 R \) was next utilized to analyze the data related to the cognitive predictors and the State Board Test Pool Examination scores.

The data was coded as follows:
Independent Variables (Cognitive Predictors)

- Last Semester Grade-Point Average \( X_1 \)
- Cumulative Semester Grade-Point Average \( X_2 \)
- American College Test English Score \( X_3 \)
- American College Test Mathematics Score \( X_4 \)
- American College Test Social Studies Score \( X_5 \)
- American College Test Natural Sciences Score \( X_6 \)
- American College Test Composite Score \( X_7 \)
- National League Psychiatry Score \( X_8 \)
- National League Community Health Score \( X_9 \)
- National League Medical-Surgical Comprehension Score \( X_{10} \)
- National League Medical-Surgical Application Score \( X_{11} \)
- National League Maternal-Child Score \( X_{12} \)

Dependent Variables (Criterion)

- State Board Medical Score \( \hat{Y}_{13} \)
- State Board Surgical Score \( \hat{Y}_{14} \)
- State Board Obstetrical Score \( \hat{Y}_{15} \)
- State Board Pediatrics Score \( \hat{Y}_{16} \)
- State Board Psychiatry Score \( \hat{Y}_{17} \)

The data was again analyzed for each of the five years, and then the five years were combined.
Each year is summarized indicating the R (multiple correlation) for predictive independent variables with each dependent variable and the regression equation for each dependent variable:

1975

\( \hat{Y}_{13} \) Medical

\[ R = 0.7905 \quad \hat{Y}_{13} = 377.87 + 1.35 X_{10} + 1.21 X_{11} \]

The independent variable \( X_{11} \) or Medical-Surgical Application score explains 54 percent of the variability while \( X_{11} \) and \( X_{10} \) together explain 62 percent of the variability. The addition of eight more variables increased the percentage by only 4.8 points. The best predictors for \( \hat{Y}_{13} \) are the National League Medical-Surgical Comprehension and Application scores.

\( \hat{Y}_{14} \) Surgical

\[ R = 0.7454 \quad \hat{Y}_{14} = 752.21 - 82.57 X_1 - 4.88 X_4 \]

\[ + 1.11 X_8 + 1.48 X_9 + 1.26 X_{11} \]

The independent variable \( X_{11} \) (Medical-Surgical Application) again explains the greatest percentage of variability at 29.84 percent. Four additional variables (last semester grade-point average, American College Test Mathematics score, National League Psychiatry and Community Health scores) are necessary to increase the percentage to 55.56.
\( \hat{Y}_{15} \text{ Obstetrical} \)

\[ R = 0.7294 \quad \hat{Y}_{15} = 554.09 - 42.39 X_1 + 0.91 X_8 \]
\[ + 1.17 X_9 + 0.87 X_{11} + 0.22 X_{12} \]

The predictor, Maternal-Child \((X_{12})\) explains 34.41 percent of the variability, and with the addition of four other predictors, the variability percentage increases to 53.21 percent.

\( \hat{Y}_{16} \text{ Pediatrics} \)

\[ R = 0.8154 \quad \hat{Y}_{16} = 306.72 + 2.43 X_8 + 1.02 X_9 + 1.58 X_{11} \]

The predictor \(X_{11}\) (Medical-Surgical Application) explains 54.26 percent of the variability. By adding \(X_9\) and \(X_6\), the percentage increases to 66.48.

\( \hat{Y}_{17} \text{ Psychiatry} \)

\[ R = 0.7930 \quad \hat{Y}_{17} = 270.52 + 7.01 X_7 + 0.59 X_9 + 1.29 X_{10} \]

The National League Medical-Surgical Comprehension score is the best predictor for \(Y_{17}\) at 44.06 percent while the addition of \(X_7\) and \(X_9\) increase the percentage to 62.88.

1976

\( \hat{Y}_{13} \text{ Medical} \)

\[ R = 0.6925 \quad \hat{Y}_{13} = 375.64 + 6.09 X_6 - 5.18 X_7 \]
\[ + 1.73 X_9 + 0.900 X_{11} \]

Medical-Surgical Application \((X_{11})\) is the predictor
explaining 30.23 percent of the variability while adding X₉, X₆, and X₇ increases the percentage to 47.96.

$\hat{Y}_{14}$ Surgical

$$R = 0.7844 \quad \hat{Y}_{14} = 256.68 + 51.975 X₂ - 1.267 X₄$$
$$+ 6.76 X₆ - 4.75 X₇ + 0.860 X₈$$
$$+ 1.264 X₉ + 0.663 X_{11}$$

The predictor X₈ (National League Psychiatry score) explains 34.69 percent of the variability, and by adding X₆, X₄, X₂, X₉, and X₇, the amount is increased to 61.52 percent.

