

THE EFFECT OF PSYCHOLOGICAL TYPE, ECONOMIC STATUS, AND
MINORITY CLASSIFICATION ON VOCATIONAL NURSING
STUDENTS PASS/FAIL RATES

Brenda S. Kays, M.Ed., L.P.C., C.S.

Dissertation Prepared for the Degree of
DOCTOR OF EDUCATION

UNIVERSITY OF NORTH TEXAS

May 2001

APPROVED BY:

J. Michelle Walker, Major Professor
James L. Poirot, Minor Professor
Jerry L. Wircenski, Committee Member
Jon I. Young, Chair of the Department of
Technology and Cognition
M. Jean Keller, Dean of the College of Education
C. Neal Tate, Dean of the Robert B. Toulouse
School of Graduate Studies

Kays, Brenda S., The effect of psychological type, economic status, and minority classification on vocational nursing students pass/fail rates. Doctor of Education (Applied Technology, Training, and Development), May 2001, 115 pp, 8 tables, bibliography, 90 titles, 4 appendices.

The purpose of this study was to determine if psychological type, economic status, and minority classification had an effect on the pass/fail rates of vocational nursing students. The rationale for conducting this study was based on the need for the institution to maintain program viability and successfully retain students.

The personality types of vocational nursing students were measured using the Myers-Briggs Type Indicator. Measures of economic status and minority classification were obtained through subject self-report. Students enrolled in a vocational nursing program at a small North Texas community college were studied. The Chi-square Test of Independence with a 2 x 2 design was employed.

Findings indicated that there was a statistically significant relationship between the pass/fail rates of thinkers versus feelers in the vocational nursing classroom. Findings did not indicate a statistically significant relationship between the pass/fail rates of extraverts versus introverts; sensors versus intuitives; or judgers versus perceivers in the vocational nursing classroom. Findings also suggested that there were no significant relationships between the pass/fail rates of individuals with poverty versus non-poverty economic statuses, nor between individuals with minority versus non-minority classifications.

Based on this study, vocational nursing students psychologically typed as thinkers, may have lower passing rates in the vocational nursing classroom setting.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
Chapter 1	
INTRODUCTION	1
SIGNIFICANCE OF THE STUDY	4
THEORETICAL FRAMEWORK	8
PURPOSE OF THE STUDY	9
HYPOTHESES	9
DELIMITATIONS.....	10
LIMITATIONS.....	11
DEFINITION OF TERMS.....	12
SUMMARY.....	15
Chapter 2	
REVIEW OF RELATED LITERATURE	16
INTRODUCTION	16
HISTORICAL PERSPECTIVE.....	16
THE MYERS-BRIGGS TYPE INDICATOR (M.B.T.I.).....	19
APPLICATIONS OF PSYCHOLOGICAL TYPE.....	24
PSYCHOLOGICAL TYPE AND CHOICE OF MAJOR.....	28

	Page
PSYCHOLOGICAL TYPE AND ATTRITION PATTERNS IN NURSING	
STUDENTS	29
ECONOMIC STATUS	31
MINORITY CLASSIFICATION	33
CRITIQUE OF THE VALIDITY OF THE EXISTING LITERATURE.....	38
CONTRIBUTIONS TO THE LITERATURE.....	39
SUMMARY.....	39
 Chapter 3	
METHODS AND PROCEDURES	40
INTRODUCTION	40
HYPOTHESES	40
POPULATION.....	42
SAMPLE.....	42
RESEARCH DESIGN	42
INSTRUMENTATION	47
RELIABILITY.....	49
VALIDITY.....	49
DATA COLLECTION	53
TREATMENT OF DATA.....	54
SUMMARY.....	56
 Chapter 4	

	Page
DATA ANALYSIS AND DISCUSSION OF RESULTS	57
INTRODUCTION	57
STUDENT PARTICIPATION	57
DATA ANALYSIS.....	59
SUMMARY.....	72
Chapter 5	
CONCLUSIONS AND RECOMMENDATIONS	73
INTRODUCTION	73
STUDY SUMMARY.....	73
CONCLUSIONS AND DISCUSSIONS	75
RECOMMENDATIONS.....	80
SUMMARY.....	84
REFERENCE LIST	85
Appendix A	
PERMISSION FORMS	94
Appendix B	
GRAPHIC HISTORICAL OVERVIEW OF PSYCHOLOGICAL TYPE.....	100
Appendix C	
STATISTICAL OUTPUT.....	102
Appendix D	
RAW DATA	113

TABLES

	Page
1. FORMAT OF 2 x 2 CONTINGENCY TABLE	44
2. FORMAT OF 2 x 2 CONTINGENCY TABLE FOR H_{01}	45
3. FREQUENCY OF INTROVERT/EXTRAVERT STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{01}	61
4. FREQUENCY OF INTUITIVE/SENSING STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{02}	63
5. FREQUENCY OF FEELING/THINKING STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{03}	65
6. FREQUENCY OF JUDGING/PERCEIVING STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{04}	67
7. FREQUENCY OF POVERTY VERSUS NON-POVERTY STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{05}	69
8. FREQUENCY OF MINORITY VERSUS NON-MINORITY STUDENTS WITH CLASSROOM PASS/FAIL RATES AND CHI-SQUARE TEST FOR H_{06}	71

CHAPTER 1

INTRODUCTION

On your mark, get set, GO! Use of this phrase typically signifies that a race has commenced. Generally one could assume upon hearing this phrase that runners were lined up at a starting point, instructed to ready themselves, and released from the same point all at the same time. Usually one could predict that the majority of the individuals involved in such a race would sooner or later arrive at the same destination, and cross the finish line. Chances are that they would not all cross at the same time, but instead would finish the race first, second, third, ..., and last. In reviewing individual finishes, it would probably be quite natural to believe that a runner's success in the race was correlated to his/her level of ability. Hence, runners with a high level of athletic ability would finish before runners with a low level of ability. However, consider for a moment a different scenario, one in which all the runners had the same ability. If that were the case, it would probably be quite natural to believe that runners with the same ability would finish with equal results. As logical as this outcome may seem, this is not always a correct assumption, especially as it relates to a classroom scenario.

In a traditional classroom setting one would expect to find a wide dispersion of skill levels. This widely distributed level of skill would in turn, lend itself to a range of student outcomes similar to what would be encountered in a normal bell curve distribution. Further, consider the classroom setting where entry is gained only by

achieving a set standard score on an entrance examination. Hence, it could be stated that based on admissions criteria, all participants in such a classroom had demonstrated an equivalent level of base knowledge and therefore had an equal chance for classroom success. Unfortunately, all one has to do is observe the grades achieved at the end of a semester by such a homogeneous group to know that assuming an equal chance of classroom success based on equivalent cognitive ability is as erroneous an assumption as the race example given previously. If ability was the only factor influencing classroom success, then a group of students categorized as having equivalent ability would demonstrate near equal achievement. Since it has been determined that this is not the case, obviously other factors exist.

A review of the literature suggested that numerous factors might have a bearing on classroom performance. Variables deemed responsible for student success, or lack thereof, ranged from sibling gender composition (Kaestner, 1997) to general health and nutrition (Behrman, 1996). Borland and Howsen (1999) pointed to external or environmental causal factors when they noted that, “students from both highly rural and highly urban areas perform similarly, but less well, in terms of educational achievement than students from moderate areas,” (pg. 537). Economic status (Provost, 1991) and school (size), teacher (years of experience), and class variables (class size) (Goldhaber & Brewer, 1997), were other external factors cited as possibly contributing to classroom success. Internal factors mentioned as possible contributors to classroom success included psychological type (Schurr & Ruble, 1986), minority classification (Provost,

1991), locus of control (Bernardi, 1997), motivation (Lawrence, 1993), and perceptions of stress (Bernardi, 1997).

Understandably, not all of the factors identified in the research as contributing to classroom success could be considered in one research effort. In order to determine which variables to include for consideration in this research effort, the researcher decided to observe the population under consideration in an attempt to discover any visible differences that might exist in this academically homogenous setting. Therefore, the vocational nursing classroom became the stage for an observational effort to deduce possible factors that might influence the pass/fail rates of students. The classroom observation revealed three possible variables for consideration. First, the observation of vocational nursing student's skin color led the researcher to hypothesize effect based on minority classification. Second, the observation of vocational nursing student's varying quality of clothing and the name brand recognition of clothing and personal accessories led the researcher to hypothesize effect based on economic status. Finally, the observation of vocational nursing student's interaction with instructor, interaction with others, and study patterns within the classroom environment led the researcher to hypothesize effect based on personality type.

The researcher then checked the classroom observations against the literature and found that prior research had in fact indicated that psychological type (Schurr & Ruble, 1986), economic status (Provost, 1991), and minority classification (Provost, 1991) were three factors that could influence classroom success. Research was found that indicated that psychological type, as measured by the Myers-Briggs Type Indicator (M.B.T.I.)

could be useful information to gather about a student after he/she had enrolled in a program of study (Schurr & Ruble, 1986). Information on psychological type could be used to aid students in acquiring awareness of their behaviors, and then in response to that new awareness, develop academic behaviors congruent with the functions that lead to academic success. Economic status and minority classification were two other factors that were indicated as having an influence on classroom success. Economic status and minority classification were also noted as two widely occurring variables that are often observed in a classroom setting (Horton & Oakland, 1997).

Significance of the Study

In its *Strategic Plan for Texas Public Community Colleges 1999-2003* the Texas Higher Education Coordinating Board (THECB) set forth what it considered to be guiding principles for Texas public higher education. Among those principles THECB stated that institutions of higher education must improve degree completion. According to THECB "the number of Texans who complete associate degrees, as well as other program completion measures such as certification and baccalaureate, graduate, and professional degrees, should be increased at least to the national average" (p. 13). According to THECB (2000), viable programs at the junior college level should have an 85% completion rate.

The vocational nursing program boasts the largest enrollment (approximately 100 students per semester) of any vocational/technical certification program at Vernon Regional Junior College (VRJC). Yearly student enrollment in the vocational nursing program comprises approximately 15% of the total student enrollment at the College

(N=2200). Throughout the remainder of the text "College" (with a capital "C") and VRJC will be used interchangeably. Due to the significant contribution that the vocational nursing program makes to the College, particular attention is paid to the program's viability. At the junior college level, viability is often determined by accountability (Schurr, Ruble, Palomba, Pickeril, & Moore, 1997). Accountability is often determined by completion rates (Texas Higher Education Coordinating Board, 2000). Hence, one can easily make the connection between program viability and program completion rates.

According to the *2000 Statewide Annual Licensure Report* published by THECB the percentage of vocational nursing students who passed the state licensure exam has declined. The *2000 Statewide Annual Licensure Report* documented that in the period of time between 1996 and 1999 the percentage of students who passed the licensure exam fell from 94% to 89%, (2001). Additionally, according to Cathy Bolton, VRJC-Vernon Director of Nursing (personal communication March 19, 2001) many directors of vocational nursing programs in Texas have mentioned a small decline (3-5%) in overall completion rates. While this data appears to illustrate a composite gradual decline in the success rates of vocational nursing students in the state of Texas it does not necessarily give rise for concern. However, enrollment statistics from the Spring 2000 Vocational Nursing Class at VRJC indicated that of the 50 students who started the class, only 29 students were successful completers of the class. Percentage wise, these figures indicate that only 58% of the class received a passing grade (Bolton, 2000). Because program completion rates fell far below the requisite 85% (Texas Higher Education Coordinating Board 2000) the College does face concern over program accountability and viability.

Typically vocational/technical programs at VRJC achieve the 85% completion rate standards (M.H. Elliott, Executive Dean of Instruction and Institutional Effectiveness, personal communication, March 15, 2001). However, it is difficult to compare the completion rates of the vocational nursing program with the completion rates of other vocational/technical certification programs at VRJC because of the differences that exist among program requirements. For example, the vocational nursing program is the most demanding vocational/technical certification course of study at the College. This statement is evidenced via the stringent admissions criteria required for entrance into the vocational nursing program. According to the *VRJC General Catalog* in order for a student to gain entrance to the vocational nursing program he/she must make admission to the College, submit an application for admission to the nursing program, supply 3 letters of character reference, show evidence of a recent physical examination by a physician, provide proof of required immunizations, and take the Nurse programs at VRJC that require only the submission of an application for admission to the Entrance Test (NET), (2000). This is in contrast to other vocational/technical certification College. Clearly, as based upon program admission requirements, because of the rigors associated with the program the College wishes to insure that the students accepted for entrance to the vocational nursing program have met certain standards. Because such care is taken in the admissions process, a 58% completion rate is indeed puzzling and unsettling.

If ability was the only factor influencing classroom success, then a group of students categorized as having equivalent ability (such as the vocational nursing students) would demonstrate near equal achievement. Since it has been determined that this is not

the case, obviously other factors such as psychological type, economic status, and/or minority classification must be considered.

The identification of psychological type as associated with student pass/fail rates in the vocational nursing program provides the impetus to isolate the characteristics associated with a particular psychological type correlated with student success rates. Having those characteristics determined then allows educators the opportunity to ascertain if these are “teachable” characteristics that could be mastered by other students not currently in possession of such skills. According to Schurr and Ruble (1986), “learner behaviors can be modified, students can be guided through workshops and individual advising sessions to develop their understanding of, and modify their academic behaviors according to the functions and attitudes that are associated with success,” (p.35). It is important to understand and stress that psychological type, as measured by the M.B.T.I., should never be used as a selection tool for any type of educational program or vocation. However, psychological type can be a useful tool after an individual is already participating in a program or vocation (Schurr & Ruble, 1986).

The determination that economic status and/or minority classification are associated with student pass/fail rates in the vocational nursing program enables educators to conduct further studies in order to determine what characteristics associated with economic status and/or minority classification are preventing success. Once identified, those factors preventing success could then be integrated into an existing “life skills” curriculum.

The determination that psychological type, economic status, nor minority classification are factors associated with pass/fail rates allows educators to continue to pursue a systematic elimination of causal factors for pass/fail rates in the vocational nursing program. Systematic elimination of causal factors would then continue until a significant relationship is uncovered.

Theoretical Framework

The theoretical framework for this paper was based on Carl Jung's theory of psychological type. Jung (1921) theorized that, according to an innate psychological disposition, people develop different preferences, which they use when relating to the world around them. These preferences may be of particular significance when investigating classroom failure and success outcomes among students with equivalent base knowledge.

Jung's theory of psychological type has successfully, "stood the test of time and a multitude of users," (Berens, 1996, p. 8). Jung viewed his psychological types as a classification system for human behavior (Lawrence, 1993). Through researching his theory, Jung discovered that, "behaviors cluster in patterns that seem to reveal different frames of mind and distinctly different ways of processing experiences," (Lawrence, 1993, p. 35). Assuming this is true, theoretically one should be able to distinguish, based on psychological type, individual characteristics displayed by students experiencing academic success.

The Myers-Briggs Type Indicator was employed as the tool used to ascertain student psychological type. The M.B.T.I. was chosen because, according to *The Tenth*

Mental Measurements Yearbook, “the M.B.T.I. is an excellent example of a construct-oriented test that is inextricably linked to Jung’s theory of psychological types,” (Conoley & Kramer, 1989, p. 538). The M.B.T.I. has been used in over 500 studies, and has high reliability and validity coefficients. The indicator is considered interesting enough so that subjects should not become bored with the instrument and mark answers in a random fashion. Additionally, the reading level is low enough that participants should easily be able to read it.

Purpose of the Study

The purpose of this study was to determine if student psychological type, economic status, and/or minority classification have an effect on vocational nursing student pass/fail rates.

Hypotheses

In order to determine the effect that psychological type, economic status and/or minority classification had on vocational nursing classroom pass/fail rates, the hypotheses investigated by this study were:

1. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as introverts versus extraverts and their pass/fail rates in the vocational nursing classroom.
2. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as sensing versus intuiting and their pass/fail rates in the vocational nursing classroom.

3. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as feeling versus thinking and their pass/fail rates in the vocational nursing classroom.

4. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as judging versus perceiving and their pass/fail rates in the vocational nursing classroom.

5. There is no significant relationship between vocational nursing students with poverty versus non-poverty economic status, as measured by self-report, and their pass/fail rates in the vocational nursing classroom.

6. There is no significant relationship between vocational nursing students with a minority versus non-minority classification, as measured by self-report, and their pass/fail rates in the vocational nursing classroom.

Delimitations

The scope of this study was limited to persons who achieved a passing score on the Nurse Entrance Test (NET) and were therefore accepted into the vocational nursing program during the 2000-2001 school year at Vernon Regional Junior College. The NET is a standardized examination employed by the College to screen for students' entrance into the vocational nursing program. The examination measures an examinee's reading comprehension, basic math skills, decision-making skills, stressful situation skills, social skills, and preferred learning style. College wide, the vocational nursing departments utilize only the measures from the reading comprehension and basic math portions of the exam for screening purposes. The other four portions of the exam (decision-making

skills, stressful situation skills, social skills, and preferred learning style) that are not taken into consideration were created only as tools to be used for individual growth and development. The reading comprehension portion of the NET measures an examinee's reading ability and provides a comparison between the examinee's ability and the level of ability deemed necessary for college success. The basic math skills portion of the NET offers a comparison between the examinee's mathematical skill level and the skill level deemed necessary for classroom and clinical success (Educational Resources, Inc., 1992).

