INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in “sectioning” the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.
FACTORS THAT AFFECT SUCCESS IN NURSING EDUCATION: AN EXPLORATORY STUDY

The University of North Carolina at Greensboro

Copyright 1981 by Brown, Hazel Nixon
All Rights Reserved
FACTORS THAT AFFECT SUCCESS IN NURSING

EDUCATION: AN EXPLORATORY STUDY

by

Hazel N. Brown

A Dissertation submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Greensboro
1981

Approved by

[Signature]
Dissertation Adviser
This dissertation has been approved by the following committee
of the Faculty of the Graduate School at the University of North
Carolina at Greensboro.

Dissertation Adviser

Jack J. Banner

Committee Members

Joseph Z. Bryan

Dale L. Rutledge

Rebecca M. Smith

Laur V. Elings

March 26, 1981
Date of Acceptance by Committee

March 26, 1981
Date of Final Oral Examination
An exploratory study was conducted at the University of North Carolina at Greensboro School of Nursing during the fall of 1979 to identify factors that affected success in nursing education. The three criteria of success that were used as dependent variables were total grade point average (GPA) in the major, theory GPA in the major, and clinical GPA. The independent variables were age, marital status, education, grade on a research paper, SAT scores, high school rank, college GPA when entering the major, profiles from the Myers-Briggs Type Indicator (MBTI), and answers to local option questions. This was a population study since all of the 112 junior students participated, and 108 of the 114 seniors participated. As all of the students who participated in the study were enrolled in the nursing major, the study discriminated among students who had been preselected twice, once into the university and again into the nursing major.

Multiple regression was the statistical procedure used. Three procedures were used to prevent the loss of any variable that might add to the prediction of either of the GPA's in the major. The three procedures were forward selection, backward elimination, and stepwise regression.

Three of the independent variables were found to have significant predictive validity. Previous college GPA and grade on the research paper were both significant at the .01 level in predicting total GPA in the major and theory GPA in the major. Previous college
GPA was significant at the .01 level and the Extraversion-Introversion (E-I) scale of the MBTI was significant at the .05 level in predicting the clinical GPA. Those students who had a higher extraversion than introversion score on the MBTI had higher clinical GPA's.

Suggestions for further research were presented and implications of the findings for admission procedures in schools of nursing were discussed.
ACKNOWLEDGMENTS

With gratitude I acknowledge the time and concern of my committee members: Dr. Jack I. Bardon, Chairman, Dr. Dale L. Brubaker, Dr. Joseph E. Bryson, Dr. Lois V. Edinger, and Dr. Rebecca M. Smith.

I also thank the nursing students of the 1980 and 1981 graduating classes of the University of North Carolina at Greensboro School of Nursing for participating in this research study. Only with their participation was this research possible.

Dr. William Powers and Marjorie Wright of the UNC-G Statistical Consulting Center deserve recognition for their helpful advice concerning the design of the statistical analysis performed in this research.

The very warmest feelings and personal "thank you" goes to my husband, Leonard, whose tolerance, patience, and support were immeasurable. Our children, Charles, Mona, Nadja, and David, were delightfully inspiring.
**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>APPROVAL PAGE</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
</tbody>
</table>

**CHAPTER**

<table>
<thead>
<tr>
<th>I. INTRODUCTION</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Purpose</td>
<td>1</td>
</tr>
<tr>
<td>Limitations of This Study</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. REVIEW OF LITERATURE</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellective Factors Applied to Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nonintellective Factors Applied to Nursing</td>
<td>6</td>
</tr>
<tr>
<td>Conclusions on Nursing Literature</td>
<td>7</td>
</tr>
<tr>
<td>Nonnursing Literature</td>
<td>9</td>
</tr>
<tr>
<td>Research Using the Myers-Briggs Type Indicator (MBTI)</td>
<td>14</td>
</tr>
<tr>
<td>Research With MBTI at the University of North Carolina at Greensboro</td>
<td>18</td>
</tr>
<tr>
<td>Summary of Nonnursing Literature</td>
<td>19</td>
</tr>
<tr>
<td>Conclusions</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. METHODOLOGY AND DESIGN</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Terms</td>
<td>23</td>
</tr>
<tr>
<td>Population</td>
<td>28</td>
</tr>
<tr>
<td>Myers-Briggs Type Indicator (MBTI)</td>
<td>30</td>
</tr>
<tr>
<td>Collection of Data</td>
<td>33</td>
</tr>
<tr>
<td>Statistical Procedures</td>
<td>34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. FINDINGS</th>
<th>37</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>V. DISCUSSION AND RECOMMENDATIONS</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myers-Briggs Type Indicator (MBTI)</td>
<td>40</td>
</tr>
<tr>
<td>Previous College Grade Point Average</td>
<td>46</td>
</tr>
<tr>
<td>Research Paper Grade</td>
<td>48</td>
</tr>
<tr>
<td>Implications of the Findings</td>
<td>51</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>53</td>
</tr>
</tbody>
</table>
CHAPTER

V. DISCUSSION AND RECOMMENDATIONS (continued)

Statement of Conclusions ........................................... 54
Summary of Recommendations for Admission Practices in Schools of Nursing.......................... 55
Summary of Recommendations for Research ....................... 55

VI. SUMMARY .......................................................... 58

BIBLIOGRAPHY ......................................................... 61

APPENDICES

Appendix A. Tables .................................................. 68
Appendix B. Objectives and Evaluation Tool ...................... 72
Appendix C. Nursing Research Paper ............................... 75
Appendix D. Conversion of High School Rank in Class to Standard Score Scale ....................... 78
Appendix E. Local Option Questions ............................... 81
Appendix F. Report to UNC-G Institutional Review Board on Research Project Involving Human Subjects ......................... 89
Appendix G. Instructions and Explanations ....................... 91
<table>
<thead>
<tr>
<th>TABLE</th>
<th>Description of Junior and Senior Nursing Students.</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Forward Selection Procedure for Dependent Variable GPA Major.</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>Forward Selection Procedure for Dependent Variable GPA Theory</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>Forward Selection Procedure for Dependent Variable GPA Clinical</td>
<td>39</td>
</tr>
<tr>
<td>5</td>
<td>Mean Grade Point Averages of Total Group According to Myers-Briggs Type Indicator Profiles.</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>Backward Elimination Procedure for Dependent Variable GPA Major.</td>
<td>69</td>
</tr>
<tr>
<td>7</td>
<td>Stepwise Regression Procedure for Dependent Variable GPA Major.</td>
<td>69</td>
</tr>
<tr>
<td>8</td>
<td>Backward Elimination Procedure for Dependent Variable GPA Theory</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>Stepwise Regression Procedure for Dependent Variable GPA Theory</td>
<td>70</td>
</tr>
<tr>
<td>10</td>
<td>Backward Elimination Procedure for Dependent Variable GPA Clinical</td>
<td>71</td>
</tr>
<tr>
<td>11</td>
<td>Stepwise Regression Procedure for Dependent Variable GPA Clinical</td>
<td>71</td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION

Statement of the Problem

This was an exploratory study to identify and evaluate both intellective and nonintellective factors present in nursing students that are related to selected criteria of success in nursing education. The problem derives from the following sources: (a) The literature search gives no clear direction regarding nonintellective factors that affect success in nursing education. (b) The literature search gives no clear direction regarding the interrelationships between intellective and nonintellective factors that affect success in nursing education. (c) There is an identified need in the University of North Carolina at Greensboro (UNC-G) School of Nursing for nonintellective information to aid in improving the selection of students who will succeed in the School of Nursing.

Purpose

The major purposes of this study were to formulate hypotheses concerning factors influencing success in nursing education, if significant new findings emerge and based on findings, to propose further research on qualities related to success in nursing education.

This study included variables so far not considered in investigations of success in nursing education. Special interest was given to the profile scores of the Myers-Briggs Type Indicator (MBTI).
A third purpose was to begin the process of assisting the UNC-G School of Nursing to improve the selection of students who will succeed in the School of Nursing.

A fourth purpose was to supplement and work within existing university research currently being conducted by the UNC-G Office of Institutional Research (OIR). One research question of the OIR is: Does the MBTI help to produce a better match between individual students and their academic majors and thereby increase student retention rates?

If these purposes could be carried out the study would be important to the School of Nursing, the OIR, and to other researchers interested in this topic.

Limitations of This Study

The greatest limitation of this study was the lack of agreed-upon criteria of success in nursing education, other than grade point average (GPA). In order to investigate as many aspects of GPA as possible, the following criteria of success were used as dependent variables: total GPA in the nursing major, theory GPA, and clinical GPA. The dependent variables are defined in the Definition of Terms section.

The study examined success in nursing education. One-half of the sample, junior students, had completed only one-fourth of the nursing curriculum. The other half, senior students, had completed three-fourths of the nursing curriculum. Time did not permit evaluating each student at the completion of the program.
CHAPTER II
REVIEW OF LITERATURE

Can traditional measures of academic achievement, grade point averages and Scholastic Aptitude Test (SAT) scores contribute the necessary information needed for the selection of students who will complete clinical programs, such as nursing? Thomas (1974) addressed this question through a prediction study of students in the University of Iowa nursing major and found significant predictive utility. At that time, a dearth of studies was reported (Thomas, 1977). The situation today remains largely unchanged. Candidates for admission to nursing programs are generally asked to submit traditional kinds of evidence of academic competence, e.g., high school and prior college GPA's, SAT scores, and possibly IQ scores as part of the application procedure (National League for Nursing, 1975). Supplementary kinds of information, such as personality measures and references are sometimes required (National League for Nursing, 1975).

Intellective Factors Applied to Nursing

There have been many studies during the past decade which tried to determine characteristics of entering students associated with nursing program attrition or completion. These studies have included both intellective and nonintellective factors. In general, findings tend to report positive relationships between intellective factors and academic success in nursing. The SAT score was found in several to be
the best single predictor of the GPA in nursing (Backman & Steindler, 1971; Kovacs, 1970; Litherland, 1966; Munday & Hoyt, 1965; Plapp, Psathas, & Caputo, 1965; Raderman & Allen, 1974; Whittmeyer, Camiscioni, & Purdy, 1971).

However, Kovacs (1970) found that the establishment of minimum scores of 500 on SAT - Verbal (B), 500 on SAT - Mathematics (M), and 1,000 on SAT total would have eliminated only 46 percent to 50 percent of the withdrawals. Nash (1977) reported in a National League for Nursing survey of 2,400 applicants to nursing programs that of those accepted, 12 percent withdrew. The most frequently reported reason for withdrawal from the nursing program was academic failure (45 percent). The second most frequently reported reason for withdrawing was to change to a different type of nursing program or to another career (29 percent). Other reasons for withdrawals were marriage and family (16 percent), financial (seven percent) and ill health (three percent). Gerstein (1965) found that intelligence as a factor had little relationship to performance in the program. This finding is put into perspective by the realization that a reasonable amount of intelligence is necessary to matriculate into the nursing major.

Previous GPA's, including both high school and college scores, were found to be the single most significant predictor of academic success in the nursing programs studied (Burgiss & Duffy, 1969; Lewis & Welch, 1975; Litherland, 1966; Michael, Haney, & Jones, 1966; Reed, 1973; Stronk, 1979; Tillinghast & Norris, 1968). High school rank (HSR) proved significant in predicting GPA in nursing education (Backman & Steindler, 1971; Kovacs, 1970; Reed, Feldhusen, & Von Mondfrans, 1973).
However, Plapp (1965) found that HSR did not correlate significantly with GPA in nursing education. Other studies that found no clearly defined patterns of correlation between either intellective or nonintellective variables and academic success in nursing were those of Morman (1965), Katzell (1968), Klahn (1967), and Schwirian and Baer (1976).

The literature available (Graduate Record Examination Board, 1972; Lannholm, 1968; Stein & Green, 1970; Taylor, Nahm, Log, Harms, Berthold, & Wolfer, 1966; Whitney, 1970; Willingham, 1974) reveals that only a small portion of the variance of the criterion measures is explained by the predictors, GPA and SAT scores. Nevertheless, Nash (1977) conducted an in-depth study of 2,400 applicants of 20 schools of nursing and found that the most universal selection criterion for admission to schools of nursing was some measure of a candidate's performance, such as GPA, achievement tests, or aptitude tests as an indicator of probable success in the program.

Stronk (1979) determined the degree of correlation between the admissions criteria and students' academic performance in the upper division courses of a baccalaureate nursing program. Other than a significant correlation between previous GPA and academic success in the nursing major, the only criterion that revealed a significant correlation was narrative skills. The narrative skills were evaluated based upon a short essay of the candidate's professional goals and attitudes written on the day of the interview. The criteria that produced no significant correlations were letters of recommendation, interview, and activities. Burkett (1971) reported from a study of undergraduate liberal arts students, that according to her data,
"ability to write is not considered an important ingredient in English, or required in courses taken" (p. 358). Yet Burkett (1971) found that narrative skills of applicants correlated well with their future performance in the professional college.

There are conflicting research results concerning the predictive use of intellective criteria in schools of nursing. However, the intellective factor that appeared to best predict GPA in the nursing programs was prior GPA, particularly prior-college GPA. The SAT scores seemed to be the second best predictor of GPA in nursing programs. Also, the finding by Stroîk (1975) that narrative skills was a significant predictor of GPA in an upper division baccalaureate nursing program was important.