$\hat{Y}_{15}$ Obstetrical

$$R = 0.6490 \quad \hat{Y}_{15} = 302.56 + 54.49 X₂ - 3.71 X₇$$
$$+ 0.932 X₈ + 1.05 X₉ + 4.09 X_{11}$$
$$+ 0.777 X_{12}$$

The variable X₈ again explains the greatest amount of variability at 25.75 percent, and X₁₁ increases the percentage to 33.60, and the addition of X₂, X₁₂, X₇, and X₉ increases it to 42.21 percent.

$\hat{Y}_{16}$ Pediatrics

$$R = 0.7858 \quad \hat{Y}_{16} = 384.35 - 5.044 X₃ + 1.264 X₆$$
$$+ 4.255 X₇ + 1.265 X₈ + 1.230 X₉$$
$$- 0.703 X_{10} + 1.449 X_{11}$$

The predictor X₉ (National League Community Health)
explains 37.72 percent of the variability, and adding $X_{11}$ increases it to 51.32 percent; while the addition of $X_8$, $X_{10}$, $X_6$, $X_3$, and $X_7$ increases the percentage of explained variability to 61.76 percent.

$\hat{Y}_{17}$ Psychiatry

$$R = 0.5699 \quad \hat{Y}_{17} = 186.287 + 51.930 X_1 + 2.75 X_6$$
$$+ 1.368 X_8 + 0.875 X_9 + 1.218 X_{10}$$
$$- 0.940 X_{11}$$

The predictor $X_8$ (National League Psychiatry score) explains 22.67 percent of the variability, but adding predictors $X_1$, $X_6$, $X_{10}$, $X_{11}$, and $X_9$ increases the percentage to only 32.48.

$\hat{Y}_{13}$ Medical

$$R = 0.8295 \quad \hat{Y}_{13} = 231.937 + 34.046 X_2 - 4.433 X_3$$
$$+ 5.744 X_7 + 0.6694 X_9$$
$$+ 0.7214 X_{11} + 1.681 X_{12}$$

The predictor $X_{12}$ (National League Maternal-Child score) explains 56.53 percent of the variability, and by adding predictors $X_7$, $X_{11}$, $X_2$, $X_3$, and $X_9$, the percentage is increased to 68.81.

$\hat{Y}_{14}$ Surgical

$$R = 0.7154 \quad \hat{Y}_{14} = 398.017 + 0.986 X_8 + 2.127 X_{12}$$
The variable $X_{12}$ (National League Maternal-Child score) explains 47.58 percent of the variability, and by adding $X_8$, it is increased to 51.18 percent. Adding all other variables only increased the percentage to 56.62 percent.

\hat{Y}_{15} \textbf{Obstetrical} \\
R = 0.7921 \ \ \hat{Y}_{15} = 173.023 + 74.303 X_2 + 1.869 X_{10}

The National League Medical-Surgical Comprehension score ($X_{10}$ predictor) explains 52.88 percent of the variability, and with the addition of $X_2$ (cumulative semester grade-point average), the amount increases to 62.74 percent. Adding all other variables increases the percentage to 65.86.

\hat{Y}_{16} \textbf{Pediatrics} \\
R = 0.7854 \ \ \hat{Y}_{16} = 349.288 + 3.226 X_5 + 0.9061 X_8 \\
+ 1.674 X_{12}

The predictor National League Maternal-Child ($X_{12}$) explains 57.25 percent of the variability, and adding $X_5$ and $X_8$, the percentage increases to 61.68.

\hat{Y}_{17} \textbf{Psychiatry} \\
R = 0.8477 \ \ \hat{Y}_{17} = 233.188 + 45.226 X_2 + 1.277 X_9 \\
+ 1.899 X_{10}

The predictor $X_{10}$ explains 57.09 percent of the vari-
ability while adding $X_2$, $X_9$, and $X_{10}$ will increase the percentage to 71.85.

**1978**

$\hat{Y}_{13}$ Medical

\[
R = 0.8019 \quad \hat{Y}_{13} = 178.565 + 41.72 \, X_1 + 5.480 \, X_7 \\
+ 0.701 \, X_{11} + 1.447 \, X_{12}
\]

The predictor $X_{12}$ again explains the greatest percentage of variability at 49.15 percent; adding $X_7$, $X_{11}$, and $X_1$ increases the percentage to 64.30.

$\hat{Y}_{14}$ Surgical

\[
R = 0.7840 \quad \hat{Y}_{14} = 128.37 + 53.568 \, X_1 + 1.924 \, X_5 \\
+ 2.594 \, X_6 + 0.476 \, X_8 \\
+ 0.487 \, X_{11} + 0.960 \, X_{12}
\]

The predictor $X_{12}$ explains 44.71 percent of the variability and adding $X_5$, $X_{11}$, $X_1$, $X_6$, and $X_8$ will increase the percentage to 61.47.

