

A STUDY OF PERSONALITY TYPES/LEARNING STYLES  
OF SECONDARY VOCATIONAL TECHNICAL  
EDUCATION STUDENTS

By

SARAH FRANCES LITTLE SOLIDAY

Bachelor of Science  
Oklahoma State University  
Stillwater, Oklahoma  
1970

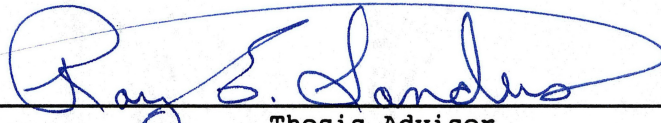
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Central State University  
Edmond, Oklahoma  
1978

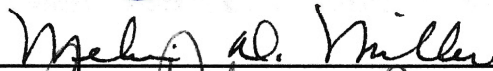
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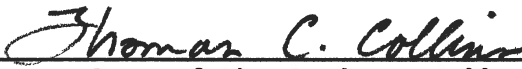
Thesis Approved:

  
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Thesis Adviser

  
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\_\_\_\_\_  
Dean of the Graduate College

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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION. . . . .	1
Statement of the Problem . . . . .	1
Purpose of the Study . . . . .	3
Research Question. . . . .	4
Terms and Definitions. . . . .	4
Limitations of the Study . . . . .	9
II. REVIEW OF LITERATURE. . . . .	11
Introduction . . . . .	11
Learning Styles. . . . .	12
Learning Styles--Cognitive, Affective and physiological . . . . .	16
Right/Left Hemisphere Learning Style . . . . .	17
Jungian Typology . . . . .	21
Personality Type . . . . .	24
Temperament. . . . .	26
Summary. . . . .	30
III. METHODOLOGY . . . . .	32
Type of Research . . . . .	33
Subjects . . . . .	33
Instrumentation. . . . .	35
The Myers-Briggs Type Indicator (MBTI). . . . .	35
Data Collection. . . . .	39
Scoring the Instrument . . . . .	40
Statistical Treatment of the Data. . . . .	41
IV. PRESENTATION OF FINDINGS. . . . .	43
Introduction . . . . .	43
Responses. . . . .	44
Description of the Subjects. . . . .	45
Vocational Technical Education	
Secondary Students . . . . .	45
Non-Vocational Technical Education	
Secondary Students . . . . .	49
Research Question Findings . . . . .	51
Research Question . . . . .	51

Chapter	Page
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . . .	61
Conclusions. . . . .	64
Recommendations. . . . .	64
REFERENCES . . . . .	68
APPENDIXES . . . . .	72
APPENDIX A - DIRECTIONS FOR ADMINISTERING THE MYERS BRIGGS TYPE INDICATOR. . . . .	73
APPENDIX B - DEMOGRAPHIC INFORMATION SHEET VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENTS . . .	76
APPENDIX C - DEMOGRAPHIC INFORMATION SHEET NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENTS . . .	78
APPENDIX D - VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENTS SUMMARY SHEET . . . . .	80
APPENDIX E - NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENTS SUMMARY SHEET . . . . .	82
APPENDIX F - AREA VOCATIONAL TECHNICAL EDUCATION CENTER INFORMATION SHEET . . . . .	84
APPENDIX G - NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENT INFORMATION SHEET. . . . .	
APPENDIX H - LETTER SENT TO EACH IDENTIFIED CONTACT PERSON IN THE VOCATIONAL TECHNICAL EDUCATION SCHOOLS AND IN THE NON-VOCATIONAL TECHNICAL EDUCATION SCHOOLS. . . . .	88
APPENDIX I - AUTHORIZATION FROM CENTER FOR APPLICATIONS OF PSYCHOLOGICAL TYPE (CAPT) TO USE THE MYERS-BRIGGS TYPE INDICATOR (MBTI) . . . . .	92
APPENDIX J - PERMISSION LETTER TO COPY THE MYERS-BRIGGS TYPE INDICATOR TO INCLUDE IN THIS STUDY. . .	94
APPENDIX K - THANK YOU LETTERS TO CONTACT PEOPLE VOCATIONAL TECHNICAL EDUCATION SCHOOLS AND NON-VOCATIONAL TECHNICAL EDUCATION SCHOOLS .	96
APPENDIX L - ADDITIONAL STATISTICAL INFORMATION . . . . .	98