Nonintellective Factors Applied to Nursing

Many studies have used nonintellective variables of nursing students to predict nursing program attrition or completion. Some researchers (Burgiss & Duffy, 1969; Michael & Gershon, 1962; Michael et al., 1966; Michael, Haney, Lee, & Michael, 1971; Thurston, 1968) found that the Minnesota Multiphasic Personality Inventory (MMPI) did not predict academic achievement in the nursing program. However, Anderson (1968) found that students who failed in the clinical practicum had MMPI scores that differentiated them from the students who passed clinical practicum. Students who failed were more likely to be rebellious and social, less anxious, and less concerned with physical symptoms. Levitt, Lubin, and DeWitt (1971) also found, based on the MMPI, that dropouts in the nursing program were more inclined to sociopathic behavior.
When using the Edwards Personal Preference Schedule (EPPS), both Levitt et al. (1971) and Michael et al. (1966) found that the EPPS did not predict academic achievement or clinical performance. However, Smith (1965) found that successful nursing students showed higher interest in achievement and lower interest in sex when the EPPS was used as a predictor variable.

Of the nursing studies that used the Cattell 16 Personality Factor Questionnaire (16PF), four found no significant relationship to clinical practice or to theory grades (Johnson & Leonard, 1970; Michael et al., 1966; Michael et al, 1971; Whittmeyer, Camiscioni, & Purdy, 1971). Smith (1965) used the 16PF to measure personality variables' predictive use and found that successful students were lower in their degree of conservatism.

Baker (1975) studied 112 associate degree nursing students and used only the California Psychological Inventory (CPI) to differentiate nonintellective differences between dropouts and graduates. The only significant finding was that graduates had a higher level of personal and social maturity.

Based on the literature reviewed, no personality test or other nonintellective factor has emerged as the tool to use to predict success in nursing programs.

Conclusions on Nursing Literature

It is generally considered by nursing educators that the quality of a nurse is better determined in the clinical setting than in the theory courses. However, beyond basic technical skills there is little
consensus among educators as to what constitutes "a good professional nurse" (Adderly & Brock, 1977). Most nurses, and particularly nursing instructors, verbalize their ability to identify that nurse or nursing student who has that "special something" that makes a "good nurse." When asked to identify components of the "special something," nurses list traits such as: personality, self-concept, attitude, values, ambition, compassion, and coping ability (Adderly & Brock, 1977).

To be sure, intelligence alone is not the sole determinant of a person's success in a nursing program. The following traits have been mentioned by authors who believe these are important to consider in recruiting, selecting, and educating nursing students: motivation (Haglund, 1978), self-actualization (Sobol, 1977), and personality (Kramer & Schmalenberg, 1977). However, none of these authors offered suggestions for how to determine whether or not prospective nursing students had these traits.

Reeve (1978) concisely defined the problem:

> In essence, we need to know within acceptable limits, what sort of person the process of nursing needs in terms of aspirations, applications, interests, and personality characteristics. Then we need to develop means to elicit information relevant to these factors so that decisions on suitability can be made (p. 167).

Based on the literature reviewed, it appears that the means to elicit information about nonintellective factors desirable in a nurse or nursing student have not yet been found.

Intellective factors that predicted academic success in nursing programs were found to be prior GPA, SAT scores, HSR, and narrative skills.
Nonnursing Literature

Colleges and universities have traditionally used various criteria for admission, which have primarily included intellective factors. Mayhew (1965) found that the most obvious successes of admission officers in predicting academic performances had been with HSR or with tests on some of the various academic aptitudes, primarily SAT. Chissom and Lanier's (1975) prediction of first quarter GPA for 669 students using SAT scores and HSR supported Mayhew's (1965) findings. Chissom and Lanier (1975) found SAT scores to be of limited value for prediction of college GPA, while high school GPA was the most reliable predictor of college GPA. Reichard and Uhl (1979) stated that in recent years the predictive validity of the freshman year GPA using such measures as SAT scores or HSR had decreased markedly.

Throughout the years efforts have been made to determine what factors might add significantly to traditional measures of predicting academic performance (Fisherman, 1962; Hengstler, Uhl, Reichard, & Goldman, 1981; Mayhew, 1965; Michael, 1965). Fisherman (1962) found from a survey of 580 studies of college guidance and selection conducted from 1948 to 1958 that the average multiple correlation between the usual predictors (high school grades and scores on standardized tests of scholastic aptitude) and a criterion of GPA in college was about .55 and that the gain in multiple correlation associated with the addition of a personality test score to one or two cognitive predictors with the criterion held constant was customarily less than .05. Therefore, the personality tests did not add significantly to the prediction of college GPA. Fisherman (1962) emphasized that personality
tests and other noncognitive measures could conceivably contribute more to the prediction of college GPA if they were actually measuring something sufficiently dissimilar to that found in the usual predictors.

Immediately following the report by Fisherman (1962), Mayhew (1965) studied research reports of nontest predictors of academic achievement. Mayhew (1965) found that investigations had searched for nonintellective factors which might account for the considerable variance in prediction which typical correlation and regression uses of HSR and academic aptitude revealed. The Rorschach, MMPI, and the Taylor Scale of Manifest Anxiety (TSMA) had been used in twenty studies with a median correlation of .22 with college GPA. Study habits tests such as the Brown Holtzman Survey of Study Habits and Attitudes (BHSSHA) and interest inventories such as the Kuder Preference Record (KPR) and the Strong Vocational Interest Blank (SVIB) had also been used, with similar or lower results. Therefore, these nonintellective factors had added very minimally to the already present HSR and SAT scores in predicting college GPA.

Indeed, conflicting results have emerged regarding the predictive value of nonintellective traits. In research using the California Psychological Inventory (CPI) (Watson, 1967; Evans, 1969), Edwards Personal Preference Schedule (EPPS) (Morgan, 1975, 1976), and the College Opinion Survey (Briggs, Roth, & Strong, 1970), personality characteristics were not found to be related to GPA when controlling for various aptitude measures. However, Graff and Boggs (1970), Stroup (1970), and Stricker, Shiffman, and Ross (1965) found personality measures to add significantly to the prediction of GPA when added after
SAT scores and HSR. Stroup (1970) used the CPI in a five-year study of entering college freshmen and found that the multiple correlation increased from .512 to .573 for males when the scores for Socialization, Flexibility, and Femininity were added to SAT scores and HSR. The multiple correlation increased from .473 to .524 for females when the scores for Achievement and Conformity were added to SAT scores and HSR. Stricker et al. (1965) used the Myers-Briggs Type Indicator (MBTI) to study personality factors of over 200 male college freshmen at two different institutions. When the four MBTI scales were added to SAT scores and HSR to predict the college GPA, the multiple correlation increased from .54 to .59 for the group at one institution and remained constant (.39) for the other group.

Stein, Linn, and Furdon (1975) found that ratings by field instructors of social workers were not related to any of the predictor variables—intelligence; dogmatic, authoritarian and alienated attitudes. In a study of the validity of demographic and evaluation admissions criteria to predict educational performance in a graduate school of social work, Williams (1976) found significant correlations between demographic variables and student performance. Ethnicity, residence, and university academic rating predicted the educational performance of entering applicants in the classroom and the field; openmindedness predicted only field-work performance.

Nichols and Holland (1963) used 154 predictor variables to predict the first-year college performance of high aptitude students who were National Merit finalists. Some of the 154 variables were SAT scores, HSR, MBTI scales, and written comments on one of six
problems presented to them. The nonintellective predictors of college grades that were significant for both sexes seemed to form two major clusters of traits: (a) perseverance and motivation to achieve and (b) conformity and socialization. The predictors used varied greatly in the degree to which they were related to subsequent achievement. The percentages of the predictor-criterion correlations that Nichols and Holland (1963) found significant for the various groups of predictors were as follows: high school achievement, 33 percent; interests and attitudes, 27 percent; personality inventory scales including MBTI, 24 percent; self-ratings, 12 percent; mother's rating, 14 percent; father's ratings, 14 percent; parental attitudes, 10 percent; family background variables, 8 percent; parental interests, 7 percent; parental goals and aspirations for students, 7 percent; and aptitude test, 7 percent. Nichols and Holland (1963) concluded that many of the non-intellective predictors might have had different relationships with the achievement criteria in a sample of students of average aptitude. However, the sample used represents precisely that group for which nonintellective predictors of achievement are most badly needed. These coefficients were obtained from nonintellective predictors after severe selection on aptitude had already been made. Nichols and Holland's (1963) problem of selecting among already preselected students was similar to the problems faced in student selection into the upper division nursing major. Students have already proven their aptitude to a great extent through acceptance into the university and by satisfactorily completing the first two years of prerequisite courses. Nichols and Holland (1963) found grades not significantly related to SAT-V or SAT-M for either sex, but significantly related to HSR for both sexes.
Teacher education programs have struggled with the difficulty of selecting the students who would best succeed in teaching. Wasicsko (1976) used perceptual data in studying the teacher selection process. Wasicsko (1976) introduces his paper with:

A need exists to improve the process by which teachers are selected. Historically, research designed to improve the process of teacher selection has had disappointing results. Investigations of teacher's behaviors, methods, and knowledge have been relatively unsuccessful in predicting teacher's effectiveness (p. 1).

Most of the literature concerning teacher selection addressed the need for better teacher selection but offered no solution (DeLong, 1971; Haberman, 1974; Muento, 1974). Cyphert (1972) did an analysis of research in teacher education and concluded that research in teacher education has had limited impact on the education of teachers. Getzels and Jackson (1963) said that educators were uncertain of how to select, educate, and assign the constant flow of personnel entering the teaching profession. One reason, but not a solution, given for that uncertainty was the difficulty in defining, measuring, and evaluating teacher traits and teacher effectiveness. Haberman (1971) defined the problem as large numbers of students self-selecting teacher education on the basis of their own previous schooling experiences. As a result, they had built-in and almost irreversible rigidities. More recently, Henney and Mortenson (1973) concluded that researchers disagreed about the most important characteristics of the effective teacher.

Some assistance with the teacher selection problem was offered by Wasicsko (1976). Volunteers employed the perceptual inference techniques as a useful measure in the process of selecting teachers.
The raters were trained to make inferences about teacher's perceptual orientation. Four perceptual factors with an effective and an ineffective description of each were defined. The teachers responded in writing to written situations, based on how the teacher believed he/she would perform. The raters scored the written work according to the guidelines.

**Research Using the Myers-Briggs Type Indicator (MBTI)**

An ongoing research study by Isabel Briggs Myers investigated nonintellectual factors as they relate to dropout in nursing. She published a preliminary report in 1967 of a study of 3,403 diploma nursing students. The MBTI was used to determine the psychological type of each student and the relationship of the psychological type to dropping out of nursing and to mean IQ in high school academic programs. The most prevalent profile found in the 3,403 students was Extraversion, Sensing, Feeling, and Judging (ESFJ). Fifty-two percent of the sample (Myers, 1962) were feeling-judging (F-J) types as compared to thinking-perceiving (TP) types. Of all of the MBTI types, the F-J group, the type most interested in choosing nursing, had the lowest drop-out percentage of all groups.

When the sensing (S) or (N) intuition variable was added to the profile, the SFJ types had significantly lower drop-out rates than NFJ types. This result is the exact opposite of what would be predicted from aptitude scores, because sensing types average about seven points lower than intuitives on IQ and 50 points lower on SAT. It must be concluded that the SFJ types have a specific aptitude for nursing that makes up, in aptitude . . . . Because of the SFJ type's lower aptitude scores they may be undervalued by admission committees. Ironically, an effort to
improve a school's output of nurses usually involves raising the cutting point on admission test scores, thus excluding more of the SFJ types with their special vocation for nursing . . . . The worst drop-out rate occurred in the sensing-perceiving types, who had neither the intuitives' advantage in aptitude nor the judging types' advantage in application (Myers, 1962, p. 1).

Other research using the MBTI has revealed interesting findings. McCaulley (1977) reported that several schools of medicine and other health professions are looking more closely into type differences in learning styles. In theory, a good career decision for any type would call on the strengths and interests of the type, with fewer requirements for use of the less developed and less preferred functions.

McCaulley (1977) found that persons in specialties requiring highly technical skills were high on the Sensing-Thinking (S-T) scale; those in specialties requiring psychological insight and concern with subtle relationships were high on the Intuition-Feeling (N-F) scale. Specialties requiring practical application of medical knowledge and concern for people were high on the Sensing-Feeling (S-F) scale, and those in specialties requiring daily application of scientific principles with objectivity were higher on the Intuition-Thinking (N-T) scale.

Using college freshmen as a control group, McCaulley (1977) found "relatively more extraverts in nursing, dietetic and nutritional services, occupational therapy, radiologic technology, speech pathology, and physician extender services" (p. 14). McCaulley (1977) also found that health fields as a group attracted significantly more judging types than would be expected from the number of judging types in college freshmen.
Of the health professions studies, McCaulley (1977) found the best data on type differences in educational levels came from nursing. As predicted, the proportion of intuitive types increased from 30 percent in licensed practical nurses (LPN) to 58 percent for nurses in graduate programs. McCaulley (1977) found that a Thinking-Feeling (T-F) difference also appeared at levels of training. Thinking types were in the minority in nursing, but they were proportionately more frequent in students at higher educational levels (23 percent in LPN students, 36 percent in graduate students).