$\hat{Y}_{15}$ Obstetrical

\[
R = 0.7689 \quad \hat{Y}_{15} = 304.564 + 2.509 \, X_5 + 0.637 \, X_{10} \\
+ 2.312 \, X_{12}
\]

The National League Maternal-Child score ($X_{12}$) again explains the largest amount of variability at 53.8 percent and adding $X_{10}$, $X_5$, and $X_9$ increases the percentage to 59.85.
\hat{Y}_{16} \textbf{Pediatrics} \\
R = 0.7548 \quad \hat{Y}_{16} = 199.393 + 64.66 X_2 + 0.664 X_9 \\
\quad + 0.625 X_{11} + 1.562 X_{12}

The predictor \(X_{12}\) explains 43.68 percent of the variability and adding \(X_2, X_{11}, \) and \(X_9\) increases the percentage to 56.97.

\hat{Y}_{17} \textbf{Psychiatry} \\
R = 0.8298 \quad \hat{Y}_{17} = 156.671 + 51.340 X_1 + 3.965 X_3 \\
\quad + 1.585 X_8 + 0.780 X_9 + 0.659 X_{11}

The predictor \(X_8\) (National League Psychiatry score) explains 53.4 percent of the variability and adding \(X_{11}, X_9, X_1, \) and \(X_3\) increases the percentage to 68.86.

\hat{Y}_{13} \textbf{Medical} \\
R = 0.7585 \quad \hat{Y}_{13} = 285.031 + 59.566 X_2 - 4.684 X_4 \\
\quad + 1.429 X_9 + 0.877 X_{10} + 0.866 X_{12}

The predictor \(X_9\) (National League Community Health score) explains 38.53 percent of the variability; adding \(X_{12}\) increases this to 48.17 percent and adding \(X_{10}, X_4, \) and \(X_2\) increases the percentage to 57.53.
\( \hat{Y}_{14} \) Surgical

\[ R = 0.8416 \quad \hat{Y}_{14} = 119.205 + 111.001 X_2 - 3.510 X_4 + 1.069 X_9 + 0.918 X_{10} + 0.823 X_{12} \]

The predictor \( X_{12} \) explains 44.41 percent of the variability; adding \( X_{10}, X_9, \) and \( X_4 \) increases the percentage to 70.83.

\( \hat{Y}_{15} \) Obstetrical

\[ R = 0.8300 \quad \hat{Y}_{15} = 381.628 - 3.486 X_4 + 1.502 X_9 + 1.116 X_{10} + 2.003 X_{12} \]

The predictor \( X_{12} \) explains 53.28 percent of the variability and adding \( X_9, X_{10}, \) and \( X_4 \) increases the percentage to 68.89.

\( \hat{Y}_{16} \) Pediatrics

\[ R = 0.7249 \quad \hat{Y}_{16} = 362.672 + 0.811 X_{10} + 0.621 X_{11} + 1.813 X_{12} \]

The predictor \( X_{12} \) explains 43.83 percent of the variability while adding \( X_{10} \) and \( X_{11} \) increases the percentage to 52.52.
The predictor $X_8$ (National League Psychiatry score) explains 49.42 percent of variability and adding $X_{10}$ and $X_{11}$ will increase the percentage to 60.09.

**Total Population, 1975-1979**

Categorizing the population by year depicts the profile of each graduating class. It is important, however, to note the analyses for the total population. These results are more conclusive in the determination of reliable predictors.

The multiple correlation ($R$) and the regression equations are summarized for the independent and dependent variables.

The predictor $X_{12}$ (independent variable or National League Maternal Child score) explains 41.54 percent of the variability and by adding $X_{11}$ (National League Medical-Surgical Application score) $X_2$ (cumulative semester grade-point average), and $X_6$ (American College Test Natural Sci-
ences score), the percentage is increased to 53.85. The National League for Nursing Maternal-Child score is considered the best predictor for the Medical State Board Examination.

\[ \hat{Y}_{14} \text{ Surgical} \]
\[ R = 0.6797 \]
\[ \hat{Y}_{14} = 216.554 + 45.147 X_2 + 3.067 X_6 + 0.731 X_11 + 1.094 X_{12} \]

The cognitive predictor \( X_{12} \) (National League Maternal-Child score) explains 33.35 percent of the variability and adding \( X_{11}, X_2, \) and \( X_6 \) increases this percentage to 43.83. Although the degree of prediction is reduced for the Surgical State Board Examination, the best predictor is again the National League Maternal-Child score.

\[ \hat{Y}_{15} \text{ Obstetrical} \]
\[ R = 0.7069 \]
\[ \hat{Y}_{15} = 273.619 + 35.633 X_2 + 0.588 X_9 + 0.826 X_{10} + 1.397 X_{12} \]

The independent variable \( X_{12} \) (National League Maternal-Child score) explains 40.41 percent of the variability and adding \( X_{10} \) (National League Medical-Surgical Comprehension), \( X_2 \) (cumulative semester grade-point average), and \( X_9 \) (National League Community Health) increases this percentage to 49.97. The National League Maternal-Child score is the best predictor for the Obstetrical State Board Examination.
\[ \hat{Y}_{16} \text{ Pediatrics} \]
\[ R = 0.7285 \quad \hat{Y}_{16} = 275.677 + 37.71X_2 + 0.712X_9 \]
\[ + 0.780X_{11} + 1.255X_{12} \]