During the development of the instrument, "a series of standardization procedures were followed to assure that the content of the NET was appropriate for entry level nurses and to provide an effective means of interpreting test performance," (Educational Resources, Inc., 1992, p. 23). The NET boasts reliability coefficients of +.89 for math and +.97 for reading comprehension (Educational Resources, Inc., 1992). The NET also claims content validity established by health occupation program directors across the United States, criterion-related validity with the American College Test (ACT), and diagnostic validity based on significantly higher norms recorded for graduating nursing students (Educational Resources, Inc., 1992). Additionally, "current overall studies of the Nurse Entrance Test have concluded that the examination contains no cultural bias," (Jarvis, 1992, p. 29).

Limitations

Data gathered on economic status and minority classification was based on self-report. Reliability of the measures of individual psychological type was affected by the level of truthfulness participants used in their response to the Myers-Briggs Type

Indicator. Factors that could affect student pass/fail rates other than psychological type, economic status, and minority classification were not taken into consideration. All subjects were drawn from the same institution.

Definition of Terms

The following operational definitions were utilized for this study:

Asian. An individual whose ancestry is traceable to one or more of the following locations: Cambodia, Asia, Japan, Korea, Vietnam, Laos, Philippines, Taiwan, Thailand, Malaysia, or Hong Kong (Taylor & Stern, 1997).

Auxiliary function or process. “The function or process that is second in importance and that provides balance between perception and judgement, and between extraversion and introversion,” (Myers & McCaulley, 1985, p. 224).

Black, non-Hispanic. “A person having origins in any of the black racial groups of Africa, except those of Hispanic origin,” (Sanderson, Dugoni, Rasinski & Taylor, 1996, p. 13).

Dominant function or process. “The function or process that is assumed to be first developed, most conscious and differentiated, and which becomes the governing force dominating and unifying one’s life,” (Myers & McCaulley, 1985, p. 224).

Economic status. In terms of poverty standards, is determined by comparing pretax income against poverty guidelines, based on household size (Shalala, 1996).

Extraversion (E). A term coined by Carl Jung created from a Latin component meaning outward turning; the term means to “look outward” or outside of oneself for “interests, values, and stimulation,” (Lawrence, 1993, p. 10).

Feeling (F). “One of the two judging functions that makes decisions by ordering choices in terms of personal values,” (Myers & McCaulley, 1985, p. 224).

Functions. “The four basic mental processes or powers of sensing, intuition, thinking, and feeling,” (Myers & McCaulley, 1985, p. 224).

Hispanic. “A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race,” (Sanderson, et al., 1996, p. 113).

Inferior function. “The opposite of the dominant function, also called the fourth function. The inferior function is assumed to be nearest to the unconscious, the least differentiated, and a source of both problems and potential for growth,”(Myers & McCaulley, 1985, p. 224).

Introversion (I). A term coined by Carl Jung created from a Latin component meaning inward turning; the term means to “look inward” or inside of oneself for “interests, values, and stimulation,” (Lawrence, 1993, p. 10).

Intuition (N). “One of the two perceptive functions that attends to meanings, relationships, symbols, and possibilities,” (Myers & McCaulley, 1985, p. 225).

Judgement (J) (A.K.A. Judging). “A term that refers to the two judging functions, thinking and feeling. Judgement also describes how thinking and feeling appear in observable behavior,” (Myers & McCaulley, 1985, p. 225).

Vocational nursing program. A program of study geared toward preparing students for the practice of nursing as a profession, culminating in a state licensure examination.

Vocational nursing student. An individual enrolled in a program of nursing skill instruction.

Minority. “A term often used in discussion about ethnic groups and their relationships to the majority or dominant group in the United States and other countries,” (Gollnick & Chinn, 1986, p. 76).

Myers-Briggs Type Indicator (M.B.T.I.). An instrument developed by the mother and daughter team of Katharine Briggs and Isabel Myers used to determine an individual’s psychological type (Lawrence, 1993).

Native American. An individual whose ancestry is traceable to that of the Paleo-Indians that first inhabited North America 40,000 years ago (Sue, 1981).

Nurse Entrance Test (NET). A standardized examination employed by Vernon Regional Junior College as a selection tool for the vocational nursing program.

Perception. “A term that refers to the two perceptive functions, sensing and intuition. Perception also describes how thinking and feeling appear in observable behavior,” (Myers & McCaulley, 1985, p. 225).

Preference. “One of the four basic dichotomies that in type theory structure the individual’s personality. The four preferences are extraversion or introversion, sensing or intuition, thinking or feeling, and judgment or perception,” (Myers & McCaulley, 1985, p. 225).

Psychological type. A term coined by Carl Jung to describe discernable patterns of human behavior (Lawrence, 1993).

Sensing (S). “One of the two perceptive functions that attends to experience available to the senses,” (Myers & McCaulley, 1985, p. 225).

Thinking (T). “One of the two judging functions that makes decisions by ordering choices in terms of cause-effect or impersonal logical analysis,” (Myers & McCaulley, 1985, p. 224).

White, non-Hispanic. “A person having origins in any of the original peoples of Europe, North Africa, or the Middle East, except those of Hispanic origin,” (Sanderson, et al., p. 113).

Summary

This chapter contained an introductory discussion of factors that may contribute to classroom failure and success outcomes when equivalent levels of student skill have been determined/controlled. The factors that were specifically addressed in this chapter included psychological type, economic status, and minority classification. The significance and purpose of the study, which related the reasons for the research, were also described in this chapter. The six hypotheses, the theoretical framework, limitations, and delimitations of the study were also provided. This chapter concluded with a definition of terms.

The remaining chapters discuss a review of related literature, the methodology to be utilized in this study, the data analysis and ensuing discussion of results, and the research conclusions and recommendations.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The psychology of personality is rich in theory and theorists. Although many individuals have postulated about human personality and its origins and effects on behavior, Carl G. Jung was a notable pioneer in the field of personality research. In fact it was Jung that actually coined the term “psychological type,” and Jung also receives credit as being the father of personality typology (Lawrence, 1993, p.6). Katharine Briggs and Isabel Myers championed Jung’s ideas and essentially brought those ideas into the 20th century with the creation of the M.B.T.I. (Myers, K. 1987). A topical organization of the study is used for the review of related literature. Areas reviewed include the historical background of psychological type, the Myers-Briggs Type Indicator, the use and educational implications of psychological type, the educational implications of economic status, and the educational implications of minority classification.

Historical Perspective

The name Sigmund Freud often conjures up images of inkblots, psychiatrists’ couches, and similar notions. Whether an individual believes that Freud and his psychological theories are pure genius or pure garbage, the fact remains that Freud’s theories, research, and writing have provided a general foundation on which many psychological theorists have built (Corey, 1996). Among Freud’s many students was Carl

G. Jung, a Swiss psychologist. Jung studied with Freud until “Jung disagreed with Freud on some major notions regarding human behavior, including the importance Freud attached to sexuality on human life, to the exclusion of everything else” (Liberty, 1992, p. 52). “Although Jung had a lot to lose professionally by withdrawing from Freud, he saw no other choice,” (Corey, 1996, p. 107).

After his break from Freud, Jung developed a theory describing patterns of human habits and impulses known as psychological type. According to Lawrence (1986), “the theory of psychological type stands apart and can be understood apart from the rest of Jung’s work. It did not evolve out of early psychological theories but rather was a fresh look at the patterns of habits in the everyday behavior of ordinary people,” (p. 40).

Some have even postulated that the impetus for Jung’s theory of psychological type arose from the major differences he saw between himself and Freud (Corey, 1996; Lawrence, 1986; Liberty, 1992). A graphic historical overview of psychological type is provided in Appendix B.

When Carl Jung looked at the way people behaved, he didn’t just see random acts - instead Jung saw patterns. Jung made note of these patterns and referred to them as psychological types. According to Lawrence (1993), Jung’s psychological types specifically referred to the preferred mental patterns individuals displayed in the process of perceiving, and then making judgements about what had been perceived.

It was Jung’s contention that individuals perceived in two distinct ways, either by sensing or intuition (Jung, 1921; Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980). An individual who perceived through sensing, according to Jung (1921),

relied on his/her five senses to gather information, whereas an individual who perceived through intuition relied on instinct or insight (Lawrence, 1993). Jung also theorized that in order for perceptions to remain in an individual's consciousness they must be used (Lawrence, 1993). According to Lawrence (1993), perceptions are "used" by the individual in that they are "sorted, weighed, analyzed, and evaluated by the judgement processes, thinking and feeling," (p. 7). An individual who judged and made decisions about his/her perceptions through thinking, according to Jung's theory (1921), used a logical and rational thought process, whereas, an individual who judged and made decisions about his/her perceptions through feeling relied on his/her personal value system in order to make decisions.

Jung's psychological type theory expressed his belief that all individuals employed both of the perceiving processes (sensing and intuition) and both of the judging processes (thinking and feeling) on a regular basis. Additionally, it was Jung's belief that one process of each pair (sensing or intuition and either thinking or feeling) came more naturally to the individual, and hence was preferred and used most frequently (Jung, 1921; Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980).

Although Jung believed that individuals employed all of their four mental processes on a regular, but not equal basis, he also maintained that one of the processes, either perceiving or judging was dominant over the other. He believed that this dominance was evident in the way a person went about his/her life (Jung 1921; Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980). It was this belief in a dominant process that led to Jung's third dimension of psychological type known as the

concept of extraversion and introversion (Lawrence, 1993). Extraversion and introversion were terms coined by Jung to reflect an individual's ways of acting and reflecting. According to Lawrence (1993), all individuals act and reflect, but not with equal ease. Acting occurs in the outside, or extraverted world, and reflection occurs in the inside, or introverted world. "If a person used the dominant process mainly in the world of people and things, that person's orientation is called extraverted. The person who uses the dominant process mainly in the inner, private world of ideas and thoughts has an introverted orientation," (Lawrence, 1993, p. 12).

The human behavior patterns that Jung referred to as psychological type were therefore based on the way individuals perceived their world, judged those perceptions, addressed life, and then directed those processes either inward or outward in the expression of attitudes or orientations (Lawrence, 1993). Jung's theory of psychological type might have remained just a theory, which he used to describe human behavior or just a passing reference in a behavioral science textbook, had it not been for the work of Katharine C. Briggs.

The Myers-Briggs Type Indicator (M.B.T.I.)

Katharine C. Briggs, by trade, was employed as the Director of the National Bureau of Standards during the Hoover and Roosevelt administrations. More importantly however, she was interested in individual differences and often theorized about those differences (Myers, K., 1987). In 1923 the writings of Carl G. Jung entitled *Psychological Types* were translated into English and read by Briggs. Briggs believed that, "his (Jung's) ideas complemented hers, but she felt that they were so much more

fully formed, that she literally spent twenty years studying his work, checking what his theories said against her own observations,” (Myers, K., 1987, p. 2). Katharine Briggs shared her interests with her daughter Isabel Briggs Myers, and together, the two women devoted their lives to creating and researching an inventory that they believed would help people to better understand not only themselves but others as well (Myers, K., 1987).

Briggs and Myers dissected Jung’s theory of psychological type and added a fourth dimension reflecting the attitude that an individual took toward the outer-world (Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980). This fourth dimension was based on whether the judgement process (thinking or feeling) or the perception process (sensing or intuition) was used in the attitude that an individual took toward the outer-world. According to Lawrence (1993), Briggs and Myers theorized that, “when a judgment process is used in running one’s outer life, the natural drive is to have things decided, judged, settled, planned, organized, and managed according to the plan,” (p. 11). However, “when a perception process is used to run one’s outer life, the natural drive is always toward keeping things, plans, and organization to a necessary minimum so one can respond to new perceptions and adapt flexibly to new circumstances,” (p. 11). Hence, the work of Briggs and Myers broadened Jung’s concept of psychological type to a fourth dimension, further defining human behavior in terms of another dimension of preferences.

Although the work of Briggs and Myers expanded Jung’s theory of psychological type, the mother and daughter team didn’t stray from his idea that one’s psychological type was reflective of a preferred way of perceiving, judging, addressing life, and holding

attitudes toward the outer-world. Even with their addition of the fourth dimension, Briggs and Myers believed that all individuals were capable of acting out of both dichotomies of each dimension, but not equally so, due to preference (Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980). Briggs and Myers likened the concept of preference to handedness, in terms that individuals typically prefer to use one of their hands over the other because it feels more comfortable to do so. Likewise individuals use one of the pairs of each dimension over the other because it feels more comfortable to do so (Myers, I., 1987).

In order to aspire to their goal of creating an instrument that could be used by laymen to help them understand their own and other's behavior (Myers, K. 1987), Briggs and Myers adopted a shorthand to be used in their indicator and explanations of psychological type (Lawrence, 1993). First, Briggs and Myers assigned a single letter to represent the eight different processes represented by the four paired dimensions as follows: extravert-E, introvert-I, sensing-S, intuition-N (because I was already taken) (Lawrence, 1993), thinking-T, feeling-F, judging-J, and perceiving-P (Lawrence, 1993; Myers & McCaulley, 1985; Myers & Myers, 1980). This shorthand served to re-label the four dimensions as E-I (extraversion-introversion), S-N (sensing-intuition), T-F (thinking-feeling), and J-P (judging-perceiving) (Myers & McCaulley, 1985).

Furthermore, in way of explanation, Briggs and Myers also combined the four pairs into sixteen distinctly different psychological types. When combining the scales into sixteen preferences it is natural to assume that, “type is a composite or addition of four separate qualities” when in reality, “each type is a distinctive dynamic organization of mental

energy, greater than the sum of four preferences,” (Lawrence, 1996, pg. 11). According to Myers and McCaulley (1985), “ the preference on each index is independent of preferences for the other three indices, so that the four indices yield sixteen possible combinations called ‘types’, denoted by the four letters of preferences (e.g., ESTJ, INFP),” (pg. 2).

The M.B.T.I. is taken by over 1.5 million people every year (Zemke, 1992). The M.B.T.I. was designed to measure and explain personality preferences in recordable scientific terms (Edgley, 1992). The M.B.T.I. is not like a lot of psychological tests that attempt to measure individual characteristics because it is not a test but rather an indicator (Lawrence, 1993). The intent of the M.B.T.I. is not to measure, but rather to sort people into groups in which, according to the theory of the psychological type, they already belong (Myers & McCaulley, 1985). According to Myers & McCaulley (1985), “the object of the M.B.T.I. is to ascertain, as correctly as possible, the four categories to which the respondent naturally belongs, i.e. ENTP,” (p. 140).

Jung’s theory of psychological type laid the groundwork for the creation of the M.B.T.I. through three assumptions (Myers & McCaulley, 1985). Jung’s three assumptions which Briggs and Myers incorporated into their indicator were: “that ‘true preferences’ actually exist, that persons can give an indication of their preferences on a self-report inventory, and that the preferences are dichotomized and that the two poles of preferences are equally valuable,” (Myers & McCaulley, 1985, p. 140). Individuals are placed into one of sixteen psychological type categories based on the degree of scores received on four scales (Zemke, 1992). According to Lawrence (1993), “Jung saw his

psychological types as a distinctive way of classifying human behavior,” (p. 35). Through his research Jung discovered that, “behaviors cluster in patterns that seem to reveal different frames of mind and distinctly different ways of processing our experiences,” (Lawrence, 1993, p. 35).

Current cultural diversity concepts espouse the recognition of people as unique individuals, not according to group membership (Corey, 1996). While in vogue, this emphasis on individuality doesn’t offer any help in the process of understanding individuals who are not similar in terms of values, interests, reasoning and interpersonal interaction (Myers & McCaulley, 1985). According to Myers and McCaulley (1985), “the theory is that much seemingly chance variation in human behavior is not due to chance, it is in fact the logical result of a few basic, observable preferences,” (p. 11). Therefore, “the merit of the theory underlying the M.B.T.I. is that it enables us to expect specific differences in specific people and to cope with the people and their differences more constructively than what we otherwise could,” (Myers & McCaulley, 1985, p. 11).

Logically, the next question to be asked is whether all individuals with the same type are alike. The answer to that question is, “no,” (Lawrence, 1993, p. 18). According to Lawrence (1993), “many things go into the makeup of a personality - genetics, family life, life circumstances outside the family, society’s expectations and requirements, and many learned traits; psychological type is just one aspect of personality,” (p. 18).

Lawrence (1993), also adds that “some people are at a higher level of type development than others, even in people of the same type who are well-developed, there are big differences,” (p. 19).

The term development implies a growth process. Myers and Myers (1980) contended that, “in normal type development, a child regularly uses the preferred process (process addresses the perceiving S-N and judging T-F typologies only) at the expense of its opposite and becomes increasingly skillful in its use,” (p. 181). They went on to conclude, “the child’s type is determined by the process that is used, trusted, and developed most,” (Myers & Myers, 1980, p. 182). The development of a favorite or dominant process is useful as part of the type equation, but, “the dominant process needs to be supplemented by a second or auxiliary process which can deal with the areas that the dominant process neglects,” (Myers & Myers, 1980, p. 182). The areas neglected by the dominant and auxiliary are known as the tertiary and inferior processes respectively. “The tertiary is the third favorite among S,N,T,F and is the opposite of the auxiliary,” and then by process of elimination, “the inferior process is the opposite of the dominant and the least developed process,” (Lawrence, 1996, p. 126). According to Lawrence (1993), awareness of both dominant and inferior processes is especially important when working with individuals in order to establish “a common ground” that allows insight into perceptual and judgement preferences (p. 129).