Students with certain types have been identified as choosing majors which, in theory, should have been attractive to them. However, all sixteen types appear in almost all samples. The most common profile found in nursing students was Extraversion, Sensing, Feeling and Judging, ESFJ, (McCaulley, 1976). McCaulley (1976) stated:

We do not yet know when the rare types in a field . . . the Introverts-Intuities (I-N's) in business and the Extraverts-Sensing (E-S's) in science . . . are highly effective in making contributions, and when they are unhappy misfits. Nor can we always tell which of the frequent types will be satisfied and competent and which will not (p. 5).

Claxton and Ralston (1978) studied the impact of learning styles of college teachers and their students using the MBTI. They found a "remarkable mismatch between the teachers and the students" (p. 56). Seventy-eight percent of the students were Sensing-(S) instead of Intuitive-(N), compared with only 55 percent of the teachers. Eighty-two percent of the teachers were Judging-(J) instead of Perceptive-(P), compared with 42 percent of the students. Eighty-two percent of the
teachers were Thinking-(T) instead of Feeling-(F), compared with 61 percent of the students. These findings that come from use of the MBTI have several implications for improving college teaching (Claxton & Ralston, 1978). This study assumes that students with certain MBTI types prefer to learn and do learn in certain identified ways. Also, teachers with certain MBTI types teach in an identifiable manner. However, the Claxton and Ralston (1978) study did not determine the relationship between academic success of the student and the similarity or dissimilarity of the MBTI type between the student and teacher.

Hengstler et al. (1981) were interested in finding the value of the MBTI as a nonintellective factor to predict academic success at UNC-G when used with the traditional aptitude measures of SAT scores and HSR. They used a total of 1,812 freshmen who enrolled in UNC-G in 1977 (556), 1978 (531), and 1979 (725) and voluntarily took the MBTI. There was no relationship between the MBTI type and academic success for the freshmen who enrolled in 1977. In both the 1978 and 1979 entering freshmen classes, the Sensing-Intuition (S-N) main effect was significant, revealing that students who had a preference for Intuition, instead of Sensing tended to have higher GPA's. For the 1979 class, those who had a preference for Sensing and Introversion had a significantly lower GPA mean than those who had a preference for Intuition and Introversion. Extraversion appeared to have little effect on the GPA. Similarly, those who preferred Introversion and Judging tended to have higher GPA's than those who preferred Extraversion or Introversion and Perception.
Students who preferred the Sensing and Perceptive dimensions tended to obtain lower GPA's than students who preferred Intuition or Judging. When the T-F dimension was added, extreme differences were noted. A mean of 2.178 GPA was found for those who preferred Sensing, Thinking and Perception (STP), while a mean GPA of 3.03 was found for those who preferred Intuition, Thinking, and Perception (NTP).

**Research With MBTI at the University of North Carolina at Greensboro**

Donald J. Reichard, Director of the Office of Institutional Research at the University of North Carolina at Greensboro (UNC-G) and his staff are currently studying how data from the MBTI can be used in institutional research. Reichard and Uhl (1979) conducted research based upon experience derived from working with data obtained from approximately 3,200 administrations of the MBTI to entering students at UNC-G from 1974 to 1978. The profiles of the members of the 1978 class were listed by preference for Myers-Briggs Type dimensions by school of major. Eighty-two of the 711 1978 cohorts were nursing majors. The highest percentage of these 82 student profiles were Extraversion, Sensing, Feeling and Judging (ESFJ). Reichard and Uhl (1979) believed that the MBTI might have usefulness in the prediction of academic success, analysis of student retention and withdrawal, academic and personal advising, and performance on professional examinations in such areas as nursing and education. A projected outcome of Reichard and Uhl's (1979) research was that individual schools and departments would use nonintellectual data as one criterion among
several for admission to advance study in particular majors.

To the extent that these uses of the MBTI may help to produce a better match between individual students and their academic majors and increase student retention rates, the study is important to institutional researchers in all institutions of higher education (Reichard & Uhl, 1979, p. 1).

Two conclusions of the Hengstler et al. (1981) study relate to nursing. In general, no significant main effects or interactions were found for males, blacks, and students majoring in Business, Home Economics, and Nursing. Also, when the predictive validity of the MBTI was analyzed by the declared major of the students, no significant increase in the multiple correlations was found when the MBTI dimensions were added to SAT scores and HSR for students with a declared major in Education, Home Economics, and Nursing.

Summary of Nonnursing Literature

Studies that have used both intellective and nonintellective factors to predict college grade point average (GPA) have found intellective factors (HSR and SAT scores) to be the better predictor of college GPA (Chissom & Lanier, 1975; Mayhew, 1965; Nichols & Holland, 1965; Reichard & Uhl, 1979). Personality variables including the Rorschach test, Minnesota Multiphasic Personality Inventory, Taylor Scale of Manifest Anxiety, Brown Holtzman Survey of Study Habits and Attitudes, Kuder Preference Record, Strong Vocational Interest Blank, California Psychological Inventory, Edwards Personal Preference Schedule, and the College Opinion Survey have added very little to the intellective factors in predicting college GPA (Briggs, Roth, & Strong, 1970; Evans, 1969; Fisherman, 1962; Hengstler et al., 1981; Mayhew,
1965; Michael, 1965; Morgan, 1975, 1976; Watson, 1967). However, Stroup (1970) and Striker et al. (1965) found that personality factors as measured by the California Psychological Inventory and the Myers-Briggs Type Indicator (MBTI) respectively, added significantly to the prediction of college GPA when added after SAT scores and HSR.

While Stein et al. (1975) did not find significant relationships between predictor variables and field work of social workers, Williams (1976) did find significant relationships between some demographic variables and student performance in social work.

Nichols and Holland (1963) studied first-year college performance of students who had been National Merit finalists and found a significant relationship between HSR and college performance, but not between SAT scores and college performance. Some nonintellective factors, including the MBTI scales, had significant predictive validity for college GPA.

Literature studied about teacher education indicated a need to find predictors of success in teacher education.

The MBTI has been used by several authors to describe nursing students and college students (Claxton & Ralston, 1978; Hengstler et al., 1981; McCaulley, 1977; Myers, 1967; Reichard & Uhl, 1979). The profile of the nursing student most often found was Extraversion, Sensing, Feeling, and Judging (ESFJ) (McCaulley, 1977; Myers, 1967). Hengstler et al. (1981) found some scales of the MBTI to predict GPA of students in some of the schools of the college, but not in the school of nursing.
The intellective factors, primarily SAT scores and HSR, have been the best predictors of general college GPA. The varied nonintellective factors that have been used to predict success in general college, social work, and nursing have produced little or no significant findings. Because the MBTI has successfully identified profiles of people who tend to choose certain careers, and because some research has shown predictive use of the MBTI profiles in predicting college GPA (Nichols & Holland, 1965; Hengstler et al, 1981), further research using the MBTI to predict success in Nursing education is warranted.

Conclusions

The intellective factors of SAT scores, high school rank, and previous GPA appeared to be the best predictors of both college GPA and GPA in nursing. However, Reichard and Uhl (1979) stated that these traditional intellective factors used to predict college GPA are losing some of their effectiveness. Nevertheless, the traditional intellective factors of HSR, SAT scores, and prior GPA should continue to be used until either other intellective factors, possibly narrative skills or nonintellective factors, have been found to be more predictive of college or of nursing GPA.

Based on the lack of nursing research that shows relationships between nonintellective factors and success in nursing education and considering that studies using the MBTI have identified psychological types of persons who tend to enter certain careers, the next step seems to be to study nursing students' profiles on the MBTI in relation to their success in nursing education. Myers (1967) examined the drop-out
versus non-drop-out record in nursing education. Simply continuing in a nursing program is one measure of success. However, there are levels of success within that continuation. Therefore, the problem of who will succeed in nursing education based on both intellective and non-intellective factors, particularly profiles on the MBTI, is the focus of this study.

Since a future objective of UNC-G's Office of Institutional Research is to involve faculty in conducting longitudinal, theoretically based research of MBTI and student retention, MBTI and selection of major, MBTI and student preferences for instructor and learning styles, and MBTI and alumni characteristics (Reichard & Uhl, 1979)—this study will be useful for the researcher, the UNC-G School of Nursing, the UNC-G Office of Institutional Research, and other researchers.
CHAPTER III
METHODOLOGY AND DESIGN

Definition of Terms

**Total grade point average (GPA) in the major.** There are 15 courses in the nursing major at UNC-G School of Nursing. Each nursing student is required to take each of the 15 courses, seven during the junior year and eight during the senior year. The 15 courses carry a total of 53 semester hour credits. The total GPA in the major was the GPA on the courses in the major completed by each student at the end of the Fall, 1979 semester. Each of the junior students had completed three courses for 12 semester hours credit. Each senior student had completed 11 courses for 39 semester hours credit. The GPA at UNC-G is based on a 4.0 system. Each credit hour of earned 'A' work receives four quality points; each credit hour of 'B' work receives three quality points; each credit hour of earned 'C' work receives two quality points; and each credit hour of earned 'D' work receives one quality point.

**Theory grade point average (GPA) in the major.** Of the 15 courses in the nursing major at UNC-G School of Nursing, nine are theory courses. The theory courses involve one hour of classroom work per week for each semester hour of credit earned for the course. In the theory courses the method of teaching is primarily lecture with some audio-visual aids and discussion. Each theory course has three or four multiple-choice item examinations. The grades on each examination are based on a percentile score. Percentile scores from 60-69 earn a 'D'
on the examination; scores from 70-79 earn a 'C' on the examination; scores from 80-89 earn a 'B' on the examination; and scores 90-100 earn an 'A' on the examination. The percentile scores from each examination in the course are averaged for the final course grade. There are two theory courses during the fall semester of the junior year that carry a total of eight semester hours of credit. During the spring semester of the junior year each student earned seven semester hours of credit for the two theory courses taken. During the fall semester of the senior year each student earned eight semester hours of credit for the two theory courses taken. The three theory courses in the spring semester of the senior year carry a total of eight semester hours of credit. The theory GPA in the major was the total GPA on the theory courses in the major completed by each student at the end of the Fall, 1979 semester. The junior students had each completed two theory courses for eight semester hours of credit. Each senior student had completed six theory courses for 24 semester hours of credit.

Clinical grade point average (GPA). Six of the 15 courses in the nursing major at UNC-G School of Nursing are clinical courses. During the clinical course time each nursing student works in a community, maternity, medical, pediatric, psychiatric, and surgical nursing setting under the direct supervision of a nursing instructor. Three hours of clinical time per week earns one semester hour of credit. The clinical grade of A, B, C, D, or F, is based on a combination of objective and subjective data gathered by the clinical instructor. There are course objectives for each clinical course (see Appendix A). The data used for student evaluation are based upon observation of the student's nursing
skills; the student's use of the nursing process: assessment, planning, intervention, and evaluation; the student's participation in conferences; and the student's written work, including nursing care plans.

Each junior student takes one clinical course in the fall semester for four hours of credit. During the spring semester each junior student takes two clinical courses for a total of six semester hours of credit. Each senior student takes two clinical courses during the fall semester for six semester hours of credit. The clinical GPA was the GPA on the clinical courses completed by each student at the end of the Fall, 1979 semester. Each junior student had completed one course for four semester hours of credit. Each senior student had completed five courses for 16 semester hours of credit.

Research paper. With the exception of three senior students, all students in the nursing major during the fall semester of 1979 wrote research papers during their first semester in the nursing major. The three senior students who did not write papers were members of earlier junior classes when the paper was not a required part of the course. The three students withdrew from the major for various reasons and reentered during the fall of 1979 to begin their senior year.

The faculty members who taught junior students collectively developed the guidelines for the research paper (see Appendix B). The papers were graded anonymously. A second reader was assigned when a paper was first scored above 90 or below 70 on a 100-point scale. There were several purposes for the research paper. The primary purpose was to develop the student's ability to investigate a nursing problem using current nursing literature. Because the nursing process is the
major focus of the nursing education program, the paper contained elements of the nursing process—assessment, planning, intervention, and evaluation. Also, the student's ability to write was evaluated by the research paper. Writing ability accounted for 20 percent of the total grade of the paper. The points awarded for the sections of the paper were not recorded separately; therefore, it is not possible to obtain the scores for writing ability.

High school rank (HSR). The admissions office at UNC-G used a converted HSR. For several of the students the HSR was available only as a rank, for example, ranked eighth in a class of 150 students. The formula used by UNC-G to convert these rankings (see Appendix C) was used to obtain the converted high school ranks.