The National League Maternal-Child score \( (X_{12}) \) explains 41.6 percent of the variability and adding \( X_{11}, X_2, \) and \( X_9 \) increases the percentage to 53.07. The National League Maternal-Child score is the best predictor for the Pediatrics State Board Examination.

\[ \hat{Y}_{17} \text{ Psychiatry} \]
\[ R = 0.7333 \quad \hat{Y}_{17} = 274.443 + 38.596X_{12} + 1.417X_8 \]
\[ + 0.832X_9 + 0.891X_{10} \]

The independent variable \( X_8 \) (National League Psychiatry score) explains 42.09 percent of the variability and adding \( X_{10}, X_2, \) and \( X_9 \) increases the percentage to 53.09. The best predictor for the Psychiatry State Board Examination is the National League Psychiatry score.

In summary, the most frequent appearing predictors are the National League's Community Health \( (X_9) \), Medical-Surgical Comprehension \( (X_{10}) \), Medical-Surgical Application \( (X_{11}) \), and Maternal-Child \( (X_{12}) \). Maternal-Child Nursing is the most reliable predictor.

Table 20 indicates the number of times a predictor appears first in the regression equation and in relation to
TABLE 20
INDEPENDENT VARIABLES APPEARING FIRST IN REGRESSION EQUATIONS

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>(Y₁₃) Medical</th>
<th>(Y₁₄) Surgical</th>
<th>(Y₁₅) Obstetrics</th>
<th>(Y₁₆) Pediatrics</th>
<th>(Y₁₇) Psychiatry</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₈</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>X₉</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X₁₀</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>X₁₁</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X₁₂</td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

which variable. Independent variable X₁₂, Maternal-Child Nursing, is the most reliable predictor appearing first in fifteen equations and as a predictor of four of the dependent variables. Independent variable X₈, National League Psychiatry score, appears first in six regression equations
and four times as the number one predictor of the dependent variable $y_{17}$, Psychiatric Nursing.

**Employee Success Scores**

The employee success scores were analyzed statistically for the correlation coefficients with the American College Test scores, the National League for Nursing test scores, grade-point averages, and the scores on the State Board Test Pool Examinations.

**American College Test Scores**

The coefficients between the Employee Success scores and the American College Test scores show negligible to low relationships (Table 21). The best correlation is the American College Test composite score with the nursing process component of Employee Success, but this is a low correlation.

**National League for Nursing Scores**

With the exception of Psychiatry with Research and Community Health with the total success score, the relationships between the National League test scores and the Employee Success scores are indifferent to slight (Table 22). The correlation between National League Psychiatry and Research is high, and the National League Community Health score with the total success score is substantial.
TABLE 21
CORRELATION COEFFICIENTS BETWEEN EMPLOYEE SUCCESS SCORES AND AMERICAN COLLEGE TEST SCORES

<table>
<thead>
<tr>
<th>AMERICAN COLLEGE TEST SCORES</th>
<th>EMPLOYEE SUCCESS SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accountability</td>
</tr>
<tr>
<td>English</td>
<td>0.3236</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.1113</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.1417</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>0.1835</td>
</tr>
<tr>
<td>Composite</td>
<td>0.2176</td>
</tr>
</tbody>
</table>
### TABLE 22

**CORRELATION COEFFICIENTS BETWEEN EMPLOYEE SUCCESS SCORES AND NATIONAL LEAGUE FOR NURSING TEST SCORES**

<table>
<thead>
<tr>
<th>NATIONAL LEAGUE TEST SCORES</th>
<th>EMPLOYEE SUCCESS SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accountability</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.1214</td>
</tr>
<tr>
<td>Community Health</td>
<td>0.3431</td>
</tr>
<tr>
<td>Med-Surg. Compreh.</td>
<td>0.0865</td>
</tr>
<tr>
<td>Med-Surg. Applic.</td>
<td>0.0196</td>
</tr>
<tr>
<td>Maternal Child</td>
<td>0.1830</td>
</tr>
</tbody>
</table>
Grade-Point Averages

The correlation coefficients between the last semester grade-point average and the Employee Success scores is low with the exception of the relationship with the Leadership component which is a substantial relationship (Table 23).