LIST OF TABLES

Table	Page
I. Vo-Tech School Sample Population. . . . .	36
II. Comprehensive High School Sample Population. . . . .	36
III. Vocational Technical Education Secondary Student Sample . . . . .	46
IV. Non-Vocational Technical Education Secondary Student Sample . . . . .	46
V. Frequency Distribution Demographic Information for Vocational Technical Education Secondary Students. .	47
VI. Frequency Distribution of Demographic Information for Non-Vocational Technical Education Secondary Students . . . . .	50
VII. Frequency Distribution of Personality Type for Vocational Technical Education Secondary Students. .	52
VIII. Summary of Ranked Order of Personality Type for Vocational Technical Education Secondary Students, as Measured by MBTI. . . . .	54
IX. Frequency Distribution of Personality Type for Male and Female Vocational Technical Education Secondary Students . . . . .	55
X. Summary of Ranked Order of Personality Type for Male and Female Vocational Technical Education Secondary Students . . . . .	57
XI. Frequency Distribution for Personality Type of Vocational Technical Education Secondary Students and Non-Vocational Technical Education Secondary Students . . . . .	58
XII. Summary of Ranked Order of Personality Type of Vocational Technical Education Secondary Students and Non-Vocational Technical Education Secondary Students . . . . .	59
XIII. Vocational Technical Education Secondary Respondent Demographic Information. . . . .	77



Table	Page
XIV. Non-Vocational Technical Education Respondent Demographic Information. . . . .	79
XV. Area Vocational Technical Education Center Information. . . . .	85
XVI. Comprehensive High School Information Student Population . . . . .	87
XVII. Personality Type of Vocational Technical Education Secondary Students, Per Individual Program . . . . .	99
XVIII. Frequency Distribution of Personality Type for Male and Female Business Education Secondary Students . . . . .	101
XIX. Frequency Distribution of Personality Type for Male and Female Health Occupations Education Secondary Students . . . . .	103
XX. Frequency Distribution of Personality Type for Male and Female Trade and Industrial Education Secondary Students . . . . .	105
XXI. Frequency Distribution of Personality Type for Male and Female Non-Vocational Secondary Students. .	107

FIGURE

Figure	Page
1. Four Dichotomous Continuums as Designed by Myers and Briggs. . . . .	37

## CHAPTER I

### INTRODUCTION

Technology and its applications to the work force is rapidly changing society and the work place. Business and industry demand workers who are technologically knowledgeable and academically competent. To produce such workers, much time and money has been spent on educating pre-service teachers and updating in-service teachers so they might better enable students to enter the work force.

It is generally known that there exists a variety of learning styles and that it is the responsibility of the teacher to adapt his/her teaching strategies to student learning styles and temperament in order to better facilitate learning (Sanders, 1990).

#### Statement of the Problem

A major concern of education is to find ways in which students may learn in the most effective and efficient manner (Oklahoma State Department of Education, 1983). In the past two decades, much research has been conducted to determine one's preferred learning style, personality type, and temperament. These determinations have helped educators develop materials and methods of teaching that are most compatible with the student's preference (Oklahoma State Department of Education, 1983, Keef and Keefe and Ferrell, 1990).

School reform efforts have moved the effectiveness of instruction to the forefront of education, thus renewing the interest of researchers and practitioners in learning styles (Keefe and Ferrell, 1990). The National Association of Secondary School Principals (NASSP) formed a task force in 1982 to develop a comprehensive review of learning styles theory and research. The learning style paradigm was developed eclectically by the NASSP task force and involved three precursors: (1) personality theory; (2) the information processing aspect of cognitive style research; and (3) research on aptitude-treatment interaction (Keefe and Ferrell, 1990).