Local option questions. Thirty-nine local option questions were answered by the 220 students (112 juniors and 108 seniors) (see Appendix D). The 39 questions consisted of some questions used by the UNC-G Office of Institutional Research in conjunction with the Myers-Briggs Type Indicator and some questions prepared by the researcher. The 39 questions were selected because of (1) previous research of some of the topics, (2) knowledge about what nursing students and nursing education programs are like, and (3) the researcher's hunch that these questions might have some relationship to students' success in nursing education as measured by grade point averages. The 39 questions related to:

1. current housing
2. number of hours currently working
3. type of high school attended
4. good fortune being due to hard work
5. good fortune being due to ability
6. good fortune being due to ease of task
7. good fortune being due to good luck
8. good fortune being due to help of others
9. bad fortune being due to not enough effort
10. bad fortune being due to insufficient ability
11. bad fortune being due to difficulty of task
12. bad fortune being due to bad luck
13. bad fortune being due to intervention of others
14. father's education
15. mother's education
16. educational plans
17. anticipated career
18. present activities
19. opinion of fraternities and sororities
20. free noncredit courses
21. big-time athletics
22. participation in athletics
23. personal philosophy of higher education
24. opinion of self as an extraverted or introverted type
25. opinion of self as a sensing or intuitive type
26. opinion of self as a thinking or feeling type
27. opinion of self as a judging or perceiving type
28. desire at UNC-G for intellectual growth
29. desire at UNC-G for social growth
30. desire at UNC-G for aesthetic and cultural growth
31. desire at UNC-G for educational growth
32. desire at UNC-G for ethical growth
33. reason for choosing nursing
34. political point of view
35. when decided to be a nurse
36. previous work experience
37. person who influenced decision to enter nursing
38. type of person considered in high school
39. reason for coming to college

The answers to these 39 categorical variables were scored by computer and printed in table form.

After the tables were studied, ten of the 39 variables were used as independent variables in the multiple regression equation. The ten variables were used because the responses of the total group showed a spread of responses that could possibly differentiate among students, and those ten variables seemed to relate to nursing students. The four to eight responses to each of the variables were condensed to two
categories. The ten variables and two categories of each that were used were:

1. number of hours currently working (< 10- >=10),
2. father's education (high school graduate or less; or more than high school graduate)
3. mother's education (high school graduate or less; or more than high school graduate)
4. personal philosophy of higher education (committed to field of study, knowledge, and intellect; or extracurricular activities, ideas, art forms, and values are important)
5. political point of view (conservative or liberal)
6. when decided to be a nurse (before high school graduation or after high school graduation)
7. previous work experience (related to nursing or not related to nursing)
8. person who influenced decision to enter nursing (parent or others)
9. type of person considered to be in high school (leader or scholar; or athlete, group member, or other)
10. reason for choosing nursing (job; or help mankind, or previous illness)

Population

The population studied in this research project was the total group of students enrolled in the nursing major at the University of North Carolina at Greensboro (UNC-G) during the fall semester of 1979 (Table 1).

Of the 112 junior students, 105 were white females, six were black females, and one was a Vietnamese female. There were no males in the junior class. Of the 114 senior students, 109 were white females, four were white males, and one was a Vietnamese female. There were no black students in the senior class. Six of the 114 seniors chose not to complete the Myers-Briggs Type Indicator and answer the local option questions. Of these six students, five were white females and one was a white male. Because of the small numbers in groups other than white
Table 1
Description of Junior and Senior Nursing Students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Junior(^a)</th>
<th>Seniors(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (total)</td>
<td>112</td>
<td>114</td>
</tr>
<tr>
<td>Age</td>
<td>19-30 (21.9)</td>
<td>20-58 (24.9)</td>
</tr>
<tr>
<td>Marital Status</td>
<td>95 single</td>
<td>89 single</td>
</tr>
<tr>
<td>Additional College Education</td>
<td>34 (1.74)</td>
<td>41 (1.88)</td>
</tr>
<tr>
<td>Research Paper Grade</td>
<td>50-99 (80.1)</td>
<td>61-100 (87.6)</td>
</tr>
<tr>
<td>SAT-M</td>
<td>310-630 (474.5)</td>
<td>295-650 (487.2)</td>
</tr>
<tr>
<td>SAT-V</td>
<td>260-710 (504.8)</td>
<td>280-670 (468.6)</td>
</tr>
<tr>
<td>Converted HSR</td>
<td>38-80 (68.5)</td>
<td>41-72 (61.7)</td>
</tr>
<tr>
<td>GPA when Entering Major</td>
<td>2.03-3.93 (2.92)</td>
<td>2.16-4.00 (3.06)</td>
</tr>
</tbody>
</table>

\(^a\)Numbers in parentheses indicate the mean of the range preceding the parentheses.

female, for the statistical analysis, each class was first considered as a separate group, and then both classes were considered as one group for the final results.

SAT scores were available for 98 of the 112 juniors. The mean SAT-Mathematics (M) score was 474.5, while the range was from 310 to 630. The mean SAT-Verbal (V) score was 504.8, while the range was from 260 to 710.

Converted HSR was available for 97 of the 112 juniors. The mean score was 68.5, while the range was from 38 to 80.
SAT scores were available for 99 of the 114 seniors. The mean SAT-M score was 487.2, while the range was from 295 to 650. The mean SAT-V score was 468.6, while the range was from 280 to 670.

Converted high school (HSR) was available for 86 of the seniors. The mean score was 61.7, while the range was from 41 to 72.

**Myers-Briggs Type Indicator (MBTI)**

The Myers-Briggs Type Indicator, an instrument used in this study, is a booklet containing 166 questions for response with no right or wrong answers to the questions. The MBTI is based on that part of C.J. Jung's theory that describes psychological types (Myers, 1962). The essence of the theory is that variations in behavior which seem random are actually consistent and orderly, when one understands differences in the ways people prefer to use their perception and judgment. There are two opposite ways of becoming aware—sensing and intuitive. There are also opposite ways ways of coming to conclusions—thinking and feeling. For each type, one of the four junctions is dominant or most preferred. The MBTI consists of four poles of preference: Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), and Judging-Perceiving (J-P). The E-I scale is presumed to measure interest in things and people or concepts and ideas; the S-N scale measures tendencies to perceive through the usual sensory processes or indirectly via the unconscious; the T-F scale measures tendencies to judge or evaluate phenomena rationally and impersonally or subjectively and personally; and the J-P scale measures the tendencies to reach conclusions about phenomena or to become aware of them (Myers, 1962).
The scales classify people into type categories or give continuous scores for each scale by arbitrarily considering one end of the scale high.

The MBTI generates 16 types, each defined by four letters which stand for the preferred poles of four preferences, E-I, S-N, T-F, or J-P. A type formula means, for example, that ENFJ, stated in full, would be a person who prefers the extraverted attitude, and shows this primarily through feeling judgments (McCaulley, 1977).

Development of the MBTI began in the early 1940's. It was published as a research instrument in 1962 by Educational Testing Service, and entered the mainstream of psychological tests with its publication in 1975 by Consulting Psychologists Press (McCaulley, 1977).

Reliability. Educational Testing Service (ETS) published a report on the intercorrelations and reliability of the MBTI scales (Stricker & Ross, 1963). The ETS report was based on a population of a total twelfth-grade high school class of 1,011 male and female students, and an entire entering freshman university class of 484 male and female students. Therefore, four groups (high school male and female and university male and female) were compared. In determining the intercorrelations, the phi coefficients for the four groups were all similar. However, all of the significant ($p < .05$) phi coefficients involved the J-P scale. Stricker and Ross (1963) found:

The J-P scale was significantly related to the S-N scale in all four groups ($\phi$'s ranged from .18 to .31), to the T-F scale in both high school groups ($\phi$'s were .13 to .14), and to the E-I scale for the university men (p. 289).
The intercorrelation results, for both types of categories and continuous scores, and for all four groups, consistently indicated that the E-I, S-N, and T-F scales were independent of each other, but that the J-P scale was significantly related to the S-N and T-F scales (Stricker & Ross, 1963).

The internal consistency reliability of the type categories was assessed by a lower-bound reliability estimate for quantitative items. It is based on the notion that a qualitative item is reliable to the extent that it is related to one or more of experimentally independent items (Stricker & Ross, 1963). The reliability coefficients ranged from .34 to .73 with the majority in the .40's and .50's. The T-F scale consistently had the lowest reliability (Stricker & Ross, 1963). Stricker and Ross also reported that the MBTI had about the same reliability as better known personality inventories, such as the Californis Psychological Inventory, the Guilford-Zimmerman Temperment Survey, the 16PF test, and the Minnesota Multiphasic Personality Inventory.

McCaulley (1977) gave correlations of the continuous scores of the four MBTI preferences with scales from other personality instruments used with medical students. Significant correlations were found between one or more of the MBTI scales and each scale of the 16PF test, Omnibus Personality Inventory, Opinion, Attitude, and Interest Survey, Allport-Vernon-Lindsey Study of Values, Rokeach Dogmatism Scale, Watson-Glazer Critical Thinking Approach, Cancer Attitude Survey, and the Medical Preference Inventory.
Collection of Data

During the fall semester of 1979, all of the 112 junior students and 108 of the 114 senior students in the UNC-G School of Nursing completed a short questionnaire including age, marital status, and the number of years of formal education after high school. The 220 students also completed the 39 local option questions and the MBTI. Prior to approaching the students about participating in the study, a proposal of the research study was approved by the Human Subjects Committee of the UNC-G School of Nursing (see Appendix E).

The two classes of students were approached separately following a regularly scheduled class. The purpose of the study (see Appendix F) was explained along with a plea for each student to volunteer approximately one hour of time to complete the materials. Approximately one-half of the students completed the materials at the first scheduled time with others participating at their convenience during the following month.

The MBTI and optional item questions were scored by computer. A one-page written explanation of their type was given to each participant, along with general oral interpretations before the end of the semester.

Most of the remaining data to be collected was available in the School of Nursing. Data collected from various records in the School of Nursing included all grades earned in the nursing major to determine total GPA, theory GPA, and clinical GPA in the major, GPA when entering the major, grade on research paper, and most of the SAT scores. The remaining SAT scores and all of the high school ranks (HSR)
were found in the office of the Registrar at UNC-G. For the small number of HSR's that had not been converted to a percentile rank, the formula for conversion was obtained from the Admissions office and the ranks were converted. With all of the data gathered and with consultation from the UNC-G Statistical Consulting Center staff, the data were prepared for the computer.

**Statistical Procedures**

The measures of success that served as dependent variables were GPA in the major, theory GPA in the major, and clinical GPA in the major. The independent variables were MBTI scales, responses to optional item questions, GPA when accepted into the major, SAT-M, SAT-V, converted HSR, grade on the research paper, age, educational background, and marital status. The statistical method used was multiple regression. Multiple regression, according to Kerlinger and Pedhazur (1973), is a general and efficient method used to explain natural phenomena by discovering and studying the relations among variables. Kerlinger and Pedhazur (1973) stated that "multiple regression is a method of analyzing the collective and separate contributions of two or more independent variables, $X_i$, to the variation of a dependent variable, $Y$" (p. 3).

For each of the three dependent variables GPA in the major, theory GPA, and clinical GPA, three types of multiple regression procedures were used; namely, forward selection, backward elimination, and stepwise regression. With both the forward selection and the stepwise regression equation equations, the level of significance was 0.50.
This level of significance was used to prevent the loss of any variable that might account for a significant proportion of the variance in the correlation coefficient, R square. All variables were included in the backward elimination procedures. All three procedures gave an F ratio, and a statistical significance level for each variable. Variables that met the 0.05 or less level of significance are reported in the results.

The procedures were carried out separately for the continuous variables and the categorical variables. The continuous variables were SAT-M, SAT-V, grade on the research paper, number of years of formal education between high school and entering the nursing major (education), GPA prior to entering the nursing major, age, HSR, and the four types of categories of the MBTI: Extraversion-Introversion (E-I), Sensing-Intuition (S-I), Thinking-Feeling (T-F), and Judging-Perceiving (J-P). The categorical variables were personal philosophy of higher education, time of decision to enter nursing, work experience, number of hours working, type of person considered in high school, mother's education, father's education, person who influenced decision to enter nursing, reason for choosing nursing, and political point of view.

The variables that accounted for the greatest amount of the variability in predicting the GPA's were again put into multiple regression formula. Hinkle, Wiersma, and Jurs (1977) stated:

The stepwise regression method is relatively complex computationally, but its rationale is quite straightforward. This procedure begins with the single predictor that seems to account for a larger portion of the variance in the criterion than any other single predictor. This variable is retained for the prediction equation. The predictor variable selected next is the one
that accounts for a larger portion of the remaining variance in the criterion than any remaining variable. The procedure continues, and at each step the variable selected is the one that accounts for the largest amount of the remaining variance in the criterion variable. The procedure terminates when the addition of another predictor no longer significantly increases the multiple R (p. 104).
CHAPTER IV
FINDINGS

Based on the results of the three multiple regression procedures for each of the dependent variables with all of the categorical and continuous variables, the five variables that had the highest correlations were put into the formula to repeat the multiple regression procedures. These five variables were GPA when entering the major, grade on research paper, high school rank (HSR), Extraversion-Introversion (E-I) scale of the Myers-Briggs Type Indicator (MBTI), and the number of years of education after high school other than the two years of required prenursing courses.

The three variables that were significant were prior GPA, grade on research paper, and the E-I scale of the MBTI. The forward selection, backward elimination, and the stepwise regression procedures were done for each of the three dependent variables: total GPA in the major, theory GPA, and clinical GPA. Because all of the significant findings were evident in each of the three procedures, only the forward selection procedure is reported. The results of the backward elimination and stepwise regression procedures are in Appendix A.

The grade on research paper accounted for 32 percent of the variability of total GPA in the major, while prior GPA added 13 percent. Both grade on research paper and prior GPA were significant at the 0.01 level (Table 2). No other variable was significant in adding to the variability of total GPA in the major.
Table 2
Forward Selection Procedure for Dependent Variable GPA Major

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade on Research Paper</td>
<td>0.3264</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Prior GPA</td>
<td>0.4575</td>
<td>0.0001*</td>
</tr>
<tr>
<td>HSR</td>
<td>0.4608</td>
<td>0.3090</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level.