TABLE 23
CORRELATION COEFFICIENTS BETWEEN EMPLOYEE SUCCESS SCORES AND GRADE-POINT AVERAGES

<table>
<thead>
<tr>
<th>GRADE POINT AVERAGES</th>
<th>EMPLOYEE SUCCESS SCORES</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accountability</td>
<td>Nursing Process</td>
<td>Leadership</td>
<td>Research</td>
<td>Prof. Growth</td>
<td></td>
</tr>
<tr>
<td>Last Semester Grade-Point Average</td>
<td>0.3683</td>
<td>0.3899</td>
<td>0.4267</td>
<td>0.1161</td>
<td>0.3705</td>
<td>0.3079</td>
</tr>
<tr>
<td>Cumulative Grade-Point Average</td>
<td>0.3579</td>
<td>0.2855</td>
<td>0.3008</td>
<td>0.0555</td>
<td>0.0296</td>
<td>0.2185</td>
</tr>
</tbody>
</table>

The correlation coefficients between the cumulative grade-point averages and the success scores are all low with the exception of Research and Professional Growth which indicate
indifferent relationships.

**State Board Test Pool Examination Scores**

The relationships between the Employee Success scores and the State Board Examination scores are each low to negligible with the exception of State Board Medical Nursing with success score Professional Growth which indicates a substantial correlation (Table 24).
TABLE 24

CORRELATION COEFFICIENTS BETWEEN
EMPLOYEE SUCCESS SCORES AND
STATE BOARD EXAMINATION TEST POOL SCORES

<table>
<thead>
<tr>
<th>STATE BOARD TEST SCORES</th>
<th>EMPLOYEE SUCCESS SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accountability</td>
</tr>
<tr>
<td>Medical</td>
<td>0.0717</td>
</tr>
<tr>
<td>Surgical</td>
<td>0.2029</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>0.2093</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>0.2561</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.2666</td>
</tr>
</tbody>
</table>
REFERENCES


2. Ibid.

3. Ibid.

4. Ibid.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Graduate nurses across the nation are faced with State Board Examinations upon completion of their nursing curriculum. Every graduate wants to be initially successful in achieving licensure. In addition, faculty members responsible for these graduates are also concerned with the successful completion of the State Board Examinations.

To assist the graduate nurse, faculty and graduates would welcome reliable predictors for success on the State Board Examinations and in employment.

The Problem

Cognitive predictors have been identified as many and varied. This study was directed toward the validation of twelve cognitive predictors and to further use these cognitive predictors to determine a relationship with the success of graduate nurses in employment.

The Hypotheses

The first hypothesis was that cognitive predictors are not associated with the resulting scores on the State Board
Test Pool Examinations.

The second hypothesis stated that there is no relation­ship between cognitive predictors and the success of gradu­ate nurses after their first two years of employment.

**Purpose of the Study**

The primary purpose of this study was to determine the validity of twelve cognitive predictors common to students in a nursing curriculum.

**Objectives of the Study**

The objectives of the study were:

1. Validation of reliable cognitive predictors for the success of graduate nurses on the State Board Examinations.

2. Substantiation of a relationship between cognitive predictors and employee success.

**Methodology**

**Population:** Data was tabulated for 427 graduates of five classes to test the first hypothesis. Survey data was requested from 106 graduates of a 1978 class to test the second hypothesis. Usable data was obtained from 40 members of the selected popu­lation (37.7 percent).
Data Collection: For the first hypothesis, the independent and dependent variables were recorded using a number code and the strictest confidence. The data to test the second hypothesis was collected through a mailed questionnaire and tabulated only by the author. The data was number coded.

Data Analyses: Statistical tests were computed at a computer center at a state university. Analyses of the first set of data included Pearson $r$, multiple correlations, and regression equations. The author computed forecasting efficiency of the data with a hand computer. The second set of data was analyzed for simple correlations and a Pearson $r$ was determined.

Findings: Cognitive Predictors and State Board Examinations

Cognitive predictors related to the State Board Test Pool Examinations:

The results of this study related to the first hypothesis were summarized indicating the relationships between the independent and the dependent variables. The independent variables were English, Mathematics, Social Studies, Natural Sciences, and
Composite American College Test scores; National League for Nursing Psychiatry, Community Health, Medical-Surgical Comprehension and Application, and Maternal-Child scores; and the last semester and cumulative grade-point averages.

The dependent variables were the Medical, Surgical, Obstetrical, Pediatrics, and Psychiatry State Board Test Pool scores. Correlation coefficients, forecasting efficiency, multiple correlations, and regression equations were the statistical analyses utilized in relating the independent variables with the dependent variables.

The analyses revealed these results:

**American College Test Scores**

1. The correlations ranged from negligible to substantial. The correlations which indicated marked relationships were the Social Studies, Natural Sciences, and composite scores for 1975; Social Studies and Natural Sciences for 1976; all the scores for 1977; the Social Studies, Natural Sciences, and composite scores
for 1978; and the English, Social Studies, and composite scores for 1979. The American College Test scores for a combination of the years indicate marked relationships between American College Test English and State Board Psychiatry, American College Test Social Studies and all State Board scores except Obstetrics; and the American College Test composite score with State Board Medical and Psychiatry scores.

2. Each of the American College Test scores fall below 13.23 percent in forecasting efficiency.

3. Using the regression equations, the American College Test scores explained very low percentages of the variability in the dependent variables. It is interesting to note that in 1976 the American College Test Natural Sciences and composite scores were of predictive value but in subsequent years proved useless.