Personality theory was the precursor used for the purpose of this study. According to Keefe and Ferrell (1990), learning styles are integrated with the affective, temperamental, and motivational structures of the total human personality. Several learning style instruments are based on Carl Gustav Jung's theory of personality type.

Jung was a Swiss-born psychiatrist whose personality theory provided the constructs for the development of instruments to diagnose learners' preferences for perceiving meaning, expressing values and commitment, and interacting with the world. In Jung's typology, psychological types were descriptive of what practitioners now call learning style or cognitive types (Barger and Hoover, 1984).

The problem for this study was that the learning styles/ personality types of vocational technical education secondary

students are not known. The review of literature revealed that little research had been performed using students in vocational technical education schools to determine personality types/learning styles. Statistical information showing the differences in vocational technical education secondary students and non-vocational technical education secondary students was not available. This information could help teachers in vocational technical education understand and identify personality types/learning styles of students enrolled in their programs. Through personality type knowledge, modifications in curriculum presentation to best accommodate the learning needs of the vocational technical education secondary student could be made. The results of this study could produce better educated students who are prepared for the work force and available for employment.

#### Purpose of the Study

The purpose of this study was to assess the personality type/learning styles of vocational technical education secondary students and non vocational technical education students, then evaluate the differences. The Myers/Briggs Type Indicator developed from the constructs of Carl Jung's theory was used to determine personality type/learning styles. The differences were appraised by comparing various demographic data collected from students enrolled in vocational technical education programs at a vo-tech school with the same data collected from students enrolled full-time at a participating comprehensive high school from the vo-tech school's

district. The selected vocational technical education secondary programs were Business Education, Health Occupations Education and Trade and Industrial Education (Auto Service Technology). Junior and senior English classes at the sending comprehensive high school were used for the purpose of this study.

#### Research Question

The research question developed to provide guidance for this study was: What are the personality types/learning styles of vocational technical education secondary students?

#### Terms and Definitions

Learning Style: The preferred way that individuals transform and assimilate information; it's how the learner constructs meaning out of stimuli (Kolb, 1984, Sanders, 1990).

Typology: (Type) - A gross indicator of what people have in common and the differences between them (Sharp, 1987). The study of human differences (Arraj and Arraj, 1985). Jung identified four basic mental functions or processes which are the basis for type-- Extrovert-Introvert (EI), Sensing/Intuitive (SN), Feeling/Thinking (FT), and Judging/Perceiving (JP) (Myers and McCaulley, 1988). Type is written with a combination of four letters to identify each type (e.g. ESTJ, INFP).

Temperament: ". . . that which places a signature or thumb print on each of one's actions, making it recognizably one's own." (Keirse, 1984). Often described as "personality," temperament is a

collection of personal characteristics which cause an individual to see the world, interpret information, and react to others in a unique way (Johnson, 1989). Temperament determines behavior because behavior is the instrument for getting us what we must have, satisfying our desire for that one thing we live for (Keirsey, 1984). Keirsey identifies temperament through combinations of two-letter descriptors (e.g., NF and SJ).

The Energizing Preference: An individual's basic orientation toward life (Silver, Harvey, et. al., 1980). Complementary attitudes or orientations toward life (Myers and McCaulley, 1985). The way people prefer to receive stimulation and energy (Kroeger and Thuesen, 1989).

- A. Introversion (I). Temperament characteristic of an individual who is territorial and prefers solitude to interaction with people (Keirsey, 1984).
- B. Extraversion (E). Temperament characteristic of an individual who is sociable and who appears to be energized by people (Keirsey, 1984).

The Attending Preference: The processes of becoming aware of things and people or occurrences and ideas (Silver, Harvey, et. al., 1980). The two ways people prefer to gather data (Kroeger and Thuesen, 1989).

- A. Sensation (S). Temperament characteristic of an individual who wants facts, trusts facts, and remembers facts. These individuals might be

described as grounded firmly in reality. They are sensible and they value experience and the wisdom of the past (Keirsey, 1984).