The same two variables were significant in accounting for the variability in the theory GPA in the major, but in reverse order. GPA accounted for 36 percent of the variability, while grade on research paper added eight percent for a total of 44 percent of the variability. These were the only variables that were significant and both were significant at the 0.01 level (Table 3).

Prior GPA and the E-I scale of the MBTI proved significant in accounting for the variability in clinical GPA. Prior GPA accounted for only 16 percent of the variability in clinical GPA and was significant at the 0.01 level. The E-I scale of the MBTI accounted for only an additional 1.8 percent of the variability but was significant at the 0.05 level (Table 4). The students who scored higher on the Extraversion than on the Introversion scale of the MBTI had significantly higher clinical grades.
Table 3
Forward Selection Procedure for Dependent Variable GPA Theory

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior GPA</td>
<td>0.3601</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Grade on Research Paper</td>
<td>0.4397</td>
<td>0.0001*</td>
</tr>
<tr>
<td>HSR</td>
<td>0.4451</td>
<td>0.2669</td>
</tr>
<tr>
<td>E-I</td>
<td>0.4486</td>
<td>0.3098</td>
</tr>
<tr>
<td>Education</td>
<td>0.4502</td>
<td>0.4839</td>
</tr>
</tbody>
</table>

Table 4
Forward Selection Procedure for Dependent Variable GPA Clinical

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior GPA</td>
<td>0.1612</td>
<td>0.0001*</td>
</tr>
<tr>
<td>E-I</td>
<td>0.1799</td>
<td>0.0402**</td>
</tr>
<tr>
<td>Grade on Research Paper</td>
<td>0.1954</td>
<td>0.0521</td>
</tr>
<tr>
<td>HSR</td>
<td>0.1981</td>
<td>0.4475</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level.
**Significant at the 0.05 level.
CHAPTER V

DISCUSSION AND RECOMMENDATIONS

In this chapter the findings, application of these findings, and possible future research based on these findings are discussed. Following each section of the discussion, recommendations for practical application and for research are listed; however, no attempt was made to separate them. These recommendations were blended deliberately because application of research findings and future research are interrelated. Results of the use of the application of research findings could provide data for even more future research. For readers who might be interested in this study both application of research findings and suggestions for future research could be helpful.

At the conclusion of this chapter there will be a summary of conclusions, a summary of recommendations for the practical application of the findings for admissions practices, and a summary of suggestions for further research.

Myers-Briggs Type Indicator (MBTI)

Each of the four poles of preference of the MBTI—Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), and Judging-Perceiving (J-P)—were used as independent variables in the study. The 220 students in the study who took the MBTI had preferences for the four poles as follows: \( E = 55 \text{ percent} \), \( I = 45 \text{ percent} \), \( S = 70 \text{ percent} \), \( N = 30 \text{ percent} \), \( F = 83 \text{ percent} \), \( T = 17 \text{ percent} \).
percent, J = 70 percent - P = 30 percent. Therefore, the most prevalent MBTI profile in the study was Extraversion, Sensing, Feeling, and Judging (ESFJ). This finding is identical to the findings of McCaulley (1977), Myers (1967), and Reichard and Uhl (1979), who found ESFJ to be the most prevalent MBTI profile found in the sample of nursing students in their studies. Therefore, the nursing students at the UNC-G School of Nursing are similar in MBTI profiles to other nursing students included in studies throughout the nation and generalizations about nursing students can be made beyond UNC-G.

The only MBTI scale that had a significance level in predicting grade point average (GPA) in the nursing major was the E-I scale. The E-I scale was significant at the 0.05 level in predicting clinical GPA. The students who were more extraverted than introverted, according to the MBTI, had significantly higher clinical grades. This finding is particularly important in view of the fact that available literature that has used the MBTI has not previously found MBTI scales to be predictive of any type of GPA in a nursing program.

All 16 types of MBTI profiles were present in the group of students in the study (Table 5). In addition to the most prevalent type in the group being ESFJ, the second most prevalent type in the group was ISFJ. Together, the _SFJ group accounted for 43 percent of the total group. The mean GPA's of the _SFJ group compared to the mean GPA's of the other groups and to the total group were very similar (Table 5). Even though generalizations are not usually made about groups with small numbers, possibly the suggestion of McCaulley (1977) should be taken seriously. When do the rare types in a field make
Table 5
Mean Grade Point Averages of Total Group
According to Myers-Briggs Type
Indicator Profiles

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Total GPA</th>
<th>Theory GPA</th>
<th>Clinical GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESFJ</td>
<td>55</td>
<td>2.86</td>
<td>2.83</td>
<td>3.06</td>
</tr>
<tr>
<td>ENFJ</td>
<td>22</td>
<td>3.03</td>
<td>2.84</td>
<td>3.39</td>
</tr>
<tr>
<td>ESTJ</td>
<td>9</td>
<td>2.96</td>
<td>2.81</td>
<td>3.19</td>
</tr>
<tr>
<td>ENTJ</td>
<td>1</td>
<td>3.00</td>
<td>3.00</td>
<td>3.80</td>
</tr>
<tr>
<td>ESFP</td>
<td>12</td>
<td>2.91</td>
<td>2.81</td>
<td>3.24</td>
</tr>
<tr>
<td>ENFP</td>
<td>17</td>
<td>3.10</td>
<td>2.75</td>
<td>3.17</td>
</tr>
<tr>
<td>ESTP</td>
<td>3</td>
<td>2.81</td>
<td>2.46</td>
<td>3.46</td>
</tr>
<tr>
<td>ENTP</td>
<td>1</td>
<td>3.59</td>
<td>3.57</td>
<td>3.63</td>
</tr>
<tr>
<td>ISFJ</td>
<td>39</td>
<td>2.94</td>
<td>2.84</td>
<td>2.96</td>
</tr>
<tr>
<td>INFJ</td>
<td>11</td>
<td>3.08</td>
<td>2.90</td>
<td>3.30</td>
</tr>
<tr>
<td>ISTJ</td>
<td>15</td>
<td>2.81</td>
<td>2.58</td>
<td>3.14</td>
</tr>
<tr>
<td>INTJ</td>
<td>3</td>
<td>2.87</td>
<td>2.73</td>
<td>3.11</td>
</tr>
<tr>
<td>ISFP</td>
<td>18</td>
<td>2.76</td>
<td>2.96</td>
<td>3.02</td>
</tr>
<tr>
<td>INFP</td>
<td>8</td>
<td>2.73</td>
<td>2.69</td>
<td>2.84</td>
</tr>
<tr>
<td>ISTP</td>
<td>4</td>
<td>2.84</td>
<td>2.70</td>
<td>3.00</td>
</tr>
<tr>
<td>INTP</td>
<td>2</td>
<td>2.91</td>
<td>2.76</td>
<td>3.10</td>
</tr>
<tr>
<td>Total</td>
<td>220</td>
<td>2.91</td>
<td>2.80</td>
<td>3.11</td>
</tr>
</tbody>
</table>
important contributions and when are they unhappy misfits? There was only one person with the ENTJ profile and only one person with the ENTP profile in the study. No other profile category had only one student. The two students with the ENT_ profiles had higher GPA's (3.80 and 3.63 mean clinical GPA's compared to a class mean of 3.11) than the mean GPA of any other group (Table 5).

With the exception of the _SFJ group, the other groups were relatively small in number. With a larger group, statistical significance might be found between the groups.

Hengstler et al. (1981) found a mean GPA of 2.178 for _STP types, compared to a mean GPA of 3.03 for _NTP types in the college in general but the difference was not significant when applied to the School of Nursing. There were only seven _STP types and three _NTP types in this study (Table 5). The mean GPA's are very similar with the mean clinical GPA being identical in the _NTP group and the _STP group. However, the numbers are too small to consider statistically. A small number of _STP's and _NTP's could possibly have been the reason for the Hengstler et al. (1981) study not having significant

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Total GPA</th>
<th>Theory GPA</th>
<th>Clinical GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>_SFJ</td>
<td>94</td>
<td>2.88</td>
<td>2.78</td>
<td>3.05</td>
</tr>
<tr>
<td>_SFP</td>
<td>30</td>
<td>2.82</td>
<td>2.90</td>
<td>3.11</td>
</tr>
<tr>
<td>_STP</td>
<td>7</td>
<td>2.83</td>
<td>2.61</td>
<td>3.21</td>
</tr>
<tr>
<td>_NTP</td>
<td>4</td>
<td>2.35</td>
<td>3.12</td>
<td>3.21</td>
</tr>
</tbody>
</table>
findings in the School of Nursing. Possibly the _STP and _NTP types are found in the college in general, but are not attracted to nursing.

Since their participation in the study in the fall of 1979, five students have withdrawn, one senior and four juniors. The profiles of these five students showed no particular pattern, however. The sample was too small to find significant differences. A large group of withdrawals, as in the Myers (1967) study, might show a trend of certain types of students withdrawing for academic reasons and another type withdrawing for personal reasons, especially a dislike for nursing.

With the exception of the E-I scale predicting clinical GPA, the MBTI did not give clear answers related to the type of student that succeeds or does not succeed in the UNC-G School of Nursing. However, the use of the MBTI did validate that the most common type of profile in the School of Nursing was ESFJ. This finding was important in that it was the same finding as the most prevalent type found in nursing programs by McCaulley (1977), Myers (1967), and Reichard and Uhl (1979). Now generalizations about MBTI types and nursing students could be made beyond the UNC-G School of Nursing.

**Recommendation.** Based on the literature that has used the MBTI in research studies, and based on the findings of this study, the MBTI has potential use for recruiting, selecting, and retaining nursing students in a nursing program. Long-range research, giving the MBTI on admission to the university, and to prospective students before admission to the nursing major, would develop profiles that could be studied in relation to the students' choice of major, acceptance or nonacceptance into the nursing major, GPA's in the major, state board examination scores, and possibly job satisfaction or competence.
It is reasonable to believe that a student who was more extraverted than introverted would have better clinical skills and perform better with patients and co-workers in a clinical setting. Therefore, the significant E-I finding related to clinical GPA in nursing should be investigated with further research.

Three reasons emerged that document a need to conduct longitudinal research to follow the nursing students after graduation to study the relationship between the MBTI profiles of the graduates and their job competence or satisfaction. (1) Adderly and Brock (1977) and other nursing educators believe that the quality of a nurse is better determined in the clinical rather than theory courses. (2) The intellective factor (prior GPA) accounted for only 16 percent of the variability of the clinical GPA, while intellective factors accounted for 46 percent and 45 percent of the variability in the total GPA and theory GPA respectively. (3) The Extraversion-Introversion (E-I) scale of the MBTI was significant in predicting clinical GPA even though the E-I scale added only 1.8 percent to the variability of the clinical GPA. The E-I scale of the MBTI was the only nonintellective variable that was significant in predicting clinical GPA. Consequently, there are other unknown factors that account for the remaining 82 percent of the variability, or 82 percent of the reasons why students succeed in clinical nursing. It is difficult to speculate about what accounts for the remaining 82 percent of the variability in clinical nursing. Possibilities might include factors related to how a student is perceived by the evaluator. Examples of factors that could affect how one is perceived are motivation, self-concept, mannerisms, and
interpersonal relationship skills. These factors may account for part of the variability in clinical grade prediction.

Because the clinical grades in nursing relate more to the performance of nursing than do the theory grades, those factors that affect clinical performance as a student would also affect clinical performance as a graduate. Therefore, longitudinal research using the MBTI might tap those variables that differentiate the most "successful" graduates in clinical practice.

**Previous College Grade Point Average**

The most significant predictor of the three dependent variables found in the study—total GPA in the major, theory GPA, and clinical GPA in the major—was prior college GPA. This finding agreed with the work of Burgiss and Duffy (1969), Lewis and Welch (1965), Litherland (1966), Michael et al. (1966), Reed (1973), Stronk (1979), and Tillinghast and Morris (1968), who found previous GPA to be the single most significant predictor of success in nursing programs studied by them. Because of the history of the significance of this finding, it was the one expected significant finding in this study.

The fact that prior GPA was found to be the best single predictor of academic success in nursing programs is related to the current practice in many baccalaureate schools of nursing of selection of students into the nursing major based primarily on prior college GPA. UNC-G School of Nursing presently selects students into the nursing major primarily based on previous college GPA.
All of the students in this study had been preselected twice. Each student had been accepted at the University of North Carolina at Greensboro. The two criterion measures used primarily for admission to UNC-G are high school rank (HSR) and SAT scores. Students are accepted into the nursing major after completing two years of prerequisite courses. The admission criteria for the School of Nursing includes a minimum GPA on prerequisite courses of 2.0 ('C' average), a grade of 'C' or higher on five specific prerequisite courses, and recommendations from the faculty who teach the prospective students in a prenursing course. Since 1976 there have been more students who met the criteria for admission to the nursing major than could be accepted into the major. Therefore, the selection of students from the group that met the criteria was made primarily from those students with the highest GPA on the prerequisite courses.