The null hypothesis is accepted for the American College Test scores as cognitive predictors of
the State Board Examination scores based on the regression equations.

National League for Nursing Scores

1. Substantial to high correlations are consistently noted between the National League scores and the State Board scores. In combining the scores, the greatest predictors are Medical-Surgical Comprehension and Application and Maternal-Child Nursing.

2. The forecasting efficiency of the National League scores is low for each test ranging in the twenty percentile.

3. Using the regression equations for 1975, the independent variable National League Medical-Surgical Application was the best predictor for Medical, Surgical and Pediatrics and Maternal-Child for Obstetrics and Medical-Surgical Comprehension for Psychiatry. In 1976, National League Psychiatry best explained Surgical, Obstetrics, and Psychiatry; Medical-Surgical Application predicted Surgical; and Community Health explained Pediatrics. In 1977, the Maternal
Child score explained the greatest variability for Medical, Surgical, and Pediatrics while Medical-Surgical Comprehension best predicted Obstetrics and Psychiatry. Predictors for 1978 proved to be Maternal-Child for Medical, Surgical, Obstetrics, and Pediatrics while National League Psychiatry is the best predictor for State Board Psychiatry. Maternal-Child again is the most reliable for three criterion--Surgical, Obstetrics, and Pediatrics; Community Health for Medical; and again National League Psychiatry is the best predictor for the State Board Psychiatry test in 1979.

Combining all the scores for the years 1975 through 1979 and computing regression equations, the independent variable Maternal-Child Nursing ($X_{12}$) proves to be the best predictor for all State Board Examination scores with the exception of Psychiatry. The National League Psychiatry ($X_8$) is the best predictor for the criterion, $Y_{17}$, Psychiatry.
The null hypothesis for the National League scores must be rejected. In the regression equations, the National League test scores (independent variables and cognitive predictors) are related to the criterion (dependent variables) State Board Test Pool Examination scores.

**Grade-Point Averages**

Statistical analyses between grade-point averages and State Board scores reveal:

1. Correlations range from low to substantial.
   The last semester grade-point averages have consistently low correlations, and the cumulative grade-point averages show frequent substantial correlations.

2. The last semester grade-point averages all fall below the 4.52 percentile in forecasting efficiency, and the cumulative grade-point averages are less than 13.87 percent in forecasting efficiency.

3. In the regression equations, the grade-point averages proved to be very poor predictors explaining only small percentages of variability.
The null hypothesis for the grade-point averages must be accepted. The grade-point averages proved to have very negligible relationships with the State Board Examination scores.

**Findings: Employee Success and Cognitive Predictors**

Correlation coefficients was the statistical method used to determine relationships between Employee Success scores and cognitive predictors. The cognitive predictors were expanded to include the scores of the graduates on the State Board Examinations. The results were:

**American College Test Scores**
1. The relationships between the Employee Success scores and the American College Test scores show negligible to low relationships.
2. The best correlation is between the American College Test composite score and the Employee Success Nursing Process component, but this is low correlation.

**National League for Nursing Scores**
1. The relationship between National League Psychiatry and Research is high.
2. The correlation between National League Community Health and the total success score
is substantial.

3. The remaining National League scores indicate indifferent to slight correlations with the components of employee success.

**Grade-Point Averages**

1. The relationship between the last semester grade-point average and the Leadership component of employee success is substantial.

2. The correlation coefficients between last semester grade-point averages and all other employee success components are low.

3. The correlation coefficients between the cumulative grade-point averages and the success scores are low to indifferent.

**State Board Test Pool Examination Scores**

1. The correlation between Medical Nursing and Professional Growth is substantial.

2. The relationships between the remaining State Board scores and the Employee Success scores are low to negligible.

The second null hypothesis is accepted for the prediction of success of graduate nurses. The cognitive predictors indicate negligible relationships with the success
of graduate nurses after two years of employment.

Conclusions and Recommendations

Conclusions

The research of cognitive predictors related to the success of graduate nurses on the State Board Examinations and after two years of employment has produced the following conclusions:

1. The cognitive predictors utilized for this study do not provide satisfactory prediction validity for the State Board scores or for Employee Success.

2. The American College Test scores and the grade-point averages indicate the least relationship with the dependent variables.

3. The relationship of the cognitive predictors with employee success is negligible to low except for three variables.

4. The National League for Nursing test scores are the best cognitive predictors with the Maternal-Child test explaining the greater percentage of variability.
**Recommendations**

The following recommendations are presented:

1. Continue to study the relationship of cognitive predictors to criterion.
2. Eliminate the American College Test scores as predictors.
3. Expand the list of independent variables to include affective predictors.
4. Compute a grade-point average utilizing only the grades achieved in nursing courses and utilize it as a predictor.
5. Using the regression equations, compute the scores on the dependent variable for each graduate prior to receiving the scores and compare the predicted score with the earned score.
6. Utilize the Employee Success form to study additional graduates.
7. Include the employers in studying employee success.
SELECTED BIBLIOGRAPHY

A. BOOKS


Anastasi, Anne and Others. The Validation of a Biographical Inventory as a Predictor of College Success. New York: College Entrance Examination Board, 1960.