Applications of Psychological Type

The M.B.T.I. is used in a variety of settings, and for a variety of reasons. It is not uncommon to find the M.B.T.I. and its theories of psychological type employed in business and industry, career counseling, marriage therapy, and education.

The overall usefulness of psychological type theory in the educational realm has been documented. Hester (1990) asserted that the influence of individual differences in

psychological type has an effect on learning tasks. According to Schurr, et al., (1997), relationships exist between type preferences, academic achievement, and an individual's persistence to graduate. Boersma, Kienholz, Jevne, and Chapman (1989) believed that a relationship existed between psychological type and academic sense of self, which could aid in identifying students at high risk for dropout. Along those same lines Schurr and Ruble (1986) maintained that, "personality causes achievement," as evidenced by different psychological types reacting, "differently to formal education, different instructional procedures, and study in different content areas," (p. 35).

Although Provost (1985) maintained that a relationship did not exist between psychological type and academic achievement, he appeared to be in the minority. In terms of academic advantage based on type, I's out-performed E's (Anchors, Robbins, & Gershman, 1989; Dawson & Guy, 1994; Delbridge-Parker & Robinson, 1989; Hester, 1990; Schurr & Ruble, 1986), N's excelled over S's (Dawson & Guy, 1994; Delbridge-Parker & Robinson, 1989; Hester, 1990; Natter, 1981), T's did better than F's (Delbridge-Parker & Robinson, 1989; Hester, 1990; Natter, 1981), and P's were stronger than J's (Hester, 1990). Interestingly, in reference to P's academically out-performing J's, Schurr and Ruble, 1986 ascertained that P's possessed the academic capability to excel over J's, but their performance was not reflective of that capability.

Schurr et al. (1997) estimated that only 50% of the individuals involved in post-secondary education actually graduate. Much disparity existed in the literature regarding the psychological type most likely to persist until graduation. While Provost (1985) maintained that all E types (ESTJ, ENTJ, ESFP, and ESFJ) were most likely to graduate,

Anchors et al. (1989) found that among graduates ENFP's were under-represented but ESTP's and ESFP's were over-represented. Schurr, Ruble, and Henriksen (1989) asserted that E's were less likely to graduate, but only when they majored in an area over-populated with I's. Additionally, J's were more likely to graduate than P's (Schurr et al., 1989), S's had a higher graduation rate than N's (Schurr et al., 1997), and graduation rates were positively affected by individuals displaying an I preference (Schurr et al., 1997).

On the flip side of the graduation coin one finds that other 50% of the students who never make it to graduation - the dropouts. Although Hester (1989) found that type difference did not vary among completers and non-completers, others were able to indicate a causal relationship between specific type and risk for student dropout. Provost (1985) pinpointed, in order, ISTP's, ESTP's, ISFP's, ENFJ's, and ENTP's as the types most likely to leave school before graduating. He attributed this behavior to the fact that ISTP's, ESTP's and ISFP's (the top three) are often disorganized, less interested in the merits of learning, and more passive about accessing helpful resources, asking questions during class, and requesting tutoring. ESF's were more at risk for dropout according to Tobacyk, Wells, and Springer (1988). Additionally, Provost (1985) found that EP's, NP's, and TP's experienced the most problems with academic probation and disciplinary referrals, which are often associated with academic high-risk students.

According to Lawrence (1993), each of the psychological types is represented by a distinct learning style. Frisbe (1988) maintained that knowledge of preferred learning style is important, however, the ability to comprehend the benefits of and then utilize the

non-preferred styles is of greater importance. Schurr and Ruble (1986) contended that the educational arena is not rewarding for ESP learners, and Lynch and Sellers (1996) believed that the learning environment could be improved by delivering course materials in symphony with student's learning styles and type preferences.

Instructional methodology employed in the classroom is biased towards I's and N's and against E's and S's according to Dawson and Guy (1994). Dayton (1982) found that the typical post-secondary classroom employed a lecture and readings format, but by type only N's (comprising only 25% of the total population) preferred a reading methodology, and only two out of the sixteen types (ESFJ and INFP) expressed a preference for lecture methodology. Television viewing, in terms of an instructional methodology was preferred by S's, but the viewing did not lead to increased classroom achievement (Dawson & Guy, 1994). Thomas (1989) found that in terms of methodology, I's and S's preferred to listen to lecture, be in a class without a lab, deal with formulas and numbers, and to work alone. E's and N's liked to participate in discussion, be in a lab class, work with principles and ideas, and work as part of a group. S's and J's preferred tightly structured classroom methodology, and more T's than F's were involved in cooperative education (hands-on) programs.

Myers and McCaulley (1985) believed that, "all types are found in all curricula but particular curricula also attracts particular types," (p. 110). Myers and McCaulley (1985) identified at least one academic subject that was significantly ($p < .05$) preferred by each of the sixteen types. Generally NF and IN types preferred the liberal arts, engineering appealed to NJ's, and ES's and ST's were most attracted to the business

areas (Myers & McCaulley, 1985). According to Todd and Roberts (1981), ENFP's and INFP's were type preferences most often associated with art majors, while music majors type preferences were typically ENFJ and SJ's. Laribee (1994) noted that accounting students showed greater levels of T, specifically ST, SJ, and TJ types.

Research indicates that, according to type theory, an individual's psychological type can be strengthened, and individuals can learn to use functions and attitudes as a situation may warrant (Frisbe, 1988). According to Schurr and Ruble (1986), "learner behaviors can be modified, students can be guided through workshops and individual advising sessions to develop their understanding of, and modify their academic behaviors according to the functions and attitudes that are associated with success," (p. 35). For example, according to Provost (1985), ISFP's and ISTP's in the educational setting may need help in developing their social adjustment, organizational skills, goal setting and study skills, as these skills have not been identified as demonstrated strengths of ISP's. Along those same lines, Schurr, et al. (1997), found that the J-P preference, "suggested an advantageous ongoing 'academic work ethic' held by students with the J preference," (p.24). Hence, while an individual may prefer one style to another, that individual may take on the characteristics of another psychological type (Frisbe, 1988).

Psychological Type and Choice of Major

Barrett (1989) reported that in terms of psychological type, significantly more ESTP students and fewer INFJ students choose to participate in vocational education programs. Acknowledging that the majority of nursing programs (especially Vocational and Associate Degree Nursing programs) are classified as vocational programs, it is not

surprising to learn that Hoffman and Betkouski (1981) identified nursing as being a frequently chosen major among ES's.

Along those same lines Haynes (1994) ascertained that there were significantly more SFJ's and P's enrolled in nursing programs than any other type, while INT's appeared to be the type least represented in the typical nursing classroom. Haynes (1994) offered the following as an explanation for the apparent overrepresentation of SFJ's in the nursing classroom, "the nature of the nursing process demands an ability to remember detail, to cope with repetitive work demands, to work in a practical way with one's hands (S), to be compassionate and supportive (F), and to make rapid decisions on the job (J)," (p. 4).

Psychological Type and Attrition Patterns in Nursing Students

Success in post-secondary education was most often attributed to I's, N's and J's (Myers & McCaulley, 1985). Myers (1967) found that this was true especially among SP's in nursing programs that possessed, "neither the intuitive's advantage in aptitude, nor the judging type's advantage in application," and subsequently were classified as having the largest number of drop-outs (p. 2). With reference to nursing student attrition rates, the lowest dropout rates were attributed to FJ types because, according to Myers (1967), these types have a keener interest in nursing. However, the exceptions to the rule are the SFJ's who show a significantly lower drop-out rate when in comparison to the other FJ's, a fact that Myers (1967) attributed to, "a specific aptitude for nursing that makes up, in most schools, for their disadvantages in scholastic aptitude," (p. 2).

Schurr, Henriksen, Alcorn, and Dillard (1992) concurred with the idea of SJ's being at an advantage in the nursing classroom as they maintained that SJ's do as well as other types in the classroom and are the type most likely to graduate from nursing programs. Unfortunately, the SJ student is also the least likely type to be admitted to a nursing program when admissions criteria are based upon standardized examination scores (Schurr, et al., 1992). In explanation, most aptitude and achievement tests are developed by N's, giving intuitive examinees a distinct advantage (Dawson & Guy, 1994). Hence, using standardized admissions examinations place SJ's at a disadvantage (Schurr et al., 1989).

According to the literature, psychological type is clearly a useful tool when examining the effects of a student's educational success or lack thereof. Specifically documented are the uses of psychological type as an indicator in the realms of academic achievement, persistence to graduation, risk for school dropout, learning styles, preferred method of instruction and field of study, and nursing school choice and attrition patterns. It is important to remember that the identification of psychological type should be viewed as a tool to facilitate early intervention and prevention strategies, and not as a label of individual potential (Provost, 1991). However, knowing an individual's psychological type may not provide all the pieces to the student academic success puzzle. According to Provost (1991) and Hester (1989) other factors may contribute to college success in addition to type. Characteristics such as economic status and minority classification may also provide pieces to the academic success puzzle.

Economic Status

Economic status refers to the classification of an individual as determined by income. Lewis (1992) asserted that poverty, not race, was a more viable determinant of academic success. Similarly, studies have revealed that poverty, not race, had the greatest affect on I.Q. scores (Anonymous, 1996). According to Clarke (1996), “there is a general belief that the amount of wealth people possess is a measure of their knowledge, survival skills, and ability to gain access to resources,” (p. 30).

Poverty standards are determined by comparing pretax income against poverty guidelines. Poverty guidelines are based on family size. The 1996 U.S. poverty guidelines according to family size were: 1 household member -\$7,740, 2-\$10,360, 3-\$12,980, 4-\$15,600, with \$2,620 added for each additional household member (Shalala, 1996). In accordance with these guidelines approximately 40 million individuals lived in poverty in 1997 (Stevenson, 1997).

Research indicates that school success is related to economic status (Clarke, 1996). Students with a low economic status were more likely to drop out of school (Schroeder, 1994), have the lowest levels of achievement on standardized tests (Garibaldi, 1997), and were three times more likely than median/high economic status students to be enrolled in remedial courses (Anonymous, 1998).

According to Birdsall (1998), “the high-school diploma has lost its value, as U.S. employers insist on college education as a measure of competence,” (p. 81). Hence, individuals who fall into lower economic status levels are placed in a double bind situation.

College education is necessary to be viable in the job market, but individuals with low economic status are less likely to successfully participate in post-secondary ventures. Statistics indicate that 83% of higher economic status students are enrolled in post-secondary institutions, compared to the enrollment of only 34% of students with lower economic status (Birdsall, 1998). Furthermore, families with a lower economic status had fewer expectations for their children to attend college when compared with higher economic status parents (Garibaldi, 1997), and individuals from a lower economic background were actually less likely to graduate from college (Barlow, 1995).

There appear to be differences between the overall poverty rate and the poverty rates of individuals in certain demographic subgroups. Census data from 1996 indicated that poverty index percentiles by minority were whites 6.2%, blacks 21.9%, and Hispanics 28.8% (Clarke, 1996). Autry (1997) indicated that the income for black families was declining due to the vast numbers of single mother families. While poverty rates for whites were below that of other minority groups, Lewis (1997) asserted that poverty rates among whites were on the rise. The average per capita income was \$8,447 for Native Americans (Churaman, 1992). According to Vinje (1996), 33.3% of all Native American families fall below poverty guidelines. While recent strides toward overcoming the poverty levels experienced among the Native American population have been made, as of 1990 almost 60% of all Native Americans still lived in housing without plumbing, and almost 58% of Native American families occupied dwellings that were far too small for their family size (Vinje, 1996). Asians are the most affluent of minority groups with a median household income of \$44,460 (Taylor & Stern, 1997), and an average household

income of \$23,671 (Schmid, 1995). Taking into consideration all minority groups, Asians receive less poverty assistance (Thatchenkery & Cheng, 1997). However, Asian children account for 11% of those living in poverty, a figure greater than their percentage in the population (Anonymous, 1994).

Minority Classification

Minority, or minority status is, “a term often used in discussion about ethnic groups and their relationships to the majority or dominant group in the United States and other countries,” (Gollnick & Chinn, 1986, p. 76). Minority status is often identified in the literature as a classification of Black-non Hispanic, Asian, Hispanic or Native American (Buerhaus & Auerbach, 1999; Holzer, Nguyen, Goldsmith, & Thompson, 1996). Often to increase the meaning and relevance in research data minorities are compared to the majority or white population (Buerhaus & Auerbach, 1999).

According to Stringfield and Herman (1997), U.S. minorities are more likely to be at an educational disadvantage. However, according to an article by Ravitch (1997), this disadvantage may be lessening. “The American Council on Education found that college enrollments increased between 1994 and 1995 among Native Americans (up by 3.1%), Asian Americans (up 3%), African Americans (up 1.7%), and Hispanics (up 4.6%),” (p.112). Citing information from the Center for Education Statistics, Churaman (1992) indicated that minority student enrollment had risen to an all time high.

“Nationally, in 1994, earning of college degrees was 29.7% for whites, 16.2% for blacks, and 13.3% for Hispanics,” (Clarke, 1996, p. 3). Similar findings were evidenced in figures related to Scholastic Aptitude Test (SAT) scores as, “the average SAT score of

all students was 1,016 on a total scale of 1,600. Asian American students obtained the highest average score of 1,056; White Americans obtained a 1,052, American Indian 950; Hispanics a 934, and African American students had the lowest average score of 857,” (Garibaldi, 1997, p. 7). Additionally, minorities were more likely to take lower-level academic core classes instead of courses designed to prepare students for college (Garibaldi, 1997 & Clark, 1996).

According to Sue (1981), “the history of Black Americans is the struggle of a people to survive against great odds and injustices,” (p.142). “Slavery had several important effects on Black education. First it left over 90% of Black people illiterate at the end of the Civil War. And, second, it set the trend for the low educational achievement of this group,” (Sue, 1981, p.148). According to Garibaldi (1997), “African Americans are the largest non-white student group in all regions of the United States except the West, Alaska, and Hawaii,” (p.3). In the area of educational attainment, Black Americans have made strides, but still obtain degrees at a lower rate than other minorities (Garibaldi, 1997). According to Sue (1981), several factors negatively impact the success of Black Americans in higher education such as racism in schools, unemployment, and parental underemployment. In comparison to white students, black students receive fewer four-year degrees, but proportionately more two-year degrees, and account for 7.2% of all college degrees awarded (Garibaldi, 1997 & Andersen, 1998). However, studies have demonstrated that when provided with quality education black students are capable of achieving at levels equal to non-minority students (Stringfield & Herman, 1997).

The Asian population has been classified as the fastest growing minority in the United States (Taylor & Stern, 1997). There were 7.2 million Asians residing in the United States in 1990 (Thatchenkery & Cheng, 1997). That figure is projected to be 9.8 million by the year 2000 (Schmid, 1995), and expected to reach 20 million by 2020 (Taylor & Stern, 1997). The Asian American population is very culturally diverse as reflected by population figures cited by Schmid (1995). The Asian American population is comprised of, “Filipinos (21%), Chinese (17%), Vietnamese (16%), Asians (10%), Japanese (9%), and 14% classified as other,” (Schmid, 1995, p.19). According to Taylor and Stern (1997), “three out of every four” Asian Americans “live in: California, New York, and Hawaii, with most concentrated in six cities: Los Angeles, San Francisco, New York, Sacramento, Chicago, and Houston,” (p. 51).

Asians have been tagged as the “model minority,” (Thatchenkery & Cheng, 1997, p.397) due to their affluence, work ethic, and high educational achievement (Taylor & Stern, 1997). However, according to Thatchenkery and Cheng (1997), a “more accurate picture of Asian Americans shows a ‘bimodal distribution’, a mixture of extremely successful students who have attained higher education and a large undereducated class,” (p. 397). As a whole, Asians have a high regard for scholarship and a great respect for education (Anonymous, 1999). Asian Americans are over-represented among the top performers on college and professional school entrance exams (Thatchenkery & Cheng, 1997), are the most educated of all minority groups (Schmid, 1995), and as of 1990, 41% of the Asian adult population (25 years old and older) had at least a bachelor’s degree (Taylor & Stern, 1997).

“Hispanics are members of a single culture group in the sense that they share a fairly common history, beginning with the Spanish Conquest,” (Sue, 1981, p.187). Hispanic Americans as a whole reside in urban environments (Sue, 1981). “With regards to within group differences, 87% of Chicanos reside in the Southwest United States, 76% of Puerto Ricans reside in one of three states: New York, New Jersey, or Connecticut; and most Cubans are to be found in Florida,” (Sue, 1981, p.190). National census projections indicate that, “Hispanics will surpass blacks as the biggest American minority group by 2005, and will form fully one-fifth of the U.S. population by 2035,” (Phillips, 1998, p. 35). “Hispanics are a significantly undereducated group,” (Sue, 1981, p.189). The percentage of Hispanics that achieve at least a high school diploma is only 33% (Sue, 1981). Similar to black students, Hispanic students receive more two year than four year degrees in comparison to white students (Andersen, 1998). However, according to Chavez (1997), the education level has steadily increased for Hispanics as, “they pursue the ‘American Dream’ with increasing success,” (p. 59).