There is the possibility that the students who met the criteria for admission to the nursing major but were not accepted into the major because they were the ones in the group with the lowest GPA on prerequisite courses, may have been students with a special vocation for nursing as described by Myers (1962). Myers described the Sensing, Feeling, and Judging (SFJ) types as defined by the MBTI as having a specific aptitude for nursing, but having lower IQ and SAT scores than other types in nursing. Therefore, when schools of nursing raise their cut-off point on scholastic measures, they may exclude the types with a special aptitude for nursing (Myers, 1962). Students must make a 'C' or better grade on each course in the nursing major to remain in the major.
The type described by Myers (1962) as having a specific aptitude for nursing was the most prevalent type, 43 percent, found in the UNC-G School of Nursing population (SFJ). However, the total mean GPA of the students who were SFJ types was 2.88, while the total group's mean GPA was 2.91. No real differences by group seemed apparent. Data on profiles of the students who were not accepted into the major were not available.

**Recommendations.** Because previous college grade point average (GPA) has been found in the literature to be one of the best predictors of success in an upper division baccalaureate program, and because prior college GPA was the most significant predictor of total GPA, theory GPA, and clinical GPA in nursing in this study, two recommendations can be made: (1) Previous college GPA should continue to be used as a selection criterion for admission into an upper division baccalaureate nursing program. As other variables are proven significantly useful in predicting either GPA or other measures of suitability in a baccalaureate nursing program, these variables should be considered along with prior college GPA in selecting students. (2) Investigation of prior college GPA in relation to success in nursing education programs should be continued to determine the continued effectiveness of this variable both when used alone and when used with other admission criteria.

**Research Paper Grade**

The second variable that significantly predicted total GPA and theory GPA in the major was a grade on a research paper written during
the first semester in the nursing major. The combination of the two variables, prior college GPA and grade on the research paper (the only two significant predictors of total GPA and theory GPA in the UNC-G School of Nursing), is related to the study of Stronk (1979) who found previous GPA and narrative skills to be the only significant predictors of success in the upper division courses of a baccalaureate nursing program. Stronk (1979) investigated success as measured by GPA in the nursing program in an upper-level baccalaureate nursing program. That sample was different from the UNC-G population in that the students came to the upper division baccalaureate program from four different programs where they received the two years of prerequisite courses. The criteria used for admission were prior college GPA, narrative skills based upon a short essay of the candidate's professional goals and attitudes written on the day of the interview, letters of recommendation, an interview, and involvement in activities. Stronk (1979) discussed the process of getting interrater reliability for evaluating the essays, but did not share the components that were considered important.

Whether or not the actual writing skills and the thought process (ideas, organization, etc.) were evaluated as two separate components is not known. The grade on the research paper used in this study was based upon the thought process (research, organization, etc.) being evaluated as 80 percent of the grade and the actual writing skills (sentence structure, grammar, form, etc.) worth 20 percent.

The grade on the research paper significantly predicted both total and theory GPA's in the major. The theory course grades are derived almost entirely from multiple-choice questions. The major
exception is that the research paper grade accounts for 20 percent of the grade for one theory course. A large amount of writing is required in the clinical nursing courses and the content of that writing influences the clinical grade. Ironically, the grade on the research paper predicted the GPA in courses that did not require actual writing skills and was not significant in predicting the GPA in courses that did require writing skills.

Burkett (1971) also proved that narrative skills written as a part of a university's admission criteria correlated well with performance in the professional college. Even though the Burkett (1971) study did not include nursing education, it was the only study located other than Stronk (1977) that studied narrative skills as a variable to predict academic success, but the studies that did use narrative skills had significant findings.

Recommendations. Both studies in the review of literature that used narrative skills as a variable to predict college GPA (Burkett, 1971) and nursing GPA (Stronk, 1979) found narrative skills to significantly predict GPA. Narrative skills as measured by a grade on a nursing research paper significantly predicted both total GPA and theory GPA in the nursing major in this study. It is recommended that research using narrative skills to predict GPA should definitely continue. One possible type of research would be to obtain some measure of narrative skills prior to admission, as in the Stronk (1979) study. This would not only give data on selected and nonselected students for research, but could also serve as an admission criterion after sufficient research was done. Also, the research paper at UNC-G School of
Nursing should be continued, with separate grades kept for the specific writing skills for research purposes. Furthermore, the narrative skills should be incorporated as one variable in long-range research to predict GPA in the nursing major.

Implications of the Findings

Prior college grade point average. The fact that prior college GPA was significant in predicting total GPA in the nursing major, theory GPA, and clinical GPA, not only supports other similar findings in the literature, but it supports the current practice of schools of nursing that are using prior college GPA either primarily or entirely as an admission criterion into the nursing major. Both faculty in schools of nursing and prospective students must realize that the grades the student earns during the first two years of college are still the best criterion for determining the grades they will earn during the last two years of college, during the nursing major. Faculty members of schools of nursing should be sure that they have current research of the predictive validity of their own admission criteria. Significant findings in one school of nursing might not apply to another school.

Even though prior college GPA was the best predictor of GPA in the school of nursing in this study, it accounted for approximately one-third of the variability. Other predictive criteria should continuously be investigated.

Grade on research paper. The significant finding that the grade on a research paper predicted both total and theory GPA in the major is exciting and is a fairly new finding in the literature. This finding
opens doors for continued investigation of narrative skills as a predictor of success in nursing, other upper division majors, and college in general.

Myers-Briggs Type Indicator (MBTI). The finding of the E-I scale of the MBTI predicting clinical GPA in nursing is believed to be unique; the first scale of the MBTI to predict a GPA in nursing. Since the MBTI was published in 1975, many interesting findings have been reported. The research with the MBTI prior to 1975 was primarily for validation of the instrument and identification of types in various vocations.

If the MBTI were completed by prospective students prior to admission into the nursing major, data would be available to study selected and nonselected students for a wider range of variables. Also, long-range research with the MBTI would produce a large enough sample so that, perhaps, sufficient numbers would be identified by each type for statistical study.

Because the qualities needed by a nursing student in clinical practice are the qualities needed in clinical practice as a graduate, the MBTI could possibly be used to study graduates.

These findings are important to the UNC-G School of Nursing as they relate to admission criteria and to further continuous research, to other schools of nursing, to the UNC-G Office of Institutional Research where continuous research is being done to find the best predictors of college GPA and where the MBTI is being used, and to other researchers.
Limitations of the Study

No answer was found for the question of how to define success in nursing, other than GPA. In reality nursing students define success in nursing education in two phases—getting into the program and getting out of the program. The data included in this study were related to progressing through the major, or getting out of the program. While grades are important, all students who make a 'C' or better grade on each course in the UNC-G School of Nursing graduate unless they choose to withdraw. Nonintellective data on the students prior to admission would give material with which to better investigate characteristics of accepted versus nonaccepted students.

Even though the junior students had completed only one-fourth of the major and the senior students had completed three-fourths of the major, visualization of the mean GPA's of each group showed little differences, and no differences were found between the independent and dependent variables for the classes when the data were first investigated by class. However, success in nursing education implies the entire program and findings might have been similar or different if the study had included only students who had completed the nursing major. Longitudinal research would answer these questions.

Research problems encountered were few. A time-consuming problem was that of getting the second half of the nursing students to take the MBTI and answer the local option questions. They were reminded again and again. Because it took an hour of their time they did not readily volunteer. Six senior students did not complete the MBTI and local option questions. Also, because of the time involved, the question of whether each student took the MBTI seriously is forever present.
A second time-consuming task was finding the SAT scores that were not available in the School of Nursing and all of the high school ranks (HSR) in the Registrar's office. A research problem was the fact that all of the SAT scores and HSRs were not available.

A procedural problem encountered was that after all of the data had been processed and the printout sheets investigated, the realization was made that two independent variables had been omitted. The two variables were education and grade on the research paper. Both variables had been key punched, so the data were processed again to include those two variables.

Statement of Conclusions

Firm conclusions were not reached in this study. The review of literature and findings of this study gave evidence leading to the following conclusions:

1. Prior grade point average (GPA) remains the best single predictor of success in a school of nursing.

2. Writing skills as measured by a nursing research paper or by a short essay (Stronk, 1979) show evidence of predicting total and theory GPA in a school of nursing.

3. The use of the Myers-Briggs Type Indicator (MBTI) has shown that the most typical profile of the nursing student, as measured by the MBTI, is Extraversion, Sensing, Feeling, and Judging (ESFJ).

4. The Extraversion-Introversion (E-I) scale of the MBTI has shown a slight tendency toward predicting clinical GPA in nursing.
Summary of Recommendations for Admission

Practices in Schools of Nursing

1. Schools of nursing should continue to use prior GPA as a predictor of success in nursing education until other predictive measures are proven more effective.

2. Schools of nursing should require the nursing students to write a formal paper both in the major and prior to admission to the major. Based on the finding that the grade on the research paper was significant in predicting both total and theory GPA in the nursing major, it is assumed that some of the qualities of a nursing student that are evaluated in theory courses are possibly evident in their writing ability. Also, the written information both prior to admission and during the nursing major could serve as data for future research.

Summary of Recommendations for Research

1. Schools of nursing should design continuous research to keep current the validation of the factors being used as admission criteria. The question to address is, does prior GPA remain the best indicator of success in nursing education?

2. Both colleges and upper division major departments of colleges should investigate the use of narrative skills as a predictor of GPA in general college or
in certain majors. The research should investigate narrative skills as evaluated by (1) the conceptualization of ideas, the processing of information, and content in general; (2) the actual writing skills; and (3) by the combination of both (1) and (2).

3. Studies are needed to determine the relationship between narrative skills and (1) acceptance or non-acceptance into a college, university, or an upper division major; (2) total, theory, and clinical GPA's in a nursing major; (3) dropout in nursing; (4) State Board of Nursing scores; and (5) job success in nursing or in another field, like teaching, after graduation.

4. Research should be designed to use the MBTI to determine (1) possible relationships between the various MBTI profiles and choice of college major; (2) acceptance or nonacceptance into a major; (3) grade point averages in college in general and in the various majors, especially clinical GPA in nursing; (4) examination of nursing dropouts for academic reasons, separate from other reasons for dropout; (5) scores on the State Board of Nursing Examination; and (6) job success after graduation, especially in people-to-people vocations, like nursing.

5. Longitudinal research is needed to determine the relationship between MBTI profile types of nursing students and (1) clinical and theory grades, and (2) job success. Special attention should be given to the most
prevalent MBTI profile type in nursing programs, Extraversion, Sensing, Feeling, Judging (ESFJ), and to rare MBTI profile types in nursing like Extraversion, Intuition, Thinking, Perceiving, (ENTP), Extraversion, Intuition, Thinking, Judging, (ENTJ), and Sensing, Thinking, Perceiving, (_STP).

6. Because this research accounted for only 46 percent of the variability of total GPA, 45 percent of the variability of theory GPA, and 18 percent of the variability of clinical GPA, further research exploring any and all possible factors that might predict success in nursing education should be conducted. Two factors that may explain some of the unknown variability are the impressions people make and the factors that influence those impressions. More research using observational data to evaluate the impressions people make and the reasons for those impressions is needed.
CHAPTER VI
SUMMARY

An exploratory study was conducted using the undergraduate students at the University of North Carolina at Greensboro (UNC-G) School of Nursing during the fall of 1979 to investigate factors that affected success in nursing education. The review of literature gave evidence that prior grade point average, SAT scores, and high school rank had been the best intellective factors to predict college and upper division major GPA's. No direction was given regarding nonintellective factors that predict either college or upper division major GPA. Research studies that had used the Myers-Briggs Type Indicator (MBTI) had shown that people with certain MBTI type of profiles tended to choose similar vocations. Research had not been conducted to determine whether people with the typical MBTI profile for that vocation did better or worse in that vocation. The most prevalent MBTI profile in groups of nursing students was Extraversion, Sensing, Feeling, and Judging (ESFJ). (McCaulley, 1979; Myers, 1967; Reichard & Uhl, 1979).

The three criteria of success that were used as dependent variables were total GPA in the nursing major, theory GPA in the nursing major, and clinical GPA in the nursing major. The independent variables were age, marital status, education, grade on a research paper, SAT scores, high school rank, college GPA when entering the major, profiles from the MBTI, and answers to the local option questions. This was a
population study as all of the 112 junior students participated, and
108 of the 114 seniors participated. Since all of the students who
participated in the study were enrolled in the nursing major, the study
discriminated between students who had already been selected twice,
once into the university and again into the nursing major.

Multiple regression was the statistical procedure used. Three
procedures, forward selection, backward elimination, and stepwise
regression were used to prevent the loss of any variable that might
add to the prediction of either of the GPA's in the major.

Three of the independent variables were found to have significant
predictive validity. Previous college GPA and grade on the research
paper were both significant in predicting total GPA in the major and
theory GPA in the major. Previous college GPA and the Extraversion-
Introversion (E-I) scale of the MBTI were significant in predicting
clinical GPA. Those students who were more extraverted than intro-
verted on the MBTI scale had significantly higher clinical GPA's.

The fact that previous GPA was significant in predicting total,
theory, and clinical GPA's in the nursing major was not surprising.
The literature validates the use of prior GPA as a predictor of GPA
in college in general and in nursing programs. Also, prior college
GPA was the primary criterion used to determine acceptance or non-
acceptance into the nursing major for all of the students who partici-
pated in this study. The most surprising finding was the prediction
of both total and theory GPA's in the major by the grade on the research
paper. The grade on the research paper did not significantly predict
clinical GPA. This is because the theory courses require little or
no written work while the clinical courses require considerable written work.