B. PERIODICALS


C. UNPUBLISHED MATERIALS


APPENDIX A
May 29, 1980

Dear

As a graduate student at LSU--Baton Rouge, I am involved in research projects. At the present, I am attempting to determine the success of graduate nurses during the first two years of employment.

May I appeal to you for a few minutes of your time to complete the enclosed questionnaire? Your assistance would be deeply appreciated.

The questionnaire takes approximately thirty minutes to complete. If you do not have the requested scores, may I have your permission to review your student records? An authorization form for this purpose is enclosed.

You are also receiving a return envelope in which you may enclose the completed questionnaire and the permission form.

None of the information provided will be identified by name or social security number.

Will you please return to me the completed questionnaire and the permission form in the self-addressed, stamped envelope by June 23, 1980?

Thank you for your necessary and courteous assistance.

Sincerely yours,

Mary B. Neiheisel, R.N.
USL Box 41932
Lafayette, LA 70504
QUESTIONNAIRE RELATED TO GRADUATE NURSE SUCCESS

Identifying Data:

Social Security Number_________________________

Presently employed in nursing? YES___ NO___

If no, why not?________________________________

Present employer________________________________

Title of present position_________________________

How soon did you obtain employment after graduation?

______________________________________________

Title of initial position__________________________

Last semester GPA____

Cumulative GPA____

ACT Scores:

English____

Math____

Social Sciences____

Natural Sciences____

NLN Scores:

Psychiatric Nursing____

Community Health____

Medical-Surgical____

Knowledge____

Application____

Maternal Child____

State Board Scores:

Psychiatric Nursing____

Medical Nursing____

Surgical Nursing____

Maternity Nursing____

Nursing of Children____
Using the following code, please evaluate yourself on the items listed by circling the letter of the most appropriate answer.

A= Strongly Agree
B= Agree
C= Disagree
D= Strongly Disagree

Each item is a personal reference or activity related to you.

1. I was well prepared for my first position. A B C D

2. The orientation period was necessary for my success. A B C D

3. I readily assume and complete the expected duties. A B C D

4. The nurses with whom I work are usually completing my duties. A B C D

5. Assessments of patients in various age groups are easily made. A B C D

6. The assessments I make are usually verified by other nurses. A B C D
7. I find it difficult to determine the pathophysiology of specific disorders.  
     A B C D

8. My general knowledge of the situations of patients is comparable to other nurses.  
     A B C D

9. Although I readily identify the needs of patients, I have difficulty with priorities.  
     A B C D

10. Nursing care plans are easily written.  
     A B C D

11. Nursing care plans are poorly utilized.  
     A B C D

12. Assignments are easily delegated to appropriate team members.  
     A B C D

13. Assignments made by me are usually changed by the charge nurse.  
     A B C D

14. It is easy for me to organize nursing care for a number of patients.  
     A B C D

15. I find that my communications are usually misinterpreted.  
     A B C D

16. I utilize effectively a variety of communication skills with patients.  
     A B C D

17. I am most competent in intervening for a variety of clients in a variety of situations.  
     A B C D

18. I usually allow others to make decisions related to nursing care.  
     A B C D
19. Decisions made by me are usually professionally correct. A B C D

20. I readily utilize the evaluation process. A B C D

21. It is difficult for me to institute correct measures. A B C D

22. I function well in the independent role of a nurse. A B C D

23. The dependent role of the nurse is comfortable for me. A B C D

24. Usually I am a positive influence on other nurses. A B C D

25. I have initiated research directly related to nursing care. A B C D

26. I consistently and actively participate in inservice education. A B C D

27. Each of my evaluations by superiors has been poor to average. A B C D

28. I have received substantial raises at least twice during the past two years. A B C D

29. In the past two years, I have had how many employers?
   A. One
   B. Two
   C. Three
   D. Four or more A B C D
30. The number of professional journals to which I subscribe are:  
A. None  
B. One  
C. Two  
D. Three or more

31. The number of professional organizations of which I am a member are:  
A. None  
B. One  
C. Two  
D. Three or more

32. I have completed ___ graduate course(s)  
A. None  
B. One  
C. Two  
D. Three or more

33. I have attended ___ continuing education courses  
A. None  
B. One  
C. Two  
D. Three or more

34. I have attended ___ professional seminars and/or workshops  
A. None  
B. One  
C. Two  
D. Three or more

35. I have published ___ articles  
A. None  
B. One  
C. Two  
D. Three or more
I, ________________________________________________, hereby give permission to MARY B. NEIHEISEL to review my student files for GPA, ACT, NLN, and State Board Scores.