- B. Intuition (N). Temperament characteristic of an individual who enjoys fantasy and fiction, reads poetry and often daydreams, lives in anticipation, values hunches and a vision of the future, and is likely to be speculative (Keirsey, 1984). ("N" is used rather than "I" as "I" is used for introvert.)

The Deciding Preferences: The process of coming to conclusions or decisions about what has been perceived (Silver, Harvey, et. al., 1980). Relates to organizing and structuring information to decide in a logical and objective way or in a personal, values-oriented way, (Hirsh and Kummerow, 1989).

- A. Thinking (T). Temperament characteristic of an individual who prefers impersonal choice as a way of making decisions, is objective and responds positively to principles, policy, laws, criteria and firmness (Keirsey, 1984). Relies on logic and objective decision making (Johnson, 1989).
- B. Feeling (F). Temperament characteristic of an individual who prefers personal choice as a way of making decisions and reacts positively to words such as subjective, values, social



values, extenuating circumstances, intimacy, and persuasion (Keirse, 1984). Relies on emotional and subjective decision making (Johnson, 1989).

The Living Preferences: The choice between perception and judgement as a way of life, a method of dealing with the surrounding world (Silver, Harvey, et. al., 1980).

- A. Judging (J). Temperament characteristic of an individual who chooses closure over open options, has a work ethic such that work comes before all else and is outcome oriented (Keirse, 1984). Relates to living a planned and organized life (Hirsh and Kummerow, 1989).
- B. Perceiving (P). Temperament characteristic of an individual who prefers to keep things open and fluid, has a play ethic about work and is process oriented (Keirse, 1984). Related to living a spontaneous and flexible lifestyle (Hirsh and Kummerow, 1989).

Superior Function (Dominant Process): The tendency for individuals to prefer one function to the point where it dominates and unifies one's life. (Silver, Harvey and Others, 1980). This is the one we automatically use because it comes most naturally and brings certain rewards (Sharp, 1987). Referred to as primary or first function.

Auxiliary Function (Secondary Function): Is always one whose nature, rational or irrational, is different from the primary function (Sharp, 1987). The auxiliary function is the one which, instead of seeking its own goals, subordinates itself to the superior function and aids it in its work (Arraj and Arraj, 1985).

Inferior Function (Fourth Function): The last function, or least developed function is the one that is most opposite to the first [primary] function, and therefore tends to be the farthest away from consciousness because of its incompatibility with the first function (Arraj and Arraj, 1985).

Irrational: As applied to the functions of sensation and intuition, does not mean illogical or unreasonable, but rather beyond or outside of reason (Sharp, 1987).

Rational: Functions (thinking and feeling) based on a reflective, linear process that coalesces into a particular judgment (Sharp, 1987).

SP Dionysian Temperament: The Sensible/Perceiving temperament is characteristic of being adaptable, artistic, athletic, easy going, gifted with tools and machines, good natured, open minded, persuasive, and good at working out compromises (Myers, 1962). Keirsey (1987) changed this temperament name to "Artisans" (Giovannoni, Berens, Cooper, 1986).

SJ Epimethean Temperament: The Sensation/Judging temperament which is characterized by the realities of the present such as rituals, traditions, facts, relationships and life itself. They are concerned with the present and the past. They also seek to improve

what exists without losing the best from the past. They excel at vigilance, detail and monitoring society (Giovannoni, Berens, Cooper, 1986). Keirsey renamed this temperament "Guardians" (1987).

NT Promethean Temperament: The Intuitive Thinking temperament described by Myers (1962) as abstract, analytic, complex, efficient, intellectual, logical, scientific and research oriented. NT's place a high value on competence, coherence and quality. They admire willpower and genius. They are visionaries and pioneers seeking to contribute to society with their strategy, design and invention. This temperament's name was changed by Keirsey from Promethean to "Rationals", (Keirsey, 1987 and Giovannoni, Berens, Cooper, 1986).