Even though the E-I scale of the MBTI was significant at the .05 level in predicting clinical GPA, it accounted for only an additional 1.8 percent of the variability. It is reasonable to expect that a student who was more extraverted than introverted on the MBTI scale would have better interpersonal relationship skills and, therefore, perform better in a people-to-people vocation like nursing.

Suggestions for further research were presented and implications of the findings for admission procedures in schools of nursing were discussed.

A disappointing result of this research was that none of the factors from the local option questions that appeared at face value to relate to nursing and possible success in nursing education produced significant findings.
BIBLIOGRAPHY


Fisherman, J.A. Some social-psychological theory for selecting and
guiding college students. In S. Nevitt (Ed.), The American
college: A psychological and social interpretation of the higher

Gerstein, A. Development of a selection program for nursing candidates. 
Nursing Research, 1965, 14, 254-257.

Getzels, J.W., & Jackson, P.W. The teacher's personality and character­
istics. In N.L. Gage (Ed.), Handbook of research on teaching. 

Graduate Record Examination Board Newsletter, 1972, 12, 1-23.

at the meeting of the American Education Research Association, 
Minneapolis, Minnesota, March 1970.


Haberman, M. Twenty-three reasons universities can't educate teachers. 
Journal of Teacher Education, 1971, 12, 133-140.

Haglund, A. An economic model for selective admissions. Nursing 

Hengstler, D., Reichard, D.J., Uhl, N.P., & Goldman, B. Prediction of 
academic success with the Myers-Briggs Type Indicator. 
Unpublished Manuscript, University of North Carolina at 
Greensboro, 1981.

Henney, M., & Mortenson, W.P. What makes a good elementary school 

Hinkle, D.E., Wiersma, W., & Jurs, S.G. Applied statistics for the 

Jackson, R.A. The selection of students in chemistry by means of 
discriminant function analysis. Journal of Experimental Educa­

Johnson, R.W., & Leonard, L.C. Psychological test characteristics and 
performance of nursing students. Nursing Research, 1970, 19, 
147-150.

Jones, C.W. Why associate degree nursing students persist. Nursing 
Research, 1975, 24, 57-59.


McCaulley, M.H. Personality variables: Model profiles that characterize various fields of science. Paper presented at the annual meeting of the American Association for the Advancement of Science, Boston, Massachusetts, February 1976.


Stein, R.E., & Green, E.J. Graduate Record Examination as predictive potential in the nursing major. Nursing Research, 1970, 19, 42-47.


Tillinghast, B.S., Jr., & Norris, B. Let's examine the relation of selected admission variables to student achievement. Nursing Outlook, 1968, 16, 58.

Thomas, B. Prediction of success in a graduate nursing service administration program. Nursing Research, 1974, 23, 156-159.


### Table 6

**Backward Elimination Procedure for Dependent Variable GPA Major**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Variables Entered</td>
<td>0.4614</td>
<td></td>
</tr>
<tr>
<td>E-I Removed</td>
<td>0.4614</td>
<td>0.9440</td>
</tr>
<tr>
<td>Education Removed</td>
<td>0.4608</td>
<td>0.6842</td>
</tr>
<tr>
<td>HSR Removed</td>
<td>0.4575</td>
<td>0.2913</td>
</tr>
<tr>
<td>Prior GPA**</td>
<td></td>
<td>0.0001*</td>
</tr>
<tr>
<td>Grade on Research Paper**</td>
<td>0.3264</td>
<td>0.0001*</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
**Remained in the model. Together accounted for 0.3264 of the 'R'.

### Table 7

**Stepwise Regression Procedure for Dependent Variable GPA Major**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade on Research Paper</td>
<td>0.3264</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Prior GPA</td>
<td>0.4575</td>
<td>0.0001*</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
No other variables met the 0.5000 significance level for entry into the model.
Table 8
Backward Elimination Procedure for Dependent Variable GPA Theory

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Variables Entered</td>
<td>0.4502</td>
<td></td>
</tr>
<tr>
<td>Education Removed</td>
<td>0.4486</td>
<td>0.4839</td>
</tr>
<tr>
<td>E-I Removed</td>
<td>0.4451</td>
<td>0.3098</td>
</tr>
<tr>
<td>HSR Removed</td>
<td>0.4397</td>
<td>0.2669</td>
</tr>
<tr>
<td>Grade on Research Paper**</td>
<td></td>
<td>0.0001*</td>
</tr>
<tr>
<td>Prior GPA**</td>
<td>0.3601</td>
<td>0.0001*</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
**Remained in the model. Together accounted for 0.3601 of the 'R'.

Table 9
Stepwise Regression Procedure for Dependent Variable GPA Theory

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior GPA</td>
<td>0.3601</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Grade on Research Paper</td>
<td>0.4397</td>
<td>0.0001*</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
No other variable met 0.5000 significance level for entry into the model.
Table 10
Backward Elimination Procedure for
Dependent Variable GPA Clinical

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Variables Entered</td>
<td>0.1984</td>
<td></td>
</tr>
<tr>
<td>Education Removed</td>
<td>0.1981</td>
<td>0.8115</td>
</tr>
<tr>
<td>HSR Removed</td>
<td>0.1954</td>
<td>0.4688</td>
</tr>
<tr>
<td>Grade on Research Paper</td>
<td>0.1799</td>
<td>0.0561</td>
</tr>
<tr>
<td>E-I***</td>
<td></td>
<td>0.0503**</td>
</tr>
<tr>
<td>Prior GPA***</td>
<td>0.1612</td>
<td>0.0001*</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
**Significant at the 0.05 level
***Remained in the model. Together accounted for 0.1612 of the 'R'.

Table 11
Stepwise Regression Procedure for
Dependent Variable GPA Clinical

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>'R' Square</th>
<th>Probable F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior GPA</td>
<td>0.1612</td>
<td>0.0001*</td>
</tr>
<tr>
<td>E-I</td>
<td>0.1799</td>
<td>0.0448**</td>
</tr>
<tr>
<td>Grade on Research Paper</td>
<td>0.1954</td>
<td>0.0720</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level
**Significant at the 0.05 level
APPENDIX B

OBJECTIVES AND EVALUATION TOOL
At the completion of the course it is expected that the student will have met the following objectives at a level commensurate with theory base.

**1. Collect data using one or more of the following sources:**
   - A. nursing history
   - B. physical assessment
   - C. laboratory data
   - D. direct observation
   - E. medical data

**2. Identify needs that:**
   - A. evolve from the data base
   - B. can be met by nursing actions

**3. Develop a nursing plan to meet the identified needs that are:**
   - A. based on priorities identified
   - B. documented with current literature

4. Implement the plan of action.

   **A. Perform nursing procedures and skills consistent with:**
      1. scientific principles
      2. hospital procedure or policy

   **B. Use language that the patient and family understand.**

   **C. Evaluate effects of communication with the**
      1. patient
      2. family
      3. staff
D. Take action to prevent or correct environmental or physical hazards to the
   1. patient
   2. visitors
   3. staff

E. Give health information to patient and family based on assessed needs.

*F. Avoid putting patient in physical or emotional danger.

G. Identify discharge planning needs.

H. Complete discharge summary forms.

*I. Communicate findings to other members of the health team using
   1. verbal report
   2. written records
   3. clinical conferences

5. Evaluate nursing action in relation to:
   A. stated goals
   B. patient response

*6. Assume responsibility for learning:
   A. prepare for clinical assignment
   B. seek learning experiences
   C. participate in clinical conferences
   D. consult faculty appropriately

*7. Complete the Expanded Family Experience according to guidelines.

*In order to pass this course these objectives are critical. Any one of these critical objectives not met will result in the failure of this course. Refer to "Guidelines for Clinical Grading" regarding determination of course grade.
Nursing Research Paper

Nursing 321

I. Purpose: To expand knowledge related to an identified topic.

II. Objectives:
   A. Describe an identified topic (define and give an overview).
   B. Define the physiological implications of the identified topic.
   C. Define the psychological implications of the identified topic.
   D. Relate the physiological and psychological implications to an actual situation: patient, family, friends, self.
   E. Demonstrate use of current professional literature.
   F. Demonstrate skills in writing a formal paper.

III. Methodology:
   A. Select a topic from the list. (See Section VII)
   B. Write a formal paper which meets the cited objectives.
   C. Use a minimum of six literary sources to include:
      1. at least one original research reference.
      2. at least four nursing articles.
      3. a maximum of two text references. (These texts must be other than those assigned as course texts for N. 211, 301, and 321.)
   D. You are encouraged to use faculty as resources during preparation of this paper.

IV. Form:
   A. The paper should be a maximum of ten (10) double-spaced typed pages, exclusive of footnotes and bibliography.
   B. Your name should be on the title page only. The title is to be on the first page of the paper.
   C. Footnotes may be placed on one sheet at the end of the body of the paper.
D. Use Kate Turabian, *A Manual for Writers of Term Papers, Theses, and Dissertations* (Chicago: The University of Chicago Press, 1973), for guidance with writing style and form.

V. Evaluation:

A. Each objective will be allotted the following number of points:

- Objective A - 10 points
- Objective B - 15 points
- Objective C - 15 points
- Objective D - 20 points
- Objective E - 20 points
- Objective F - 20 points

1. Organization: logical orderly structure - 5 points
2. Form: footnotes and bibliography - 5 points
3. Presentation: sentence structure, spelling, grammar - 10 points

B. The Nursing Research Paper will represent 20 percent of the final N. 321 grade.

C. Papers are graded anonymously. Those receiving very high and very low grades will be evaluated by a second reader.

VI. Date Due:

A. The paper is due November 25, 1980.

B. The grade will be lowered one letter grade for each day late.

VII. Suggested List of Topics:

- Pain
- Sensory deprivation
- Nutritional status
- Immobility
- Anxiety
- Fear
- Body image
- Stress
- Separation
- Rest and sleep
- State of hydration
- Comfort
- Hygiene
- Safety
- Sexuality
- Elimination
- Self-esteem
- Grief
- Bonding
- Parenting
APPENDIX D

CONVERSION OF HIGH SCHOOL RANK IN CLASS

TO STANDARD SCORE SCALE
Conversion of High School Rank in Class to Standard Score Scale

Rank in class has frequently been found to be a better predictor of grades in college than the high school average. The following presents formulas and tables for converting the rank in class to a standard score scale for use in prediction formulas.

STEP 1. Obtaining the Inverted Percentile Rank.

Double the applicant's rank-in-class and subtract one. Divide this number by twice the applicant's size of class. The resulting quotient is the applicant's inverted percentile rank.

STEP 2. Obtaining the Converted Rank.

Find the converted rank which corresponds to this inverted percentile rank from the table below.

<table>
<thead>
<tr>
<th>Inverted Percentile Rank</th>
<th>Converted Rank</th>
<th>Inverted Percentile Rank</th>
<th>Converted Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0000 - .0016</td>
<td>80</td>
<td>.4802 - .5198</td>
<td>50</td>
</tr>
<tr>
<td>.0017 - .0022</td>
<td>79</td>
<td>.5199 - .5595</td>
<td>49</td>
</tr>
<tr>
<td>.0023 - .0030</td>
<td>78</td>
<td>.5596 - .5986</td>
<td>48</td>
</tr>
<tr>
<td>.0031 - .0040</td>
<td>77</td>
<td>.5987 - .6367</td>
<td>47</td>
</tr>
<tr>
<td>.0041 - .0054</td>
<td>76</td>
<td>.6368 - .6735</td>
<td>46</td>
</tr>
<tr>
<td>.0055 - .0071</td>
<td>75</td>
<td>.6736 - .7087</td>
<td>45</td>
</tr>
<tr>
<td>.0072 - .0094</td>
<td>74</td>
<td>.7088 - .7421</td>
<td>44</td>
</tr>
<tr>
<td>.0095 - .0122</td>
<td>73</td>
<td>.7422 - .7733</td>
<td>43</td>
</tr>
<tr>
<td>.0123 - .0158</td>
<td>72</td>
<td>.7734 - .8022</td>
<td>42</td>
</tr>
<tr>
<td>.0159 - .0202</td>
<td>71</td>
<td>.8023 - .8288</td>
<td>41</td>
</tr>
<tr>
<td>.0203 - .0256</td>
<td>70</td>
<td>.8289 - .8530</td>
<td>40</td>
</tr>
<tr>
<td>.0257 - .0322</td>
<td>69</td>
<td>.8531 - .8748</td>
<td>39</td>
</tr>
<tr>
<td>.0323 - .0401</td>
<td>68</td>
<td>.8749 - .8943</td>
<td>38</td>
</tr>
<tr>
<td>.0402 - .0495</td>
<td>67</td>
<td>.8944 - .9114</td>
<td>37</td>
</tr>
<tr>
<td>.0496 - .0606</td>
<td>66</td>
<td>.9115 - .9264</td>
<td>36</td>
</tr>
<tr>
<td>.0607 - .0735</td>
<td>65</td>
<td>.9265 - .9393</td>
<td>35</td>
</tr>
<tr>
<td>.0736 - .0885</td>
<td>64</td>
<td>.9394 - .9504</td>
<td>34</td>
</tr>
<tr>
<td>.0886 - .1056</td>
<td>63</td>
<td>.9505 - .9598</td>
<td>33</td>
</tr>
<tr>
<td>.1057 - .1251</td>
<td>62</td>
<td>.9599 - .9677</td>
<td>32</td>
</tr>
<tr>
<td>.1252 - .1469</td>
<td>61</td>
<td>.9678 - .9743</td>
<td>31</td>
</tr>
<tr>
<td>.1470 - .1711</td>
<td>60</td>
<td>.9744 - .9797</td>
<td>30</td>
</tr>
<tr>
<td>.1712 - .1977</td>
<td>59</td>
<td>.9798 - .9841</td>
<td>29</td>
</tr>
<tr>
<td>.1978 - .2266</td>
<td>58</td>
<td>.9842 - .9877</td>
<td>28</td>
</tr>
<tr>
<td>.2267 - .2578</td>
<td>57</td>
<td>.9878 - .9905</td>
<td>27</td>
</tr>
<tr>
<td>.2579 - .2912</td>
<td>56</td>
<td>.9906 - .9928</td>
<td>26</td>
</tr>
<tr>
<td>Inverted Percentile Rank</td>
<td>Converted Rank</td>
<td>Inverted Percentile Rank</td>
<td>Converted Rank</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------</td>
<td>--------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>.2913 - .3264</td>
<td>55</td>
<td>.9929 - .9945</td>
<td>25</td>
</tr>
<tr>
<td>.3265 - .3632</td>
<td>54</td>
<td>.9946 - .9959</td>
<td>24</td>
</tr>
<tr>
<td>.3633 - .4013</td>
<td>53</td>
<td>.9960 - .9969</td>
<td>23</td>
</tr>
<tr>
<td>.4014 - .4404</td>
<td>52</td>
<td>.9970 - .9977</td>
<td>22</td>
</tr>
<tr>
<td>.4405 - .4801</td>
<td>51</td>
<td>.9978 - .9983</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.9984 - 1.000</td>
<td>20</td>
</tr>
</tbody>
</table>
APPENDIX E