The life of the Native American is often described as, “one of hardships, incarcerations, degradations, exploitations, low self-esteem, and rejection,” (Sue, 1981, p.216). According to Major (1992), the estimated two million individuals who comprise the Native American population in the United States have the highest suicide rates, highest infant mortality rates, and the highest incidence of HIV/AIDS of any minority group. Below average rankings on standardized test scores and high school completion rates appear to also plague the Native American population. Results from standardized tests indicate that scores for Native American students fall below the national average

(Anonymous, 1994). In fact, many Native American graduating high school seniors had reading, math, and language skill levels three to five grade levels below their twelfth grade standing (Anonymous, 1994).

However, according to Vinje (1996), the devalued status of education that exists among Native Americans is changing. Many tribal leaders have reached the conclusion that in order for the Native American population to develop to its potential, education must be a top priority (Vinje, 1996). Proof of this attitudinal change may be evidenced in recent college enrollment statistics. Ravitch (1997) noted that among Native Americans college enrollment had increased 3.1% between 1994 and 1995.

In terms of minority classification and nursing, according to Buerhaus and Auerbach (1999), minorities are underrepresented in all health professions, including nursing. The percentage of minorities in nursing lags considerably behind the percentage of minorities involved in other professions (Buerhaus & Auerbach, 1999). In addition, Rassool (1997) contended that applicants from ethnic minorities were less likely than whites to be admitted to nursing educational programs. Bellack (1996) agreed with Rassool (1997), especially with regards to Black Americans, indicating that race, class, and gender had converged to exclude black women from the nursing profession.

In addition to extrinsic exclusion factors keeping minorities from the nursing profession, Sadler (1999) contended that it was difficult to recruit ethnic minority groups into the nursing field. Some minority groups fear that involvement in a nursing profession may break the rules of their culture or religion, while other minority groups simply hold negative attitudes toward the career field (Sadler, 1999). For example, Asian women

stated that attending to a male in a bed would be unacceptable; additionally, many Asians viewed nursing as physically demanding but not mentally stimulating, or as an occupation where one must be subservient to physicians (Sadler, 1999). Hence, extrinsic as well as intrinsic factors exclude minorities from pursuing nursing as a profession.

Critique of the Validity of the Existing Literature

According to the literature, Jung's theory of psychological type appears to be valid (Berens, 1996). Furthermore, if used as a tool of inclusion rather than exclusion, the use of psychological type also appears to be appropriate (Myers & McCaulley, 1985).

Jung's theory of psychological type and the resulting M.B.T.I., according to the literature, are extremely well researched and documented (Berens, 1996). The overall usefulness of psychological type theory in the educational realm has been well documented. Research indicated that certain psychological types may be at an advantage in the academic arena (Schurr & Ruble, 1986; Schurr et al., 1997). According to the existing literature, it is possible to measure the psychological type most closely associated with academic success, isolate characteristics peculiar to that identified type, and instruct non-successful students in the acquisition of those traits (Frisbe, 1988, Schurr & Ruble, 1986). Nursing student choice of major and attrition patterns have been researched in terms of effect by psychological type. However, limited literature exists on research conducted for which equivalent ability has been controlled. Additionally, much literature exists which suggests that educational pursuits appear to be jeopardized by low economic status and minority classification (Clarke, 1996; Stringfield & Herman, 1997). However, limited literature exists on research, which examined the effects of

demographic variables on the pass/fail rates of nursing students while controlling for equivalent ability.

Contributions to the Literature

It is expected that this study will contribute to the literature by specifically considering the effect of psychological type, and the demographic variables of economic status and minority classification on the pass/fail rates of vocational nursing students. If significant findings are not obtained, then this study may contribute to the existing literature in terms of causal factors not associated with vocational nursing student pass/fail rates.

Summary

Literature relating to psychological type and the demographic variables of economic status and minority classification were reviewed in this chapter. This chapter also included a critique of the validity of the theory and research literature. Finally, the chapter concluded with a summary of what is known and unknown about the topic and the contributions this study is expected to make to the literature.

CHAPTER 3

METHODS AND PROCEDURES

Introduction

Vernon Regional Junior College is held accountable by the state of Texas as a funding entity, and by the student as a consumer. Student pass/fail rates reflect accountability measures. The Texas Higher Education Coordinating Board (2000) requires all public two-year institutions to produce a specified number of degree or certificate earning students in order to qualify for continued funding. As consumers, students expect to be afforded the opportunity to acquire marketable skills in order to be competitive in the workplace. The instrumental task of this research effort was identified as the need to ascertain the relationship between psychological type, economic status, and minority classification, and the pass/fail rates of vocational nursing students.

Hypotheses

In order to determine the relationship between psychological type, economic status and minority classification, and vocational nursing classroom pass/fail rates, the hypotheses investigated by this study were:

H₀₁: There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as introverts versus extraverts and their pass/fail rates in the vocational nursing classroom;

H₀₂: There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as sensing versus intuiting and their pass/fail rates in the vocational nursing classroom.

H₀₃: There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as feeling versus thinking and their pass/fail rates in the vocational nursing classroom.

H₀₄: There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as judging versus perceiving and their pass/fail rates in the vocational nursing classroom.

H₀₅: There is no significant relationship between vocational nursing students with a poverty versus non-poverty economic status, as measured by self-report, and the pass/fail rates in the vocational nursing classroom;

H₀₆: There is no significant relationship between vocational nursing students with a minority versus non-minority classification, as measured by self-report, and the pass/fail rates in the vocational nursing classroom.

The dependent variable in this study was vocational nursing students' pass/fail rates. The independent variables in this study included vocational nursing student personality type, vocational nursing student self-reported economic status, and vocational nursing student self-reported minority classification. This section contains information about the population, sample, research design, instrumentation, data collection, treatment of data, and pilot study. A chapter summary is also provided.

Population

The population of this study included all students enrolled in the vocational nursing program at Vernon Regional Junior College during the 2000-2001 school year (N=150). Data on the population was obtained through demographic records stored at the Vernon Regional Junior College Admissions and Records Office.

Sample

The sample of this study included students enrolled in the vocational nursing program at the V.R.J.C.-Century City Center day and evening programs during the 2000-2001 school year (n=70), and students enrolled in the vocational nursing program at the V.R.J.C.-Vernon Campus day and evening program during the 2000-2001 school year (n=25). Convenience sampling allowed the researcher the benefits of obtaining the largest sample size possible, increasing the likelihood of rejecting the null hypothesis if false using the desired statistical power of .05, and safeguarding against problems with attrition (Gall, Borg, & Gall, 1996).

Research Design

The type of research design employed in this study was the chi-square, specifically the chi-square test of independence with a 2x2 design. The chi-square test of independence is a “phrase used by researchers when they want to investigate the relationship between two variables,” (Huck & Cormier, 1996, p. 528). The chi-square was deemed suitable for use in this research effort because it is typically the statistic “used to determine whether a ‘non-chance’ relationship exists between two nominal variables,” (Huck & Cormier, 1996, p. 528). The chi-square is a nonparametric test that,

“can be used when the parametric assumptions of normality and homogeneity of variance are not met,” (Hinkle, Wiersma & Jurs, 1998, p. 574). Restrictions on the use of the chi-square dictate that the statistic only be used with frequency data, that variables be independent of one another, that no expected frequencies be less than five, that all data be logically categorized, and that the sums of expected and observed frequencies be the same (Isaac & Michael, 1995). Additionally, “to work properly, the chi-square necessitates sample sizes that are not too small; a current rule of thumb says that the chi-square should not be used if the average expected cell frequency is less than two,” (Huck & Cormier, 1996). According to these guidelines, this research effort met all of the chi-square restrictions. Additionally, the sample size was deemed as being adequate because all of the expected cell frequencies in the statistic were greater than five.

Chi-square is similar to other statistical procedures in that, “a null hypothesis is stated, a test statistic is computed, the observed value of the test statistic is compared to the critical value, and a decision is made whether or not to reject the null hypothesis,” (Hinkle, et al., 1998, p. 578). Essentially, observed frequencies are compared to expected or hypothetical frequencies. When employing a chi-square with a 2x2 design, “a single sample of subjects is measured, and each subject is classified into one of the available categories of the first variable, and then classified once more into one of the categories of the second variable,” (Huck & Cormier, 1996, p. 528). For example, in the first research hypothesis explored in this study a single sample of subjects (the vocational nursing students) were measured. Then each vocational nursing student was classified either as an introvert or extravert (one of the available categories of the first variable) and then

classified once more as either passing or failing the vocational nursing program (one of the categories of the second variable).

The raw data in a chi-square is placed into what is referred to as a contingency table. The type of contingency table used in this research effort was a 2x2 contingency table. A 2x2 contingency table measures two levels of the first variable against two levels of the second variable to ascertain any evidence of a non-chance relationship (Huck & Cormier, 1996). A pictorial representation of a 2x2 contingency table contains the following elements:

Table 1

Format of 2x2 Contingency Table

		Variable Two	
		Category 1	Category 2
Variable One	Category 1	A	B
	Category 2	C	D

For example, in the first research hypothesis explored in this study the 2x2 contingency table appeared as follows:

Table 2

Format of 2x2 Contingency Table For H_{01}

		Personality Type	
		Introvert	Extravert
Student Status	Pass	A	B
	Fail	C	D

The observed frequencies (raw data) and the expected frequencies (hypothetical data) are both represented in the contingency table. “Expected frequencies in a contingency table are determined by $fr \times fc / n$, that is, the product of the row and column frequencies divided by the sample size,” (Hinkle, et al., 1998, p. 585). “If there were no relationship in the population between the two variables, the population frequencies in all four cells of the contingency table would be the same,” (Huck & Cormier, 1996, p. 530). Essentially, the formula for the null hypothesis would appear as $P1=P2=P3=P4$. Typically, “a sample extracted from the population would not likely mirror the population perfectly,” (Huck & Cormier, 1996, pg. 530).

The chi-square is calculated with the following formula: $\chi^2 = n (AD - BC)^2 / (A + B) (C + D) (A + C) (B + D)$ (Isaac & Michael, 1995). The calculated value of the chi-square is compared to the critical chi-square value. The critical value of the chi-square is obtained by utilizing a table illustrating the upper percentage points of the chi-square

distribution. The table reflecting the upper percentage points of the chi-square distribution was taken, “from table IV of R.A. Fisher and F. Yates: *Statistical Tables for Biological, Agricultural and Medical Research*, 6th edition, (London: Longman Group, Ltd., 1974), reprinted by permission of Addison-Wesley Longman, Ltd.,” (Hinkle, et al., 1998, p.638). Using the chi-square table requires the researcher to calculate the degrees of freedom (*df*) involved in the test statistic (Isaac & Michael, 1995). “With the chi-square tests, the *df* value is determined by the number of categories into which the data are classified rather than by the number of pieces of data that are classified. The researcher does this simply by multiplying one less than the number of rows ($r-1$) by one less than the number of columns ($c-1$),” (Huck & Cormier, 1996, p. 533). For example, the calculation of *df* for the 2x2 design used in this research effort consisted of $(2-1) \times (2-1) = 1 \text{ df}$.

The phi coefficient is the test of significance for the chi-square test of independence (Isaac & Michael, 1995). Researchers can convert their chi-square calculated value into an index that estimates the strength of the relationship that exists in the population. By making this conversion, the researcher obtains a numerical value that is analogous to the correlation coefficient generated by Pearson's or Spearman's technique,” (Huck & Cormier, 1996, p. 530). The phi coefficient is calculated by taking the square root of the chi-square calculation divided by the total sample size (Huck & Cormier, 1996). The value of the phi coefficient is that if a meager relationship is revealed then there is only weak evidence that the two variables are related in the population. However, following this same logic, if a pronounced relationship is revealed

then there is strong evidence that exists that the two variables are related in the population (Huck & Cormier, 1996). In this research effort, the phi coefficient was calculated only for those variables that proved to have a statistically significant relationship.

A post hoc test was not used in this research effort. A post hoc test was not necessary because when the, “chi-square test is used to compare two groups, interpretation of the results is straightforward regardless of what decision is made regarding the null hypothesis,” (Huck & Cormier, 1996, p. 533). Essentially, a direct interpretation of the chi-square can be made simply by noting whether or not any discrepancies exist between the observed and expected frequencies in the distribution.

The SPSS Base 9.0 Applications Guide (1990) addresses the continuity correction for the chi-square as a correction, “intended to improve the approximation to the chi-square distribution when samples are small,” (p.80). According to Siegel (1956) a, “correction for continuity for a 2x2, $df = 1$, is desirable when $N < 100$,” (p.107). However, other statisticians do not recommend the correction for continuity for a 2x2 distribution due to a loss of power (Hinkle, et al., 1998). Due to the fact that all data collected was analyzed using Statistical Package for the Social Sciences (SPSS) version 9.0 which includes the continuity correction in its data printout, the continuity correction was documented in the results chapter of this research effort.

Instrumentation

The instruments used to gather data for this study were the Myers-Briggs Type Indicator and a demographic self-report forced choice questionnaire. The Myers-Briggs

Type Indicator was developed by Katharine C. Briggs and Isabel Briggs Myers in 1942 based on Carl G. Jung's theory of psychological type. The form of the instrument implemented in this study was Form G, a revised version of the M.B.T.I.'s previous forms A through F, completed in 1977, and still used today (Myers & McCaulley, 1985). The instrument requires an eighth grade reading level, is relatively simple to administer, and takes approximately 30 minutes for participants to complete.

The M.B.T.I. is "a 126-item forced choice questionnaire," (Horton & Oakland, 1997, p. 133), that "poses questions about how the test taker feels or acts in different situations," (Edgley, 1992, p. 85). Questions were designed to deal with, "self-reportable surface contrasts," of a person's behavior (Myers & McCaulley, 1985, p. 141). The questions on the indicator focus on surface behaviors with the intent of reliably uncovering the, "complex and profound patterns of behavior that could not otherwise be detected in a self-report instrument," (Myers & McCaulley, 1985, p. 141). The surface approach used to develop indicator questions lends itself toward creating a non-threatening testing environment that fosters candidness (Myers & McCaulley, 1985). The questions on the M.B.T.I. were written in a forced-choice format in accordance with the either/or dichotomies theorized by Jung. Based on their responses, individuals are placed into one of sixteen psychological type categories based on the degree of scores received on four scales (Zemke, 1992). "An internal consistency analysis was used for Forms A through G to select items that made a contribution to only one scale, items with high correlation on more than one scale were eliminated, and the cosine-pi formula was used

to obtain the approximation of tetrachoric correlations,” (Myers and McCaulley, 1985, p. 146).

Reliability

Split-Half Reliability of the M.B.T.I. across scales is .84 indicating, “proven consistency,” with other personality or, “trait-based,” instruments (Harvey, 1996, p.8). Temporal Stability correlations of $\pm .70$ between two administrations on test retest are considered adequate (Berens, 1996, p.8). The M.B.T.I.’s average short (less than or equal to nine months) test-retest correlation falls within the .80 vicinity. The instrument’s average long (greater than nine months) test-retest correlation falls in the .60-.70 range (Harvey, 1996). According to Myers and McCaulley (1985), “test-retest reliabilities of the M.B.T.I. show consistency over time,” (p. 171). When individuals do report a change in type it usually occurs in only one preference. Additionally, “estimates of internal consistency reliabilities for the continuous scores of the four M.B.T.I. scales are acceptable for most adult samples,” (Myers & McCaulley, 1985, p. 169).

Validity

According to Harvey (1996), “large amounts of empirical data indicate that M.B.T.I. scores demonstrate good convergent, discriminant, and predictive validity with respect to a wide range of criteria, including best-fit type assessments, scores on other personality inventories, occupational preference/choice, and independent behavioral observations,” (p.24). “The acceptable range of correlations for establishing validity is $\pm .20$ to .60, the M.B.T.I. fared well in such correlations, although most of the correlations were with continuous scores on individual scales,” (Berens, 1996, p. 8). Extraverts

ranged from -.77 to -.40; Introverts .75 to .40; Sensors -.67 to -.40; Intuitives .62 to .40; Thinkers -.57 to -.40; Feelers .55 to .40; Judgers -.59 to -.40; Perceivers .57 to .40 (Myers & McCaulley, 1985). Validity is often established by comparing the instrument under study with existing instruments or measurements. To establish validity, the M.B.T.I. was correlated with the Jungian Type Survey and self-estimates of type (Myers & McCaulley, 1985). “With respect to the M.B.T.I.’s construct validity several large-sample, carefully conducted exploratory studies produced textbook four-factor structures that almost exactly matched the hypothesized pattern of loadings based on the preference scoring system,” (Harvey, 1996, p.19).

Attached to the M.B.T.I. answer document was a demographic self-report forced choice questionnaire developed by the researcher. The demographic questionnaire contained the following three questions:

1. What is your annual household income before taxes?

- | | |
|----------------------|-----------------------|
| a. less than \$7,740 | f. \$18, 220-\$20,839 |
| b. \$7,740-\$10, 359 | g. \$20,840-\$23,459 |
| c. \$10,360-\$12,979 | h. \$23,460-\$26,079 |
| d. \$12,980-\$15,599 | i. \$26,080-\$28,699 |
| e. \$15,600-\$18,219 | j. \$28,700-\$31,319 |

k. other, please specify: _____

2. How many people currently live in your household including you?

- a. one
- b. two
- c. three
- d. four
- e. five
- f. six
- g. seven
- h. eight
- i. nine
- j. ten

k. other, please specify: _____

3. What is your minority classification?

- a. Asian
- b. Black (non-Hispanic)
- c. Hispanic
- d. Native American
- e. White (non-Hispanic)

The data used to construct the first two questions relating to economic status (annual household income and family size) was taken from the 1996 U.S. poverty guidelines. The 1996 U.S. poverty guidelines according to family size were: 1 household member-\$7,740, 2-\$10,360, 3-\$12,980, 4-\$15,600, with \$2,620 added for each additional household member (Shalala, 1996).