SIGNED _______________________________________

DATE ________________________________
July 4, 1980

Dear

Approximately four weeks ago you received a questionnaire from me.

Would you please take a few minutes now to complete the items and return the several pages to me?

If for some reason you did not receive the materials, please contact me.

Thank you. I appreciate your attention to this.

Sincerely yours.

Mary B. Neiheisel, R.N.
USL Box 41932
Lafayette, LA 70504
APPENDIX E
WEIGHTING OF QUESTIONNAIRE ITEMS

Using the following code, please evaluate yourself on the items listed by circling the letter of the most appropriate answer.

A= Strongly Agree

B= Agree

C= Disagree

D= Strongly Disagree

Each item is a personal reference or activity related to you.

1. I was well prepared for my first position. A B C D

2. The orientation period was necessary for my success. A B C D

3. I readily assume and complete the expected duties. A B C D

4. The nurses with whom I work are usually completing my duties. A B C D

5. Assessments of patients in various age groups are easily made. A B C D

6. The assessments I make are usually verified by other nurses. A B C D
7. I find it difficult to determine the pathophysiology of specific disorders.

8. My general knowledge of the situations of patients is comparable to other nurses.

9. Although I readily identify the needs of patients, I have difficulty with priorities.

10. Nursing care plans are easily written.

11. Nursing care plans are poorly utilized.

12. Assignments are easily delegated to appropriate team members.

13. Assignments made by me are usually changed by the charge nurse.

14. It is easy for me to organize nursing care for a number of patients.

15. I find that my communications are usually misinterpreted.

16. I utilize effectively a variety of communication skills with patients.

17. I am most competent in intervening for a variety of clients in a variety of situations.

18. I usually allow others to make decisions related to nursing care.
19. Decisions made by me are usually professionally correct.

20. I readily utilize the evaluation process.

21. It is difficult for me to institute correct measures.

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23. The dependent role of the nurse is comfortable for me.

24. Usually I am a positive influence on other nurses.

25. I have initiated research directly related to nursing care.

26. I consistently and actively participate in inservice education.

27. Each of my evaluations by superiors has been poor to average.

28. I have received substantial raises at least twice during the past two years.

29. In the past two years, I have had how many employers?
   A. One
   B. Two
   C. Three
   D. Four or more
30. The number of professional journals to which I subscribe are:
   A. None
   B. One
   C. Two
   D. Three or more

31. The number of professional organizations of which I am a member are:
   A. None
   B. One
   C. Two
   D. Three or more

32. I have completed ___ graduate course(s)
   A. None
   B. One
   C. Two
   D. Three or more

33. I have attended ___ continuing education courses
   A. None
   B. One
   C. Two
   D. Three or more

34. I have attended ___ professional seminars and/or workshops
   A. None
   B. One
   C. Two
   D. Three or more

35. I have published ___ articles
   A. None
   B. One
   C. Two
   D. Three or more
APPENDIX F
## CATEGORIES UTILIZED IN GRADUATE SUCCESS SURVEY QUESTIONNAIRE

<table>
<thead>
<tr>
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VITA

Mary Brown Neiheisel, daughter of Mr. and Mrs. Glen W. Brown, was born May 30 in San Antonio, Texas.

She graduated from Stockdale High School in 1957 and graduated from Baptist Memorial Hospital School of Nursing, San Antonio, Texas, in 1960.

She received her Bachelor of Science in Nursing from Incarnate Word College in 1962 and her Master of Science in Nursing from the University of Colorado in 1965.

In June, 1966, she was married to Richard G. Neiheisel.

Professional positions include staff and head nurse positions; nursing instructor at Brackenridge Hospital School of Nursing, Austin, Texas, and Texas Woman's University in Denton, Texas.

Since 1966, she has been associated with the University of Southwestern Louisiana and currently holds the rank of associate professor of nursing.

She has received various awards and was named in Outstanding Young Women of America, received the J.W.
Bateman Award at Louisiana State University and was named a Distinguished Young Professor at the University of Southwestern Louisiana in 1976. She is a member of Sigma Theta Tau and Phi Eta Sigma.

She is a member of the American Nurses' Association, National League for Nursing, American Association of Critical Care Nurses, American Heart Association, and the American Association of University Professors.

Professional pursuits have included E.M.T. courses, lectures for Paramedics, continuing education courses, seminars, refresher courses for Registered Nurses, and cardiopulmonary resuscitation courses for the community.
Candidate: Mary B. Neiheisel

Major Field: Extension Education

Title of Thesis: Cognitive Predictors of Success of Graduate Nurses on State Board Test Pool Examinations and After Two Years Employment

Approved:

[Signature]

Major Professor and Chairman

[Signature]

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signature]

McCann

[Signature]

Virginia Rutable

[Signature]

Edward W. Gossie

[Signature]

[Signature]

Date of Examination:

April 6, 1981