LOCAL OPTION QUESTIONS
Local Option Questions

Please answer these questions in the space provided for the thirty-nine local option items at the end of answer sheet number 3. DO NOT MARK ON THE QUESTIONNAIRE SHEET. Please mark only one response for each question on your answer sheet.

Background Information

1. Which of the following best describes where you will be living this semester?

   a. with parents
   b. rented apartment
   c. rented house
   d. rented room
   e. own home
   f. with relatives other than parents
   g. university residence hall
   h. other

2. On the average, how many hours per week do you anticipate spending in part-time work this term?

   a. none
   b. less than six
   c. six to ten
   d. 11 to 15
   e. 16 to 20
   f. 21 to 25
   g. 26 to 30
   h. more than 30

3. Indicate the type of high school you attended for the longest period of time.

   a. only black students enrolled
   b. predominantly black
   c. racially mixed
   d. predominantly white
   e. only white students enrolled

Think of some specific achievement related to your past school (such as a good grade or entry into National Honor Society) and mark your answer sheet with the appropriate number indicating how you feel about that experience.
4. To what extent was this due to your hard work? 1 2 3 4 5
5. To your ability? 1 2 3 4 5
6. To the ease of the task? 1 2 3 4 5
7. To good luck? 1 2 3 4 5
8. To the help of others? 1 2 3 4 5

Think of some particular failure related to your past school experience (such as doing poorly in a course) and answer the following questions about how you feel regarding that experience.

9. To what extent was this due to not enough effort on your part? 1 2 3 4 5
10. To the intervention of others? 1 2 3 4 5
11. To the fact that the task was too difficult? 1 2 3 4 5
12. To bad luck? 1 2 3 4 5
13. To insufficient ability? 1 2 3 4 5
14. What is the highest level of education obtained by your father?
   a. grades 1-8
   b. some high school
   c. high school graduate
   d. less than two years of post-high school trade, technical or vocational training
   e. two year associate, vocational or liberal arts degree
   f. some college
   g. bachelor’s degree
   h. advanced degree beyond bachelor's
   i. don't know
15. What is the highest level of education obtained by your mother?
   a. grades 1-8
   b. some high school
   c. high school graduate
   d. less than two years of post-high school trade, technical or vocational training
   e. two year associate, vocational or liberal arts degree
   f. some college
   g. bachelor's degree
   h. advanced degree beyond bachelor's degree
   i. don't know

Expectations and Attitudes

16. What are your present educational plans?
   a. I expect to be continuously enrolled at UNC-G until I obtain a degree
   b. I expect to graduate from UNC-G but I may "stop-out" for a time before I obtain a degree
   c. I do not plan to complete a degree at any college or university
   d. I expect to transfer to another institution because of my major
   e. I expect that I may transfer to another college or university later for reasons other than my major (financial, personal, social, etc.)

17. What kind of a relationship do you think might exist between your present or intended academic major and your anticipated career?
   a. I expect my present academic major to lead directly into a lifetime career
   b. I expect my ultimate academic major to lead directly into a lifetime career
   c. I expect my academic major to relate to my career in a very general manner
   d. I do not expect my academic major to relate to my lifetime career but only to job entry
   e. I do not expect my academic major to relate to my vocational career at all
   f. my career plans are not well enough defined for me to respond at this time
   g. my plans with regard to academic major are not well enough defined for me to respond to this

18. Which one of the activities listed below would you be most interested in attending or participating in while in college?
   a. cultural activities
   b. movies
   c. dances
19. Which responses best reflects your view on Greek letter fraternities and sororities and people who join them?

a. entirely positive
b. somewhat positive
c. undecided or unconcerned
d. somewhat negative
e. entirely negative

20. Which of the following categories of free, noncredit courses would you be most interested in attending (or teaching) at Elliott Center next spring?

a. a craft or art (ceramics, photography, etc.)
b. musical skill (guitar, disco dancing, etc.)
c. culinary skill (cooking, bartending, etc.)
d. a self-help class (career alternatives, meditation, etc.)
e. a practical skill (auto mechanics, bricklaying, etc.)

21. Do you agree that "big-time" intercollegiate athletics should be instituted at UNC-G?

a. yes, I strongly agree
b. I mildly agree
c. no, I disagree mildly
d. I strongly disagree
e. I have no opinion on this subject

22. In which kind of athletic activities do you expect to participate while at UNC-G?

a. largely in planned athletic programs such as intramural teams
b. largely in informal recreational athletic activities such as swimming, golf, tennis, etc. with friends
c. I expect to participate fully in both of the above programs
d. I do not plan to participate in any unrequired athletic activity while at UNC-G

23. On every university campus students hold a variety of attitudes about their own purposes and goals while at college. Such attitudes might be thought of as personal philosophy of higher education. After you have read the four statements below describing such "personal philosophies," please mark the one that seems most in agreement with your point of view.

a. I am quite committed to a particular field of study and am in college primarily to obtain training for a career.
b. I attach greatest importance to interest in ideas, pursuit of knowledge and cultivation of intellect.

c. While recognizing and appreciating the value of academic activities, I also attach great importance to the extracurricular side of college life.

d. I am deeply involved with ideas and art forms both in and out of the classroom and tend to believe my values are more valid than commonly accepted norms.

Items 24-27 require a choice between one of two alternatives. Neither choice may be entirely satisfactory to you. Nevertheless, please select the response to each of the four items which overall appears to be more applicable to yourself.

24. Which of the following two choices does a better job of describing you?
   a. I relate more easily to the outer world of people and things
   b. I relate more easily to the inner world of ideas

25. Which one of the following two choices does a better job of describing you?
   a. I would rather work with known facts
   b. I would rather look for possibilities and relationships

26. Which one of the following two choices does a better job of describing you?
   a. I base judgments more on impersonal analysis and logic
   b. I base judgments more on personal values

27. Which one of the following two choices does a better job of describing you?
   a. I like a planned, decided, orderly way of life
   b. I like a flexible, spontaneous way of life

There are many reasons for pursuing education, some of which are listed below in items 28-34. In planning your educational experience, how important to you is your progress in each area?

28. Intellectual Growth: Your ability to understand and use concepts and principles from several broad areas of learning.
   a. of no importance
   b. of little importance
c. of moderate importance
d. of much importance
e. of very much importance

29. Social Growth: Your understanding of other people and their views; your experience in relating to others.

a. of no importance
b. of little importance
c. of moderate importance
d. of much importance
e. of very much importance

30. Aesthetic and Cultural Growth: Your awareness and appreciation of the literature, music, art, and drama of your own culture and of others.

a. of no importance
b. of little importance
c. of moderate importance
d. of much importance
e. of very much importance

31. Educational Growth: Your understanding of a particular field of knowledge; your preparation for further education.

a. of no importance
b. of little importance
c. of moderate importance
d. of much importance
e. of very much importance

32. Ethical Growth: Your understanding of fundamental questions of ethics such as the origin and validity of the distinction between good and evil, moral right and wrong, and the foundations of moral judgment.

a. of no importance
b. of little importance
c. of moderate importance
d. of much importance
e. of very much importance

33. Which one of the above was your most important reason for coming to college?

a. intellectual growth
b. social growth
c. aesthetic growth
d. educational growth
e. ethical growth
34. Do you consider your political point of view to be generally:
   a. quite conservative
   b. fairly conservative
   c. fairly liberal
   d. very liberal

35. Which of the following best describes the time in your life when you decided to be a nurse?
   a. before age 14
   b. during high school
   c. after I entered college
   d. after I was into another major
   e. after I completed another major
   f. after I had worked a year or longer

36. Which of the following best describes your work experience before entering the nursing major?
   a. worked during summer months in non-nursing-related job
   b. worked during summer months in a nursing-related job
   c. worked a year or longer in a nursing-related job
   d. worked less than any of the above

37. Who most influenced your decision to enter nursing?
   a. mother
   b. father
   c. grandparent
   d. other relative
   e. friend
   f. high school counselor
   g. boyfriend/girlfriend
   h. husband/wife
   i. other

38. In high school were you considered more a
   a. leader
   b. scholar
   c. athlete
   d. group member
   e. other

39. Which of the following best describes your reason for choosing nursing as a major?
   a. to get a job
   b. to please someone else
   c. to help mankind
   d. to prepare for another vocation
   e. previous experience with illness
APPENDIX F
REPORT TO UNC-G INSTITUTIONAL REVIEW BOARD ON
RESEARCH PROJECT INVOLVING HUMAN SUBJECTS
Report to UNC-G Institutional Review Board on
Research Project Involving Human Subjects
School of Nursing

Date: September 24, 1979

Project title: Factors that Affect Success in Nursing Education: An Exploratory Study

Principal Investigator(s): Hazel N. Brown

Relationship(s) to the University: X Faculty ___ Student ___ Other (specify)

Are participants in this project, in the judgment of the School or Department, at risk? ___ Yes ___ No

If the participants are at risk, attach a brief abstract of the project and a copy of all forms and/or procedures used to assure the protections of participants. School and/or Department Human Subject Review Committees should keep on file copies of proposals or other information of the basis of which the determination of the degree of risk was made.

I certify that an approved Human Subjects Review Committee has reviewed the project named above and that the statements made concerning the degree of risk involved in the project and the safeguards taken to protect participants are as indicated.

Dean or Department Head

Human Subjects Review Committee

Send with accompanying material when applicable to:
UNCG Institutional Review Board
Office for Sponsored Programs
214 Mossman Building
The Campus

Form 1-IRB (9/78)
APPENDIX G

INSTRUCTIONS AND EXPLANATIONS
Instructions and Explanations

1. I am Hazel N. Brown, a faculty member in the School of Nursing and a doctoral student in the School of Education at UNC-G.

2. Many of you took the MBTI as an entering freshman or transfer student, given by the Office of Institutional Research. I would like each of you to complete this form (MBTI) today.

3. The MBTI is based on that part of the theory of C.G. Jung which describes psychological types. The essence of the theory is that variations in behavior which seem random are actually consistent and orderly, when one understands differences in the ways people prefer to use their perception and judgment. The questions deal with the way you like to use your perception and judgment, that is, the way you like to look at things and the way you like to go about deciding things. There are no right or wrong answers. After you have answered the 166 MBTI questions, continue with the 39 questions on the sheet that is inserted.

4. I plan to use your profiles from the MBTI as part of the data for my doctoral dissertation, "Factors that Affect Success in Nursing Education: An Exploratory Study."

5. This study may be published. If so, only group data will be used. No individual names or identification numbers will be used.

6. Because of the interest in the MBTI by the Office of Institutional Research on UNC-G campus, the profiles from the MBTI will be put on file in that office for use with institutional research. Again, there will be no identification of individuals; only group data will be reported.

7. Your participation or nonparticipation will in no way affect your course grades or if you're a sophomore, your acceptance or non-acceptance into the nursing major.

8. The Dean of the School of Nursing has given me permission to ask you to participate in the study.

9. Before the end of this semester I will give to each of you who participate in the study your computer profile with a written explanation of the scores. This report should help you to know your own preferences and to understand where your special strengths are.

10. I am now ready for you to complete the MBTI. It should take about one hour. Raise your hand if you need assistance or have questions.
11. Your participation in this study will be greatly appreciated, but it is not required. You may choose not to participate by not completing the MBTI. By completing the MBTI you are saying that you have been informed about the study and are consenting to participate. If you choose not to participate, you may be excused now or you may occupy yourself with something else during this time.

12. You are free to withdraw from the study now or in the future by leaving your I.D. number along with your request to withdraw in office number 315.