The demographic variables used to construct the third question relating to minority status were employed based on demographic variables taken from a survey used to sample nurses on various topics, “conducted every four years by the Bureau of Health Professions, Health Resources and Services Administration, U.S. Department of Public Health,” (Buerhaus & Auerbach, 1999, pg.180). The inclusion of the White, non-Hispanic category was done purposefully to increase the meaning and relevance of the

data through comparison of minorities to the majority population (Buerhaus & Auerbach, 1999).

It was believed that the sample under study would be able to furnish the information requested due to their chronological age. According to the Vernon Regional Junior College Annual Report 1999-2000 the average age of students enrolled at VRJC was 27.8 years (2000).

In order to ascertain the feasibility of the chosen methodology and make revisions as needed, a pilot study was conducted. In July of 2000, five vocational nursing students on the verge of completing the nursing program in August 2000 were asked to participate in the pilot study. With the permission and under the cooperation of the V.R.J.C. - Century City Center Director of Nursing, the chosen students were contacted, received a description of the purpose of the study, and were asked for their cooperation. Upon their acceptance, the group was assembled and asked to complete the three question demographic questionnaire, which was attached to the M.B.T.I. answer document. Upon completion of the demographic questionnaire, the M.B.T.I. test booklet Form G, was distributed. Participants were asked to read the directions printed on the Form G test booklet and answer document, and complete the instrument accordingly. Upon completion of the M.B.T.I. the materials were collected and the self-scoring answer keys were used to determine participant type. Self-report questionnaires were tabulated to ascertain participant economic status and minority classification. Upon the participant's completion of the vocational nursing program, the information on student program outcomes was gathered. Individuals who received a grade of C or above in all of their

vocational nursing classes were considered as passing. Individuals who received a grade of D, F, W, or I in any of their vocational nursing classes were considered as failing.

The pilot study enabled the researcher to transition toward the data collection phase of this research effort with confidence. Participants involved in the pilot study did not indicate or display any confusion or difficulty in completing the demographic questionnaire or the M.B.T.I. Hence, the methodology chosen for the study was deemed as suitable without the need for any revisions.

Data Collection

During the fall of the 2000-2001 academic year, with the permission and cooperation of the Directors of the V.R.J.C.-Century City and Vernon Campus vocational nursing programs, both the day and evening nursing classrooms were visited for the purpose of collecting data. This occurred during the first month of the student's vocational nursing program. Participants were advised that the study was being conducted to determine information that could increase the chances of future nursing students successfully completing the vocational nursing program. It was explained to the students that participation was on a voluntary basis, and that participation or choices of non-participation would in no way effect their status in the vocational nursing program. The nursing students were informed that the results from the inventory and the questionnaire would remain confidential, and that profile results from their inventory or the study could be obtained by contacting the researcher through the Division of Student Services. Students that opted to participate were asked to read the Institutional Review Board (IRB) research application which notified them that they could withdraw from the

study at any time without penalty. The M.B.T.I. Form G inventory booklet and answer document were then distributed to each student remaining in the room. The demographic questionnaire was attached to the M.B.T.I. answer document.

Participants were first instructed to complete the demographic questionnaire. Then individuals were instructed to read the directions printed on the Form G test booklet and answer document, and complete the instrument accordingly. Upon completion of the inventory, all materials were collected. Upon completion of the M.B.T.I., self-scoring answer keys were used to determine participant type. Self-report questionnaires were tabulated to ascertain participant economic status and minority classification. At the end of the semester, information on student pass/fail outcomes was obtained. Individuals who received a grade of C or above in all of their vocational nursing classes were classified as passing. Individuals who received a grade of D, F, I, or W in any of their vocational nursing classes were classified as failing.

Treatment of Data

In order to investigate whether a student's classroom performance could in part be predicted by their psychological type preference, economic status, or minority classification, a chi-square test of independence with a 2x2 design was employed. After collecting and analyzing the raw data, the raw data used for testing research hypothesis one was placed into a 2x2 contingency table. The observed frequencies (raw data) and the expected frequencies (hypothetical data) were both represented in the contingency table. The expected frequencies in the contingency table were determined through the

application of the formula $fr \times fc / n$, which multiplies row and column frequencies and divides them by sample size (Hinkle, et al., 1998).

The chi-square for research hypothesis one was then calculated by applying the formula $x^2 = n (AD - BC)^2 / (A + B) (C + D) (A + C) (B + D)$ (Isaac & Michael, 1995). The calculated value of the chi-square was then compared to the critical value of the chi-square. The critical value of the chi-square was obtained by utilizing a table comprised of the upper percentage points of the chi-square distribution. In order to utilize this table the researcher located the value found at the intersection of the significance level of .05 chosen for this study and the number of degrees of freedom involved in the test statistic (Isaac & Michael, 1995). The degrees of freedom for this 2x2 design was calculated “by multiplying one less than the number of rows (r-1) by one less than the number of columns (c-1),” (Huck & Cormier, 1996, p. 533). The critical value for all six research hypotheses was “3.841,” (Huck & Cormier, 1996, p. 533).

The calculated value of chi-square was then compared to the critical value of chi-square. If the calculated value of the chi-square was less than the critical value of chi-square, the null hypothesis was not rejected, but retained. If the calculated value of the chi-square was greater than the critical value of chi-square, the null hypothesis was rejected (Hinkle, et al., 1998).

The phi coefficient was used to estimate the strength of the relationship that existed in any hypothesis that yielded a statistically significant result (Huck & Cormier, 1996). The phi coefficient was calculated by taking the square root of the chi-square calculation divided by the total sample size (Huck & Cormier, 1996). A moderate to

strong phi coefficient lent evidence that the two variables under consideration were related in the population (Huck & Cormier, 1996).

The process described above was initiated for each of the six research hypotheses considered in this study. The Statistical Package for the Social Sciences Version 9.0 was used for the calculation of the chi-square test of independence. The data reported did not contain any identifying information that could be traced back to the participant.

Summary

The methodologies used to gather and analyze the data were described in this chapter. Subjects from vocational nursing classes were administered the Myers-Briggs Type Indicator. The subjects included first semester vocational nursing students at Vernon Regional Junior College-Century City Center and the Vernon Campus that were solicited for volunteer participation. The population of the study included vocational nursing students at Vernon Regional Junior College. Instrumentation, data collection and the treatment of data were also discussed in this chapter.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION OF RESULTS

Introduction

This chapter is divided into three sections. The first section provides a summary of the participants in the study. The second section contains a descriptive overview of the data and resulting statistical analysis. The final section presents decisions concerning each null hypothesis. Detailed statistical tables can be found in Appendix C and are arranged in the same order as the analysis in the chapter.

Student Participation

The M.B.T.I. and accompanying demographic questionnaire were administered to students (n=95) during their initial semester of enrollment in the vocational nursing program at V. R. J. C. The student's personality type profile was determined through the researcher's use of self-scoring answer templates provided by the instrument's publisher. Personality type for each of the four dichotomies (Extravert/Introvert; Sensing/Intuition; Thinking/Feeling; and Judging/Perceiving) was recorded for each student participant. A count of the raw data for each of the four personality type dichotomies indicated that there were more extraverts (n=61) than introverts (n=34); more sensing students (n=75) than intuitive students (n=20); slightly more feelers (n=51) than thinkers (n=44); and almost twice as many students classified as judging (n=62) than those that were classified

as perceiving (n=33). Refer to Appendix D for a chart illustrating an accounting of the raw data.

The demographic questionnaires were tabulated to determine student economic status and minority classification. Economic status was determined by examining the reply to questions numbered one and two on the demographic survey that pertained to annual household income and family size. The student's responses were then compared to the 1996 U.S. poverty guidelines, which according to family size were: 1 household member-\$7,740, 2-\$10,360, 3-\$12,980, 4-\$15,600, with \$2,620 added for each additional household member (Shalala, 1996). Students whose response calculation fell at or below the established poverty guidelines were classified as impoverished. Students whose response calculation fell above the established poverty guidelines were classified as non-impoverished. A count of the raw data indicated that there were more students classified as non-impoverished (n=57) than there were students classified as impoverished (n=38). For a chart indicating an accounting of the raw data refer to Appendix D.

Minority classification was determined by examining the reply to question number three on the demographic survey. Students who responded by circling letters a, b, c, or d (representing Asian; Black/non-Hispanic; Hispanic; and Native American) were classified as being a minority. Students who responded by circling letter e (representing White/non-Hispanic) were classified as being non-minority. Raw data counts indicated that well over half of the vocational nursing students were classified as non-minority (n=69) while less than a third of the students were classified as minority (n=26). Appendix D offers an accounting of the raw data counts.

The pass/fail rates of student participants were determined by examining the course grades awarded at the completion of the initial semester of enrollment in the vocational nursing program. Individuals who received a grade of A, B, or C in all their vocational nursing coursework were classified as passing. Individuals who received a grade of D, F, W, or I in any of their vocational nursing coursework were classified as failing. A count of the raw data indicated that more students passed the vocational nursing program (n=63) than failed the program (n=32). For raw data gathered in this research effort see Appendix D.

Data Analysis

The Chi-square Test of Independence was used to analyze the data in all six hypotheses. The one analysis (H_{03}) that yielded a statistically significant result used the phi coefficient to measure the strength of the relationship.

The first research hypothesis, “there is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as introverts versus extraverts and their pass/fail rates in the vocational nursing classroom” was tested by the following null hypothesis: $H_{01}: P_1=P_2=P_3=P_4$

A Chi-square Test of Independence 2x2 analysis was conducted to test the relationship between the variables at the .05 level of significance (as shown in Table 3). No relationship was found between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as introverts versus extraverts and their pass/fail rates in the vocational nursing classroom ($\chi^2 = 1.331$, $N=95$, $df=1$, $p>.05$). The null hypothesis for H_{01} was not rejected. Due to the fact that the analysis did not yield

evidence of a statistically significant relationship among the variables analyzed, the phi coefficient was not calculated.

A frequency count of the data in the analysis indicated that the difference between the observed and the expected counts was no greater than what one would generally expect to find in the population by chance (refer to Table 3). Of the students who passed the vocational nursing program (n=63, a figure comprised of 43 extraverts and 20 introverts) it was expected that roughly two-thirds of that number would be extraverts (n=40.5), and that approximately one-third would be introverts (n=22.5). The observed frequency counts for the analysis revealed that roughly two-thirds of the number of vocational nursing students who passed (n=63) were indeed extraverts (n=43), and that approximately one-third of the students who passed were indeed introverts (n=20).

Of the students who failed the vocational nursing program (n=32, a figure comprised of 18 extraverts and 14 introverts) it was expected that roughly two-thirds would be extraverts (n=20.5) and that approximately one-third would be introverts (n=11.5). The observed frequency counts for the analysis did indeed reveal that roughly two-thirds of the nursing students who failed the program (n=32) were extroverts (n=18), while approximately one-third were introverts (n=14).

Table 3

Frequency of Introvert/Extravert Students with Classroom Pass/Fail Rates and Chi-squareTest for H₀₁

Pass/Fail Status		Personality Type		Totals
		Extravert	Introvert	
Pass	Observed Count (<i>n</i>)	43	20	63
	Expected Count	40.5	22.5	
	%	45.3	21.1	
Fail	Observed Count (<i>n</i>)	18	14	32
	Expected Count	20.5	11.5	
	%	18.9	14.7	
Totals	<i>N</i>	61	34	95
	Value	df	Significance	
Pearson Chi-square	1.331	1	.249	
Continuity Correction	.860	1	.354	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.45.

The second research hypothesis, “there is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as sensing versus intuiting and their pass/fail rates in the vocational nursing classroom” was tested by the following null hypothesis: $H_{02}: P_1=P_2=P_3=P_4$.

A Chi-square Test of Independence 2x2 analysis was conducted to test the relationship between the variables at the .05 level of significance (as shown in Table 4).

No relationship was found between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as intuiting versus sensing and their pass/fail rates in the vocational nursing classroom ($\chi^2 = .855$, $N=95$, $df=1$, $p>.05$). The null hypothesis for H_{02} was not rejected. Since the analysis failed to yield evidence of a statistically significant relationship between the analyzed variables, the phi coefficient was not calculated.

A frequency count of the data in the analysis indicated that the difference between the observed and the expected counts was no greater than what one would generally expect to find in the population by chance (refer to Table 4). Of the students who passed the vocational nursing program ($n=63$, a figure comprised of 15 intuiting students and 48 sensing students) it was expected that approximately a quarter of those students would be intuiting ($n=13.3$), and that roughly three-quarters would be sensing ($n=49.7$). The observed frequency counts for the analysis revealed that approximately one-quarter of vocational nursing students who passed ($n=63$) were indeed intuiting ($n=15$), and that roughly three-quarters were sensing ($n=48$).

Of the students who failed the vocational nursing program ($n=32$, a count of 5 intuiting students and 27 sensing students) it was expected that approximately a fifth of those students would be intuiting ($n=6.7$), and that roughly four-fifths would be sensing ($n=25.3$). The observed frequency counts for the analysis did indeed reveal that approximately a fifth of the nursing students who failed the program ($n=32$) were intuiting ($n=5$), while roughly four-fifths were sensing ($n=27$).

Table 4

Frequency of Intuitive/Sensing Students with Classroom Pass/Fail Rates and Chi-square

Test for H₂

Pass/Fail Status		Personality Type		Totals
		Intuiting	Sensing	
Pass	Observed Count (<i>n</i>)	15	48	63
	Expected Count	13.3	49.7	
	%	15.8	50.5	
Fail	Observed Count (<i>n</i>)	5	27	32
	Expected Count	6.7	25.3	
	%	5.3	28.4	
Totals	<i>N</i>	20	75	95
	Value	df	Significance	
Pearson Chi-square	.855	1	.355	
Continuity Correction	.434	1	.510	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.74.

The third research hypothesis, “there is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as feeling versus thinking and their pass/fail rates in the vocational nursing classroom” was tested by the following null hypothesis: H₀₃: P₁=P₂=P₃=P₄.

Table 5 illustrates the Chi-square Test of Independence 2x2 analysis that was conducted to test the relationship between the variables at the .05 level of significance. A

statistically significant relationship was found between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as feeling versus thinking and their pass/fail rates in the vocational nursing classroom ($\chi^2 = 7.236$, $N=95$, $df=1$, $p<.05$). The null hypothesis for H_{03} was rejected. The phi coefficient was used to measure the strength of association in the 2x2 contingency table resulting in a .28 effect size, indicating a moderate relationship. A frequency count of the data in the analysis (as illustrated in Table 5) indicated that the actual count of thinkers who had failed the vocational nursing program ($n=21$) exceeded the expected count ($n=14.8$) by almost a third. Therefore, as one would expect, the actual count of thinkers who passed the vocational nursing program ($n=23$) was considerably less than what had been expected ($n=29.2$). Because the observed counts for both groups of thinkers differed considerably from what had been expected, one would assume that the feelers expected and observed counts would also be skewed. In accordance with this expectation, a frequency count of the data in the analysis indicated that the actual count of feelers who passed the vocational nursing program ($n=40$) was greater than the expected count ($n=33.8$) by almost a third. Therefore, as one would expect, the actual count of feelers who failed the vocational nursing program ($n=11$) was considerably less than what had been expected ($n=17.2$).

Table 5

Frequency of Feeling/Thinking Students with Classroom Pass/Fail Rates and Chi-square Test for H_03

Pass/Fail Status		Personality Type		Totals
		Feeling	Thinking	
Pass	Observed Count (<i>n</i>)	40	23	68
	Expected Count	33.8	29.2	
	%	42.1	24.2	
Fail	Observed Count (<i>n</i>)	11	21	32
	Expected Count	17.2	14.8	
	%	11.6	22.1	
Totals	<i>N</i>	51	44	95
	Value	df	Significance	
Pearson Chi-square	7.236	1	.007	
Continuity Correction	6.112	1	.013	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.82.

The fourth research hypothesis, “there is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as judging versus perceiving and their pass/fail rates in the vocational nursing classroom” was tested by the following hypothesis: $H_{04}: P_1=P_2=P_3=P_4$.

A Chi-square Test of Independence 2x2 analysis was conducted to test the relationship between the variables at the .05 level of significance (as shown in Table 6).

No relationship was found between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as judging versus perceiving and their pass/fail rates in the vocational nursing classroom ($\chi^2 = .259$, $N=95$, $df=1$, $p>.05$). The null hypothesis for H_{04} was not rejected. Since the analysis failed to yield evidence of a statistically significant relationship between the analyzed variables, the phi coefficient was not calculated.

A frequency count of the data in the analysis (refer to Table 6) indicated that the difference between the observed and the expected counts was no greater than what one could generally expect to find in the population by chance. Of the students who passed the vocational nursing program ($n=63$, a figure comprised of 40 judging students and 23 perceiving students) it was expected that approximately two-thirds of those students would be typed as judging ($n=41.1$), and that roughly a third would be typed as perceiving ($n=21.9$). The observed frequency counts for the analysis revealed that approximately two-thirds of vocational nursing students who passed ($n=63$) were indeed typed as judging ($n=40$), and that roughly a third were typed as perceiving ($n=23$).

Of the students who failed the vocational nursing program ($n=32$, a figure comprised of 22 judging students and 10 perceiving students) it was expected that approximately two-thirds of those students would be typed as judging ($n=20.9$), and that roughly a third would be typed as perceiving ($n=11.1$). The observed frequency counts for the analysis did indeed reveal that approximately two-thirds of the nursing students who failed the program ($n=32$) were typed as judging ($n=22$), while roughly a third were typed as perceiving ($n=10$).

Table 6

Frequency of Judging/Perceiving Students with Classroom Pass/Fail Rates and Chi-square Test for H_04

Pass/Fail Status		Personality Type		Totals
		Judging	Perceiving	
Pass	Observed Count (<i>n</i>)	40	23	63
	Expected Count	41.1	21.9	
	%	42.1	24.2	
Fail	Observed Count (<i>n</i>)	22	10	32
	Expected Count	20.9	11.1	
	%	23.2	10.5	
Totals	<i>N</i>	62	33	95
	Value	df	Significance	
Pearson Chi-square	.259	1	.611	
Continuity Correction	.079	1	.779	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.12.

The fifth research hypothesis, “there is no significant relationship between vocational nursing students with a poverty versus non-poverty economic status, as measured by self-report, and their pass/fail rates in the vocational nursing classroom” was tested by the following hypothesis: $H_{05}: P_1=P_2=P_3=P_4$.

Table 7 illustrates the Chi-square Test of Independence 2x2 analysis that was conducted to test the relationship between the variables at the .05 level of significance.

No relationship was found between vocational nursing students with a poverty versus a non-poverty economic status, as measured by self-report, and their pass/fail rates in the vocational nursing classroom ($X^2 = .008$, $N=95$, $df=1$, $p>.05$). The null hypothesis for H_{05} was not rejected. Due to the fact that the analysis failed to yield evidence of a statistically significant relationship between the analyzed variables, the phi coefficient was not calculated.

A frequency count of the data in the analysis (as illustrated in Table 7) indicated that the difference between the observed and the expected counts was no greater than what one would generally expect to find in the population by chance. Of the students who passed the vocational nursing program ($n=63$, comprised of 25 students classified as impoverished and 38 students classified as non-impoverished) it was expected that a little less than half would have an impoverished economic status ($n=25.2$), and that a little over half would have a non-impoverished economic status ($n=37.8$). The observed frequency counts for the analysis revealed that a little less than half of the vocational nursing students who passed ($n=63$) did indeed have an impoverished economic status ($n=25$), and that a little over half had a non-impoverished economic status ($n=38$).

Of the students who failed the vocational nursing program ($n=32$, consisting of 13 students classified as impoverished and 19 students classified as non-impoverished) it was expected that a little less than half would have an impoverished economic status ($n=12.8$), and that a little over half would have a non-impoverished economic status ($n=19.2$). The observed frequency counts for the analysis revealed that a little less than half of the vocational nursing students who failed the program ($n=32$) did indeed have an

impoverished economic status (n=13), and that a little over half had a non-impoverished economic status (n=19).

Table 7

Frequency of Poverty versus Non-Poverty Students with Classroom Pass/Fail Rates and Chi-square Test for H₀₅

Pass/Fail Status		Economic Status		Totals
		Poverty	Non-Poverty	
Pass	Observed Count (<i>n</i>)	25	38	63
	Expected Count	25.2	37.8	
	%	26.3	40.0	
Fail	Observed Count (<i>n</i>)	13	19	32
	Expected Count	12.8	19.2	
	%	13.7	20.0	
Totals	<i>N</i>	38	57	95
	Value	df	Significance	
Pearson Chi-square	.008	1	.929	
Continuity Correction	.000	1	1.000	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.80.

The sixth research hypothesis, “there is no significant relationship between vocational nursing students with a minority versus non-minority classification, as measured by self-report, and their pass/fail rates in the vocational nursing classroom” was tested by the following hypothesis: H₀₆: P1=P2=P3=P4.

As illustrated in Table 8 a Chi-square Test of Independence 2x2 analysis was conducted to test the relationship between the variables at the .05 level of significance. No relationship was found between vocational nursing students with a minority versus a non-minority classification, as measured by self-report, and their pass/fail rates in the vocational nursing classroom ($\chi^2 = 1.192$, $N=95$, $df=1$, $p>.05$). The null hypothesis for H_{06} was not rejected. Due to the fact that the analysis did not produce evidence of a statistically significant relationship among the variables analyzed, the phi coefficient was not calculated.

A frequency count of the data in the analysis (refer to Table 8) indicated that the difference between the observed and the expected counts was no greater than what one would generally expect to find in the population by chance. Of the students who passed the vocational nursing program ($n=63$, a number composed of 15 students classified as minority and 48 students classified as non-minority)) it was expected that roughly a quarter of that number would be classified as minority ($n=17.2$), and that approximately three-quarters would be classified as non-minority ($n=45.8$). The observed frequency counts for the analysis revealed that roughly a quarter of vocational nursing students who passed ($n=63$) were indeed classified as minority ($n=15$), and that approximately three-quarters were classified as non-minority ($n=48$).

Of the students who failed the vocational nursing program ($n=32$, a figure comprised of 11 students classified as minority and 21 students classified as non-minority) it was expected that approximately a fourth of those students would be classified as minority ($n=8.8$), and that roughly three-quarters would be classified as non-

minority (n=23.2). The observed frequency counts for the analysis did indeed reveal that approximately a quarter of the nursing students that failed the program (n=32) were classified as minority (n=11), while roughly three-quarters were classified as non-minority (n=21).

Table 8

Frequency of Minority versus Non-Minority Students with Classroom Pass/Fail Rates and Chi-square Test for H_0

Pass/Fail Status		Minority Classification		Totals
		Minority	Non-Minority	
Pass	Observed Count (<i>n</i>)	15	48	63
	Expected Count	17.2	45.8	
	%	15.8	50.5	
Fail	Observed Count (<i>n</i>)	11	21	32
	Expected Count	8.8	23.2	
	%	11.6	22.1	
Totals	<i>N</i>	26	69	95
	Value	df	Significance	
Pearson Chi-square	1.192	1	.275	
Continuity Correction	.719	1	.396	

Note: 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.76.

Summary

This chapter provided a summary of the participants in the research effort. A description of data analysis procedures and results were also given in this chapter. The chapter concluded with a synopsis of the decision made for each hypothesis.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Retention continues to be an often-investigated concept in the world of higher education. Junior/community colleges are held accountable for their retention rates by the state of Texas as a funding entity, and by the student as a consumer. Student pass/fail rates reflect measures of accountability. The Texas Higher Education Coordinating Board (T.H.E.C.B.) requires all public two-year institutions to produce degree or certificate earning students in order to qualify for continued funding. As consumers, students expect to be afforded the opportunity to acquire marketable skills in order to be competitive in the workplace. This chapter presents a summary of the study, offers conclusions in light of the study's findings, and discusses implications and recommendations for further research.

Study Summary

This study investigated the effects of psychological type, economic status, and minority classification on the pass/fail rates of vocational nursing students. Prior enrollment statistics at the institution had indicated that the student rates for successful completion of the vocational nursing program had in some instances fallen below the required state average, threatening the viability of the program.

Theoretically, it was believed that successfully identifying psychological type as associated with student pass/fail ratings in the vocational nursing program would provide the impetus to isolate the characteristics associated with a particular psychological type correlated with student success rates (Jung, 1921). It was theorized that once those student success characteristics were discovered, it could be determined if they were “teachable” characteristics that could be mastered by students not currently in possession of such success skills. According to Schurr and Ruble (1986), “learner behaviors can be modified, students can be guided through workshops and individual advising sessions to develop their understanding of, and modify their academic behaviors according to the functions and attitudes that are associated with success,” (pg. 35).

Accordingly, successfully identifying economic status, and/or minority classification as associated with student pass/fail rates in the vocational nursing program would enable educators to isolate peculiar characteristics associated with economic status and/or minority classification preventing success. Once identified, those factors could be dealt with by integrating proactive measures into an existing “life skills” curriculum.

Hence, the study made the following research hypotheses:

1. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as introverts versus extraverts and their pass/fail rates in the vocational nursing classroom.

2. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as sensing versus intuiting and their pass/fail rates in the vocational nursing classroom.

3. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as feeling versus thinking and their pass/fail rates in the vocational nursing classroom.

4. There is no significant relationship between vocational nursing students psychologically typed according to the Myers-Briggs Type Indicator as judging versus perceiving and their pass/fail rates in the vocational nursing classroom.

5. There is no significant relationship between vocational nursing students with poverty versus non-poverty economic status, as measured by self-report, and their pass/fail rates in the vocational nursing classroom.

6. There is no significant relationship between vocational nursing students with a minority versus non-minority classification, as measured by self-report, and pass/fail rates in the vocational nursing classroom.

The Myers-Briggs Type Indicator Form G was utilized to collect personality type data. A three question self-report demographic questionnaire was utilized to determine economic status and minority classification. Results from the instrument and questionnaire were hand-scored and tabulated. Students' pass/fail status was ascertained via final grade information posted to each participant's permanent student record at the institution.

Conclusions and Discussion

The raw data relating to all six research hypotheses was analyzed using the Chi-square Test of Independence. The one analysis (H_{03}) that yielded a statistically significant

result used the phi coefficient to measure the strength of the relationship. An exploration of the analysis of the raw data yielded the following conclusions:

The null hypothesis for research hypothesis number one was not rejected. An analysis of the data failed to show any significant relationship between a student being an introvert/extravert and their pass/fail rates in the vocational nursing classroom. This means that introverts and extraverts have an equal chance for success in the vocational nursing classroom. This result is in contrast to Myers and McCaulley's (1985), findings that attributed success in post-secondary education most often to introverts. Furthermore, this result contradicts a number of researchers that had indicated that introverts had an academic advantage over extraverts (Anchors, et al., 1989; Dawson & Guy, 1994; Delbridge-Parker & Robinson, 1989; Hester, 1990; Schurr & Ruble, 1986). However, this result is in agreement with Provost (1985), who maintained that a relationship did not exist between psychological type and academic achievement.

The null hypothesis for research hypothesis number two was not rejected. An analysis of the data failed to show any significant relationship between a student being typed as sensing/intuitive and their pass/fail rates in the vocational nursing classroom. This indicates that those students who were psychologically typed as sensing and those students psychologically typed as intuitive have an equal chance for success in the vocational nursing classroom. This result is in contrast to the results obtained by Myers and McCaulley (1985), that attributed success in post-secondary education most often to intuitives. This result also disputed the results of Myers (1967), which indicated that sensing types did not possess the intuitive's advantages in aptitude in the nursing

classroom. However, this result is in agreement with Provost (1985) who maintained that a relationship did not exist between psychological type and academic achievement. Interestingly, the raw data from this research effort indicated that students psychologically typed as sensing outnumbered students psychologically typed as intuitive three to one. These results are in line with Haynes (1994), who contended that sensing types were over-represented in the nursing classroom due to their strengths in remembering detail, coping with repetition, and their desire to work in a "hands-on" environment.

The null hypothesis for research hypothesis number three was rejected. An analysis of the data found a statistically significant relationship between a student being typed as feeling/thinking and their pass/fail ratings in the vocational nursing classroom. Results from the phi coefficient used to measure the strength of association indicated a moderate relationship. Hence, based on a statistically significant research finding, and a moderate phi coefficient relationship between a student being typed as feeling/thinking and their pass/fail rates in the vocational nursing classroom, evidence exists that the two variables may be related in the population. Expected and observed frequencies for H_3 indicated upon scrutiny, that individuals psychologically typed as feelers had a higher than expected passing rate in the vocational nursing classroom. Further scrutiny of those same frequencies revealed a higher than expected failure rate for individuals psychologically typed as thinkers. This means that students who were psychologically typed as feelers had an academic advantage over students who were psychologically typed as thinkers. This result is in agreement with Haynes (1994), who indicated that a

feeler's compassion and ability to offer support when needed were qualities possessed by successful nursing practitioners. This result also concurred with the results from Myers (1967), that indicated that feelers have a lower attrition rate in the nursing classroom due to their keener interest in nursing. Interestingly, the raw data from this research effort indicated a frequency count for feelers as almost equal to the frequency count for thinkers. This result is in direct contrast with research efforts that indicated a tendency for there to be greater numbers of psychologically typed feelers than thinkers enrolled in nursing programs (Haynes, 1994).

The null hypothesis for research hypothesis number four was not rejected. An analysis of the data failed to show any significant relationship between a student being typed as judging/perceiving and their pass/fail rates in the vocational nursing classroom. This indicates that individuals psychologically typed as judging and perceiving have an equal chance for success in the vocational nursing classroom. This result is in contrast to the results obtained by Schurr, et al. (1997), who indicated that individuals psychologically typed as judging had "an advantageous ongoing academic work ethic" (p. 24). This result is also in contrast with Haynes (1994), who indicated that individuals psychologically typed as judging had the ability "to make rapid decisions on the job" (p. 4); a quality possessed by successful nursing practitioners. The results obtained by Myers and McCaulley (1985), that attributed success in post-secondary education most often to individuals psychologically typed as judging are also in contrast to the researcher's findings.

A review of the information analysis from the first four research hypotheses led to the conclusion that personality type does indeed have an effect on the pass/fail rates in the vocational nursing classroom in some instances. This result is in agreement to the numerous researchers who cited results indicating academic advantage based on type (Anchors et al., 1989; Dawson & Guy, 1994; Delbridge-Parker & Robinson, 1989; Hester, 1990; Schurr & Ruble, 1986). However, the result is in contrast with Provost (1985) who maintained that a relationship did not exist between psychological type and academic achievement. Specifically, the results from H₀₃ addressing the relationship between a student being typed as feeling/thinking and his/her pass/fail rates in the vocational nursing classroom contrasted researchers that cited thinkers as possessing an academic advantage over feelers (Delbridge-Parker & Robinson, 1989; Hester, 1990; and Natter, 1981). However, the results are in agreement with Provost (1985), who found that, of the five personality types most likely to leave school without successfully completing their course of study, four of the five were thinkers.

The null hypothesis for research hypothesis number five was not rejected. An analysis of the data failed to show any significant relationship between vocational nursing students with a poverty/non-poverty status and their pass/fail rates in the vocational nursing classroom. This led to the conclusion that economic status does not have an effect on the pass/fail rates in the vocational nursing classroom. This means that students, despite their economic status, have an equal chance for success in the vocational nursing classroom. This result is in contrast to Lewis (1992), who asserted that poverty was a viable determinant of academic success. This result is also in contrast with Clarke (1996),

whose research indicated that school success was related to economic status.

Furthermore, Barlow (1995) contended that individuals from a lower economic background were actually less likely to graduate from college. Barlow's (1995) contention is also in contrast with the results obtained from this research effort.

The null hypothesis for research hypothesis number six was not rejected. An analysis of the data failed to show any significant relationship between vocational nursing students with a minority/non-minority classification and their pass/fail rates in the vocational nursing classroom. This led to the conclusion that minority classification does not have an effect on the pass/fail rates in the vocational nursing classroom. This result is in contrast to researchers who cited results indicating academic disadvantage based on minority classification (Andersen, 1998; Anonymous, 1994; Clark, 1996; Garibaldi, 1997; Stringfield & Herman, 1997; Sue, 1981; and Thanchenkery & Cheng, 1997). However, this conclusion is in line with a trend mentioned by researchers who indicated a lessening in the academic disadvantages experienced by minority students (Chavez, 1997; Ravitch, 1997; Schmid, 1995; Taylor & Stern, 1997; and Vinje, 1996).

Recommendations

In light of this research effort the determination was made that neither economic status nor minority classification are variables associated with the pass/fail rates in the vocational nursing classroom. However, in reaching the determination that psychological type is indeed a variable associated with the pass/fail rates in the vocational nursing classroom, the following recommendations are made:

1. The study should be replicated using a larger sample from a larger population (i.e. vocational nursing students from four or five junior colleges). This replication would make the study more generalized to the universe of vocational nursing students.
2. This study should be replicated using vocational majors outside of the nursing program to ascertain if results are specific to the vocational nursing program or are common among vocational majors as a whole.
3. A study should be conducted designed to investigate the characteristics peculiar to the vocational nursing students psychologically typed as feelers that contribute to their higher than expected passing rates in the vocational nursing classroom. Once isolated, these characteristics should be integrated into the existing “life skills” curriculum.
4. A study should be conducted designed to investigate the characteristics peculiar to the vocational nursing students psychologically typed as thinkers that contribute to their higher than expected failure rates in the vocational nursing classroom. Once isolated, preventative measures should be integrated into the existing “life skills” curriculum.
5. Certain personality types are drawn to particular fields. Prior research efforts indicated a tendency for there to be greater numbers of psychologically typed feelers than thinkers enrolled in nursing programs (Haynes, 1994). Raw data gathered from this research effort indicated that an almost equal number of feelers and thinkers enrolled in the VRJC vocational nursing program.

Therefore, an investigation should be conducted as to why more thinkers than expected were enrolled in the vocational nursing program, possibly focusing on the effect of agency sponsorship (i.e. Texas Rehabilitation Commission) on an individuals choice of major.

6. Further research should be conducted that continues to pursue a systematic elimination of other student centered causal factors that might have an effect on the pass/fail rates in the vocational nursing classroom (i.e. factors not immediately apparent such as the use or lack of use of student support services).
7. Further research should be conducted that continues to pursue a systematic elimination of other external causal factors that might have an effect on the pass/fail rates in the vocational nursing classroom (i.e. factors similar to economic status or minority classification over which the student as little or no control).
8. Research should be conducted that examines environmental factors that might affect the pass/fail rates in the vocational nursing classroom (i.e. conditions in the classroom, teaching styles).
9. The Myers-Briggs Type Inventory should be administered to all incoming vocational nursing students. This instrument should be administered to students after they have been selected for the vocational nursing program to insure that the instrument is utilized not as a tool of exclusion, but as a tool of inclusion.

Psychological type can be a useful tool after an individual is already participating in a program or vocation (Schurr & Ruble, 1986).

10. Results from the administration of the Myers-Briggs Type Inventory should be shared with academic advisors/counselors that are skilled in the interpretation and implementation of the instrument's results. Access to such information will enable these helping professionals to take a more personalized approach with each vocational nursing student. According to Schurr and Ruble (1986), "learner behaviors can be modified, students can be guided through workshops and individual advising sessions to develop their understanding of, and modify their academic behaviors according to the functions and attitudes that are associated with success," (p. 35).
11. A detailed group interpretation of psychological type should be implemented into existing vocational nursing "life skills" curriculum. The interpretation should provide the student with his/her results from the MBTI including a detailed explanation of the concept of type. The student should obtain information detailing the strengths and weaknesses associated with each psychological type. The objective of this training would be to provide each student with the skills to capitalize on the strengths associated with his/her psychological type, while minimizing his/her type associated weaknesses. Research indicates that, according to type theory, an individual's psychological type can be strengthened, and individuals can learn to use functions and attitudes as a situation may warrant (Frisbe, 1988).

12. Vocational nursing instructor personnel should develop and implement strategies designed to elicit emotional "buy-in" to the vocational nursing program from the psychologically typed thinkers in the classroom. This "buy-in" may afford the thinkers to gain an advantage inherent to the feelers who already have a keener interest in nursing (Myers, 1967).

Summary

Further research is indicated as a follow-up to this study. If ability was the only factor influencing classroom success, then a group of students categorized as having equivalent ability would demonstrate near equal achievement. Since it has been determined that this is not the case, obviously other factors exist. A search for causal factors should encompass variables both internal and external to the vocational nursing student. Once causal variables have been identified, appropriate "teachable solutions" should be incorporated into the existing "life skills" curriculum.

REFERENCE LIST

- Anchors, W., Robbins, M., & Gershman, E. (1989). The relationship between Jungian type and persistence to graduation among college students. Journal of Psychological Type, 17, 20-25.
- Andersen, C. (1998). Fact book on higher education. Phoenix, AZ: Oryx Press.
- Anonymous. (1994). Education: tribes go high tech. Futurist, 28(1), 48-49.
- Anonymous. (1996). Lower IQ's linked to poverty, not race: study source. Jet, 89(26), 39.
- Anonymous. (1998). As hard as ABC. Canada & the World Backgrounder, 63(6), 20.
- Anonymous. (1999). A quest for education. Limra's Marketfacts, 18(2), 9-11.
- Autry, G. (1997). The South's cure for racism and poverty, Forum for Applied Research & Public Policy, 12(3), 84-88.
- Barlow, D. (1995). Education resources—beating the odds: how the poor get to college by Arthur Levine and Jana Nidiffer. Education Digest, 61(4), 77-78.
- Barrett, L. (1989). Impact of teacher personality on classroom environment. Journal of Psychological Type, 18, 50-56.
- Behrman, J. (1996). The impact of health and nutrition on education. World Bank Research Observer, 11(1), 23-37.
- Bellack, J. (1996). Critical issues in American nursing in the twentieth century: perspectives and case studies. N & HC: Perspectives on Community, 17(5), 266-267.

Berens, L. (1996). Type & temperament. Bulletin of Psychological Type, 19(2), 8-9.

Bernardi, R (1997). The relationship among locus of control, perceptions of stress, and performance. Journal of Applied Business Research, 13(4), 1-8.

Birdsall, N. (1998). The not-so great leveler. Foreign Policy, 111, 81.

Boersma, F., Kienholz, A., Jevne, R. & Chapman, J. (1989). Teaching type to elementary school teachers: implications for individualizing instruction. Journal of Psychological Type, 18, 33-35.

Bolton, C. (2000). [Retention figures for L.V.N. students presented in nursing advisory committee meeting agenda May 2000]. Unpublished raw data.

Borland, M. & Howsen, R. (1999). A note on student academic performance. American Journal of Economics & Sociology, 58(3), 537-546.

Buerhaus, P. & Auerbach, D. (1999). Slow growth in the United States of the number of minorities in the RN workforce. Image: Journal of Nursing Scholarship, 31(2), 179-183.

Chavez, L. (1997). Hispanics and the American dream. Education Digest, 62(6), 57-60.

Churaman, C. (1992). Financing of college education by minority and white families. Journal of Consumer Affairs, 26(2), 324-350.

Clarke, V. (1996). Removing roadblocks to equity and excellence in the education of minorities. Black Scholar, 26(1), 30-32.

- Conoley, J. & Kramer, J. (1989). The tenth mental measurements yearbook. Lincoln, NB: The University of Nebraska Press.
- Corey, G. (1996). Theory and practice of counseling and psychotherapy. Pacific Grove, CA: Brooks/Cole Publishing Company.
- Dawson, B. & Guy, R. (1994). Personality type and grade performance in a TV-assisted course. Journal of Psychological Type, 29, 38-42.
- Dayton, Y. (1982). Personality and media preferences of community college students. Research in Psychological Type, 5, 84-86.
- Delbridge-Parker, L. & Robinson, D. (1989). Type and academically gifted adolescents. Journal of Psychological Type, 17, 66-72.
- Edgley, G. (1992). Type and temperament. Association Management, 44(10), 83-92.
- Educational Resources. (1992). NET Technical & Developmental Report. Shawnee Mission, KS: ERI Publishing.
- Frisbe, G. (1988). Cognitive styles: an alternative to Keirsey's temperaments. Journal of Psychological Type, 16, 13-21.
- Gall, M., Borg, W. & Gall, J. (1996). Educational research an introduction. White Plains, New York: Longman Publishers USA.
- Garibaldi, A. (1997). Four decades of progress...and decline: an assessment of African American educational attainment. Journal of Negro Education, 66(2), 105-120.

Goldhaber, D. & Brewer, D. (1997). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity. Journal of Human Resources, 32(3), 505-523.

Gollnick, D. & Chinn, P. (1986). Multicultural education in a pluralistic society. Columbus, Ohio: Charles E. Merrill Publishing Company.

Harvey, R. (1996). Reliability and validity. In A.L. Hammer (Ed.), M.B.T.I. applications: A decade of research on the Myers-Briggs Type Indicator (p.5-29). Palo Alto, California: Consulting Psychologists Press.

Haynes, D. (1994). Trouble at work. Australian Journal of Psychological Type, 3(1), 3-15.

Hester, C. (1989). The effects of personality style configurations and logical reasoning scores on academic achievement in computer science. Journal of Psychological Type, 18, 43-49.

Hester, C. (1990). The differential performance of M.B.T.I. types on learning tasks. Journal of Psychological Type, 19, 21-26.

Hinkle, D., Wiersma, W., & Jurs, S. (1998). Applied Statistics for the Behavioral Sciences. Boston, MA: Houghton Mifflin Company.

Holzer, C., Nguyen, H., Goldsmith, H., & Thompson, W. (1996). The demographics of disability in the South. Community Mental Health Journal, 32(5), 431-443.

Horton, C. and Oakland, T. (1997). Temperament-based learning styles as moderators of academic achievement. Adolescence, 32(123), 131-141.

- Huck, S. & Cormier, W. (1996). Reading Statistics and Research. New York, NY: HarperCollins College Publishers
- Isaac, S. & Michael, W. (1995). Handbook in Research and Evaluation. San Diego, CA: EdITS/Educational and Industrial Testing Services.
- Jarvis, M. (1992). Differential Item Functioning--the Mantel-Haenszel Procedure-NET Technical & Developmental Report. Shawnee Mission, KS: ERI Publishing
- Jung, C. (1921). Psychological Types. Princeton, NJ: Princeton University Press.
- Kaestner, R. (1997). Are brothers really better? Sibling sex composition and educational achievement revisited. Journal of Human Resources, 32(2), 250-284.
- Larabee, S. (1994). The psychological types of college accounting students. Journal of Psychological Type, 28, 37-42.
- Lawrence, G. (1986). Teaching for thinking: a Jungian extension of Dewey's ideas. Journal of Psychological Type, 12, 38-45.
- Lawrence, G. (1993). People types and tiger stripes. Gainesville, FL: Center for Applications of Psychological Type, Inc.
- Lewis, A. (1992). Demographics of poverty. Education Digest, 58(1), 62-65.
- Lewis, A. (1997). The price of poverty. Phi Delta Kappan, 78(6), 423-424.
- Liberty, L. (1992). Counselor NCC/CRC. New York, NY: Simon & Schuster/MacMillan.
- Lynch, A. & Sellers, P. (1996). Preferences for different educational environments and psychological type: a comparison of adult learners and traditional age college students. Journal of Psychological Type, 39, 18-29.

Major, M. (1992). Dancing to a different drummer: how Native Americans view the Columbus Quincentenary. Public Relations Journal, 48(11), 20-23.

Myers, I. (1967). Relation of psychological type to drop-out in nursing. Gainesville, FL: Center for Applications of Psychological Type, Inc.

Myers, I. (1987). Introduction to type. Palo Alto, CA: Consulting Psychologists Press, Inc.

Myers, I. & McCaulley, M. (1985). Manual: a guide to the development and use of the Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press, Inc.

Myers, I. & Myers, P. (1980). Gifts differing. Palo Alto, CA: Consulting Psychologists Press, Inc.

Myers, K. (1987). Katharine C. Briggs and Isabel Briggs Myers: the women behind the M.B.T.I.. Journal of Psychological Type, 13, 2-8.

Natter, F. (1981). The human factor: psychological type in legal education. Research in Psychological Type, 3, 55-67.

Phillips, A. (1998). Language wars. Macleans, 111(22), 34-40.

Provost, J. (1985). "Type watching" and college attrition. Journal of Psychological Type, 9, 16-23.

Provost, J. (1991). Tracking freshman difficulties in the class of 1993. Journal of Psychological Type, 21, 35-39.

Rassool, G. (1997). Nursing for a multi-ethnic society. Journal of Advanced Nursing, 25(6), 1307-1308.

- Ravitch, D. (1997). How affirmative action harms minorities. Forbes, 160(11), 112.
- SPSS[®] Base 9.0 Applications Guide (1999). USA.
- Sadler, C. (1999). Promoting diversity. Nursing Standard, 13(39), 14-16.
- Sandersen, A., Dugoni, B., Rasinski, K. & Taylor, J. (1996). National Education Longitudinal Study 1988-1994-descriptive summary report with an essay on access and choice in postsecondary education. Washington, DC: U.S. Department of Education.
- Schmid, J. (1995). Ethnic niche catalogs. Zip/Target Marketing, 18(11), 18-20.
- Schroeder, K. (1994). Lower dropout rate. Education Digest, 60(3), 71-72.
- Schurr, K., Henriksen, L., Alcorn, B. & Dillard, N. (1992). Tests and psychological types for nurses status and teachers: classroom achievement and standardized test scores measuring specific training objectives and general ability. Journal of Psychological Type, 23, 38-44.
- Schurr, K. & Ruble, V. (1986). The Myers-Briggs Type Indicator and first year college achievement: a look beyond aptitude test results. Journal of Psychological Type, 12, 25-37.
- Schurr, K., Ruble, V. & Henriksen, L. (1989). Effects of different university admission practices on the M.B.T.I. and gender composition of a student body, graduation rate, and enrollment in different departments. Journal of Psychological Type, 18, 24-32.

- Schurr, K., Ruble, V., Palomba, C., Pickerill, B. & Moore D. (1997). Relationships between the M.B.T.I. and selected aspects of Tinto's Model for college attrition. Journal of Psychological Type, 40, 31-42.
- Shalala, D. (1996). Annual update of health and human services. Federal Register, 61(43), 8286-8288.
- Siegel, S. (1956). Nonparametric Statistics. New York, NY: McGraw-Hill.
- Stevenson, J. (1997). Children and poverty: how American higher education must respond for the 21st century. Education, 118(2), 213-220.
- Strategic Plan For Texas Public Community Colleges 1999-2003. (June, 1998) (Available from Texas Higher Education Coordinating Board, P.O. Box 12788, Austin, TX 78711)
- Stringfield, S. & Herman, R. (1997). Research on effective instruction for at-risk students: implications for the St. Louis public schools. Journal of Negro Education, 66(3), 258-287.
- Sue, D. (1981). Counseling the culturally different theory and practice. John Wiley & Sons, Inc.
- Taylor, C. & Stern, B. (1997). Asian-Americans: Television advertising and the "model minority" stereotype. Journal of Advertising, 26(2), 47-61.
- Texas Higher Education Coordinating Board. (2000). 2000 Statewide Annual Licensure Report. Available www.theccb.state.tx.us/ctc/ie/ctc/bb/licensur200.pdf.
- Texas Higher Education Coordinating Board. (2000). Starting Points For Community Colleges. Available: www.theccb.state.tx.us/start/cc.htm.

Thatchenkery, T. & Cheng, C. (1997). Seeing beneath the surface to appreciate what “is”. Journal of Applied Behavioral Science, 33(3), 397-406.

Thomas, C. (1989). Exploratory studies of psychological type and engineering students: three brief reports. Journal of Psychological Type, 18, 57-58.

Tobacyk, J., Wells, D. & Springer, T. (1988). Jungian type and self-concept in junior high school students at high risk for dropout. Journal of Psychological Type, 16, 47-53.

Todd, M. & Roberts, D. (1981). A comparative study of Jungian psychological traits of art education and music education majors. Research in Psychological Type, 3, 73-77.

Vernon Regional Junior College Annual Report 1999-2000. (2000, Fall).
(Available from Vernon Regional Junior College, 4400 College Drive, Vernon, TX 76384)

Vernon Regional Junior College General Catalog 2000-2001. (2000, Fall).
(Available from Vernon Regional Junior College, 4400 College Drive, Vernon, TX 76384)

Vinje, D. (1996). Native American economic development on selected reservations: a comparative analysis. American Journal of Economics & Sociology, 55(4), 427-442.

Zemke, R. (1992). Second thoughts about the M.B.T.I.. Training, 29(4), 43-47.

APPENDIX A
Permission Forms



VRJC AT WICHITA FALLS

Century City Center

4105 Maplewood Avenue
Wichita Falls, Texas 76308
(940) 696-8752 Phone
(940) 696-3244 FAX

Sheppard Learning Center

426 5th Avenue, Suite 8
Sheppard AFB, Texas 76311
(940) 855-2203 Phone
(940) 855-0035 FAX

Skills Training Center

2813 Central Expressway East
Wichita Falls, Texas 76302
(940) 766-3369 Phone
(940) 766-3419 FAX

July 5, 2000

Dr. Michelle L. Walker
University of North Texas
College of Education
Department of Applied Technology, Training and Development
P.O. Box 311337
Denton, Texas 76203-1337

Dear Dr. Walker:

At the request of Brenda S. Kays, I am writing to notify you that she has been given permission to conduct her doctoral dissertation research project at VRJC. We are glad to cooperate in this study.

Sincerely,

A handwritten signature in cursive script that reads 'Sharon Winn'.

Sharon Winn
Dean, Wichita Falls
Vernon Regional Junior College

UNIVERSITY *of* NORTH TEXAS

Office of Research Services

July 19, 2000

Brenda S. Kays
4411 Montego
Wichita Falls, TX 76308

RE: Human Subjects Application No. 00-144

Dear Ms. Kays,

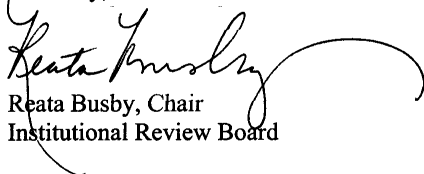
Your proposal titled "The Effect of Psychological Type, Socioeconomic Status, and Minority Classification on Licensed Vocational Nursing Students' Pass/Fail Rates," has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101.

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

The UNT IRB must review any modification you make in the approved project. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,



Reata Busby, Chair
Institutional Review Board

RB:sb

P.O. Box 305250 ♦ Denton, Texas 76203-5250 ♦ (940) 565-3940
Fax (940) 565-4277 ♦ TDD (800) 735-2989 ♦ www.unt.edu

UNIVERSITY OF NORTH TEXAS
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
RESEARCH CONSENT FORM
Page 1 of 3

Subject Name: _____ Date: _____

Title of Study: **The Effect of Psychological Type, Socioeconomic Status, and Minority Classification on Licensed Vocational Nursing Students Pass/Fail Rates.**

Principal Investigator: **Brenda S. Kays**

Co-Investigators: **N/A**

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, discomforts of the study. It also describes the alternative treatments that are available to you and your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

PURPOSE OF THE STUDY AND HOW LONG IT WILL LAST:

The purpose of this study is to identify what effect if any, psychological type, socioeconomic status, and minority classification have on the pass/fail rates of Licensed Vocational Nursing (L.V.N.) students. The subjects direct participation in the study will be approximately 30-45 minutes; which represents the typical time used by most individuals to complete the Myers-Briggs Type Indicator (MBTI) and demographic questionnaire. The actual study will conclude with the posting of final grades for the Fall 2000 semester at Vernon Regional Junior College on December 22, 2000.

DESCRIPTION OF THE STUDY INCLUDING THE PROCEDURES TO BE USED:

Study participants will be administered the MBTI to identify personality type; and a three question demographic questionnaire to identify socioeconomic status and minority classification. At the conclusion of the Fall 2000 semester personality type, socioeconomic status, and minority classification will be correlated with student pass/fail rates in order to identify the effects of such variables on student success in the L.V.N. program.

UNIVERSITY OF NORTH TEXAS
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
RESEARCH CONSENT FORM
Page 2 of 3

Subject Name: _____ Date: _____

Title of Study: **The Effect of Psychological Type, Socioeconomic Status, and Minority Classification on Licensed Vocational Nursing Students Pass/Fail Rates.**

Principal Investigator: **Brenda S. Kays**

Co-Investigators: N/A

DESCRIPTION OF PROCEDURES/ELEMENTS THAT MAY RESULT IN DISCOMFORT OR INCONVENIENCE:

No procedures/elements have been identified which would result in discomfort or inconvenience that would be greater than those ordinarily encountered in the daily routine of a L.V. N. student. There will be no grades, no pressures, and no time limits. Participants will be allowed to work at their own pace; as neither the personality inventory nor the demographic questionnaire will be time. Participants will complete the inventory and questionnaire during approved class time.

DESCRIPTION OF THE PROCEDURES/ELEMENTS THAT ARE ASSOCIATED WITH FORESEEABLE RISKS:

No procedures/elements have been identified which would result in risk to the participant that would be greater than those ordinarily encountered in the daily routine of a L.V.N. student. Participation is strictly voluntary, and participants may drop out at any time during the study. There will be no penalty assessed those who choose not to participate.

BENEFITS TO THE SUBJECTS OR OTHERS:

Participants will gain the opportunity to learn more about themselves through the completion of the personality inventory. Individuals interested in an individual in-depth interpretation of their results may contact the Director of Counseling, Wichita Falls. VRJC will gain information needed to provide quality education to all students.

CONFIDENTIALITY OF RESEARCH RECORDS:

Individual results will be kept strictly confidential by the researcher, and will not be shared with the participant's instructors or the Director of the L.V.N. program. Participation will in no way influence the participant's outcome in the L.V.N. program.

UNIVERSITY OF NORTH TEXAS
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
RESEARCH CONSENT FORM
Page 3 of 3

Subject Name: _____ Date: _____

Title of Study: **The Effect of Psychological Type, Socioeconomic Status, and Minority Classification on Licensed Vocational Nursing Students Pass/Fail Rates.**

Principal Investigator: **Brenda S. Kays**

Co-Investigators: N/A

APPROVED BY THE UNT IRB
FROM 07/19/00 TO 07/18/01
(21)

REVIEW FOR PROTECTION OF PARTICIPANTS:

This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940) 565-3940.

RESEARCH SUBJECTS' RIGHTS: I have read or have had read to me all of the above.

Brenda S. Kays has explained the study to me and answered all of my questions. I have been told the risks or discomforts and possible benefits of the study. I have been told of other choices of treatment available to me.

I understand that I do not have to take part in this study, and my refusal to participate will involve no penalty or loss of rights to which I am entitled. I may withdraw at any time without penalty or loss of benefits to which I am entitled. The study personnel can stop my participation at any time if it appears to be harmful to me, if I fail to follow directions for participation in the study, if it is discovered that I do not meet the study requirements, or if the study is canceled.

In case there are problems or questions, I have been told I can call **Brenda S. Kays** at telephone number (940)696-8752 ext. 3202 or **Dr. Michelle Walker, University of North Texas Faculty Sponsor**, at (940)565-2154.

I understand my rights as a research subject, and I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done. I will receive a signed copy of this consent form.

Subject's Signature

Date

Signature of Witness

Date

For the Investigator or Designee:

I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Principal Investigator's Signature

Date

APPENDIX B

Graphic Historical Overview of Psychological Type

Historical Overview of Psychological Type

Freudian Influence

Carl Jung, Student of Sigmund Freud, experienced philosophical differences and parted company with his mentor.



Jungian Concept of Behavior

After breaking away from Freud, Jung developed a theory describing patterns of human habits and impulses known as psychological type that conceptualized behavior.



Psychological Type

Psychological type according to Jung consisted of individualized patterns of perceiving, judging, acting, and reflecting. Jung viewed these concepts as dichotomous and assigned classification terminology.



Jung's Three Dichotomous Dimensions

sensing / intuition	thinking / feeling	extroversion / introversion
(perceiving)	(judging)	(acting / reflecting)



Katharine Briggs

Also interested in individual difference, read Jung's theory of psychological type, adopted and researched Jung's type concepts.



Fourth Dimension of Type

Briggs and daughter Isabel Myers dissected Jung's theory and added a fourth dimension reflecting the attitude an individual took toward the outer-world - judging / perceiving.



MBTI

Myers – Briggs Type Indicator

After adding to Jung's theory, Briggs and Myers created an inventory designed to measure and explain psychological type preferences in recordable scientific terms

APPENDIX C
Statistical Output

Case Processing Summary

	Cases					
	N	Valid Percent	N	Missing Percent	N	Total Percent
PFSTATUS*						
TYPE1	95	100.0%	0	0%	95	100.0%

PF Status* Type1 Crosstabulation

		TYPE1				
		E	I	Total		
PFSTATUS	F	Count	18	14	32	
		Expected Count	20.5	11.5	32.0	
		% within PFSTATUS	56.3%	43.8%	100.0%	
		% within TYPE1	29.5%	41.2%	33.7%	
	% of Total	18.9%	14.7%	33.7%		
	P	Count	43	20	63	
		Expected Count	40.5	22.5	63.0	
		% within PFSTATUS	68.3%	31.7%	100.0%	
		% within TYPE1	70.5%	58.8%	66.3%	
	% of Total	45.3%	21.1%	66.3%		
	Total	Count	61	34	95	
		Expected Count	61.0	34.0	95.0	
% within PFSTATUS		64.2%	35.8%	100.0%		
% within TYPE1		100.0%	100.0%	100.0%		
% of Total	64.2%	35.8%	100.0%			

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	1.331 ^b	1	.249		
Continuity Correction ^a	.860	1	.354		
Likelihood Ratio	1.315	1	.252		
Fisher's Exact Test				.266	.177
N of Valid Cases	95				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.45.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.118	.249
N of Valid Cases		95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	N	Cases				Total Percent
		Valid Percent	N	Missing Percent	N	
PFSTATUS*						
TYPE2	95	100.0%	0	0%	95	100.0%

PF Status* Type2 Crosstabulation

		TYPE2			
		I	S	Total	
PFSTATUS	F	Count	5	27	32
		Expected Count	6.7	25.3	32.0
		% within PFSTATUS	15.6%	84.4%	100.0%
		% within TYPE2	25.0%	36.0%	33.7%
		% of Total	5.3%	28.4%	33.7%
	P	Count	15	48	63
		Expected Count	13.3	49.7	63.0
		% within PFSTATUS	23.8%	76.2%	100.0%
		% within TYPE2	75.0%	64.0%	66.3%
		% of Total	15.8%	50.5%	66.3%
Total	Count	20	75	95	
	Expected Count	20.0	75.0	95.0	
	% within PFSTATUS	21.1%	78.9%	100.0%	
	% within TYPE2	100.0%	100.0%	100.0%	
	% of Total	21.1%	78.9%	100.0%	

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	.855 ^b	1	.355		
Continuity Correction ^a	.434	1	.510		
Likelihood Ratio	.888	1	.346		
Fisher's Exact Test				.432	.259
N of Valid Cases	95				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.74.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.094	.355
N of Valid Cases		95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	N	Valid Percent	N	Missing Percent	N	Total Percent
PFSTATUS*						
TYPE3	95	100.0%	0	0%	95	100.0%

PF Status* Type3 Crosstabulation

		TYPE3			
		F	P	Total	
PFSTATUS	F	Count	11	21	32
		Expected Count	17.2	14.8	32.0
		% within PFSTATUS	34.4%	65.6%	100.0%
		% within TYPE3	21.6%	47.7%	33.7%
		% of Total	11.6%	22.1%	33.7%
	P	Count	40	23	63
		Expected Count	33.8	29.2	63.0
		% within PFSTATUS	63.5%	36.5%	100.0%
		% within TYPE3	78.4%	52.3%	66.3%
		% of Total	42.1%	24.2%	66.3%
Total	Count	51	44	95	
	Expected Count	51.0	44.0	95.0	
	% within PFSTATUS	53.7%	46.3%	100.0%	
	% within TYPE3	100.0%	100.0%	100.0%	
	% of Total	53.7%	46.3%	100.0%	

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	7.236 ^b	1	.007		
Continuity Correction ^a	6.112	1	.013		
Likelihood Ratio	7.306	1	.007		
Fisher's Exact Test				.009	.007
N of Valid Cases	95				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.82.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Contingency Coefficient	.266	.007
N of Valid Cases	95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	N	Valid Percent	N	Missing Percent	N	Total Percent
PFSTATUS* TYPE4	95	100.0%	0	0%	95	100.0%

PF Status* Type4 Crosstabulation

		TYPE4			
		J	P	Total	
PFSTATUS	F	Count	22	10	32
		Expected Count	20.9	11.1	32.0
		% within PFSTATUS	68.8%	31.3%	100.0%
		% within TYPE4	35.5%	30.3%	33.7%
		% of Total	23.2%	10.5%	33.7%
	P	Count	40	23	63
		Expected Count	41.1	21.9	63.0
		% within PFSTATUS	63.5%	36.5%	100.0%
		% within TYPE4	64.5%	69.7%	66.3%
		% of Total	42.1%	24.2%	66.3%
Total	Count	62	33	95	
	Expected Count	62.0	33.0	95.0	
	% within PFSTATUS	65.3%	34.7%	100.0%	
	% within TYPE4	100.0%	100.0%	100.0%	
	% of Total	65.3%	34.7%	100.0%	

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	.259 ^b	1	.611		
Continuity Correction ^a	.079	1	.779		
Likelihood Ratio	.261	1	.609		
Fisher's Exact Test				.655	.392
N of Valid Cases	95				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.12.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.052	.611
N of Valid Cases		95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	N	Valid Percent	N	Missing Percent	N	Total Percent
PFSTATUS*						
INCLEVEL	95	100.0%	0	0%	95	100.0%

PF Status* INCLEVEL Crosstabulation

		INCLEVEL			
		Non-Poverty	Poverty	Total	
PFSTATUS	F	Count	19	13	32
		Expected Count	19.2	12.8	32.0
		% within PFSTATUS	59.4%	40.6%	100.0%
		% within INCLEVEL	33.3%	34.2%	33.7%
		% of Total	20.0%	13.7%	33.7%
P		Count	38	25	63
		Expected Count	37.8	25.2	63.0
		% within PFSTATUS	60.3%	39.7%	100.0%
		% within INCLEVEL	66.7%	65.8%	66.3%
		% of Total	40.0%	26.3%	66.3%
Total		Count	57	38	95
		Expected Count	57.0	38.0	95.0
		% within PFSTATUS	65.3%	40.0%	100.0%
		% within INCLEVEL	100.0%	100.0%	100.0%
		% of Total	65.3%	40.0%	100.0%

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	.008 ^b	1	.929		
Continuity Correction ^a	.000	1	1.000		
Likelihood Ratio	.008	1	.929		
Fisher's Exact Test				1.000	.551
N of Valid Cases	95				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.80.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.009	.929
N of Valid Cases		95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	N	Valid Percent	N	Missing Percent	N	Total Percent
PFSTATUS*						
MINCLASS	95	100.0%	0	0%	95	100.0%

PF Status* MINCLASS Crosstabulation

		MINCLASS			
			Minority	Non-Minority	Total
PFSTATUS	F	Count	11	21	32
		Expected Count	8.8	23.2	32.0
		% within PFSTATUS	34.4%	65.6%	100.0%
		% within MINCLASS	42.3%	30.4%	33.7%
		% of Total	11.6%	22.1%	33.7%
	P	Count	15	48	63
		Expected Count	17.2	45.8	63.0
		% within PFSTATUS	23.8%	76.2%	100.0%
		% within MINCLASS	57.7%	69.6%	66.3%
		% of Total	15.8%	50.5%	66.3%
Total	Count	26	69	95	
	Expected Count	26.0	69.0	95.0	
	% within PFSTATUS	27.4%	72.6%	100.0%	
	% within MINCLASS	100.0%	100.0%	100.0%	
	% of Total	27.4%	72.6%	100.0%	

Chi-square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	1.192 ^b	1	.275		
	.719	1	.396		
Continuity Correction ^a	1.167	1	.280		
Likelihood Ratio				.332	.197
Fisher's Exact Test	95				
N of Valid Cases					

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.76.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.111	.275
N of Valid Cases		95	

Not assuming the null hypothesis.

Using the asymptotic standard error assuming the null hypothesis.

APPENDIX D

Raw Data

TYPE 1	TYPE 2	TYPE 3	TYPE 4	ES	CLASS	STATUS
E	S	T	P	P	M	P
I	N	F	P	P	NM	P
E	S	F	J	P	NM	P
I	S	T	J	NP	M	F
I	S	F	P	P	M	P
E	S	F	J	P	NM	P
E	S	T	P	NP	NM	P
E	S	F	J	NP	NM	P
E	S	F	J	P	NM	P
E	S	F	P	P	M	F
E	S	T	J	P	M	F
E	N	T	P	P	NM	P
I	S	F	J	NP	NM	P
I	S	T	J	NP	M	P
E	N	F	J	NP	NM	P
E	N	F	P	NP	NM	P
E	S	T	J	NP	M	F
E	S	F	J	P	M	F
I	S	F	J	NP	NM	P
I	S	F	J	NP	NM	P
I	S	F	P	NP	NM	F
E	S	F	J	NP	NM	P
E	S	T	J	NP	M	P
E	S	F	J	NP	M	P
I	S	T	J	P	NM	P
E	S	T	J	P	M	P
E	S	T	P	P	M	P
E	S	F	P	NP	NM	P
E	S	F	P	NP	NM	P
E	N	F	P	NP	NM	P
I	S	T	J	NP	NM	F
I	N	T	P	NP	NM	P
E	S	T	P	P	M	F
E	N	F	P	NP	NM	P
E	S	F	J	NP	NM	F
I	S	F	J	P	NM	P
E	N	T	P	NP	NM	P
E	S	T	J	NP	NM	F
I	S	T	J	NP	NM	P
E	S	T	J	P	NM	P
E	S	T	J	NP	NM	P
E	N	F	P	NP	NM	F
E	S	T	J	NP	NM	P
I	N	T	P	NP	NM	P
E	N	T	J	P	NM	F
E	S	F	P	P	NM	P
I	S	F	J	NP	NM	F
I	S	F	J	NP	NM	P

TYPE 1	TYPE 2	TYPE 3	TYPE 4	ES	CLASS	STATUS
E	S	T	J	NP	NM	P
I	S	F	P	P	NM	P
E	S	F	J	P	M	F
E	S	F	P	P	M	P
E	S	T	J	NP	NM	P
I	S	F	J	NP	NM	P
I	S	T	J	NP	NM	F
I	S	T	J	P	M	F
I	S	F	J	NP	NM	P
E	N	F	J	P	NM	P
I	S	F	J	P	M	P
E	S	T	J	NP	M	P
E	N	F	P	NP	NM	P
E	N	F	J	NP	NM	P
E	S	T	J	NP	NM	F
I	S	T	P	NP	M	F
E	N	T	P	NP	NM	F
I	S	T	P	P	NM	F
I	S	T	J	P	NM	P
E	S	F	J	P	M	P
I	S	T	P	P	NM	F
E	S	F	P	NP	M	P
E	S	F	J	NP	NM	F
I	N	T	J	NP	NM	F
E	S	T	J	P	M	P
E	S	T	J	NP	NM	F
I	S	T	J	NP	M	F
I	S	T	J	P	NM	F
E	S	F	J	NP	NM	P
I	S	F	J	NP	NM	P
E	S	F	P	NP	NM	P
E	S	T	J	NP	M	F
E	S	F	J	P	NM	P
E	S	T	J	P	NM	P
E	S	F	J	NP	M	P
E	N	F	P	NP	NM	P
E	S	T	J	P	NM	F
E	N	F	P	NP	NM	P
E	S	F	J	P	NM	F
I	S	F	J	P	NM	P
I	N	F	P	NP	NM	P
E	S	T	P	P	NM	P
E	S	F	J	P	NM	P
E	S	F	J	NP	M	F
I	S	T	J	NP	NM	P
E	N	T	J	P	NM	F
I	S	F	P	NP	NM	F