NF Apollonian Temperament: The Intuitive/Feeling temperament focusing on human potential, ethics, culture, quality of life and personal growth. These individuals are sympathetic, insightful, creative, enthusiastic and humane (Myers, 1962). They excel at communication, place a high value on authenticity and integrity in people, relationships and organizations. "Idealist" is the term Keirsey renamed this temperament (Keirsey, 1987, Giovannoni, Berens, Cooper, 1986).

#### Limitations of the Study

The limitations of this study were:

1. This study was limited to students in three vocational education programs which were (1) Vocational Business Education,

(2) Health Occupations Education, and (3) Trade and Industrial Education (Auto Service Technology).

2. No private or parochial schools, were included in this study.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### Introduction

This study examined personality types/preferred learning styles of vocational technical education secondary students and non-vocational technical education secondary students for the purpose of evaluating these elements in relationship to the students' demographic information. This chapter reviewed literature on learning styles, Jungian typology, personality types and temperaments.

The question is often asked, "Why do students choose to enroll in vocational technical education courses?" Is it because they lack academic skills and think the vocational technical courses will be easier? Could it be that counselors encourage students with low academic skills to enroll in vocational technical education classes so they can "work with their hands"? Perhaps parents and counselors believe students who do not plan to attend college should attend vocational technical education classes. Conceivably, secondary students may enroll in vocational technical education courses because individuals of varying personality types tend to be interested in different applied subjects and methods of curriculum presentation.

## Learning Styles

The nineteenth century educational system was reliant on ill-trained, harassed, underpaid and often immature teachers, who were expected to teach standard virtues and community values through stern discipline (Kliebard, 1986). No deviation in methods of teaching were given to individual differences. Changes in the American society brought about through the rapid advance of railroads as a cheap means of transportation and the tremendous growth in popular journalism to include mass circulation of newspapers and magazines radically altered vision of the role of schooling (Kliebard, 1986). Another change agent to the American school system was an influx of students into secondary schools (Kliebard, 1986).

The twentieth century was ushered in with four major forces determining the course of the new American curriculum (Kliebard, 1986). One of the forces, the child-study movement, led the drive for a curriculum reform based on the natural order of development in the child (Kliebard, 1986). The child-study group (developmentalists) believed the curriculum should be in harmony with the child's interests. This knowledge would lead to identification of the students' needs and learning patterns (Kliebard, 1986).

One hundred years following the education reform movement, educators are continuing to define education's role in meeting the needs of the individual (Keefe, 1982). Practitioners and researchers have agreed that people learn in different ways (Arraj and Arraj,

1985, Conti, 1986, Cornett, 1983, Cross, 1976, Dunn, 1984, Gregorc, 1982, Guild, 1989, Hirsh and Kimmerow, 1989, Keefe, 1982, Kolb, 1984, McCarthy, 1980, Sanders and Galbraith, 1990, Smith and Rensulli, 1984). The term "learning style" explains an individual's constant way of handling stimuli in the context of learning or behaviors which serve as indicators of how a person learns and adapts to the environment (Oklahoma State Department of Education, 1983). Learning styles refers to the characteristic ways each individual collects, organizes, and transforms information into useful knowledge (Cross, 1976; Kolb, 1984). It influences such things as the setting in which people wish to learn, the kinds of things they want to learn about, and how they will approach learning situations (Conti and Welborn, 1986).

In the book, One of a Kind--A practical Guide to Learning Styles written by the Oklahoma State Department of Education in 1983, thirty-four different learning style theories were presented. How people perceive and process information were the commonalties of the learning style models. Learning styles encompass so many variables, so much diversity, that it could not ever be assumed that tests fully measure them (McCarthy, 1980).

Learning style was the combination of preferred functions resulting in a style or type (Hanson, Silver and Strong, 1984). Dunn (1984) described learning style as the way in which each person absorbed and retained information and/or skills. She posited that regardless of how that process was described, it was dramatically different for each person. Learning style represented each person's

biologically and experientially induced characteristics that either foster or inhibit achievement (Dunn, 1984).

Cornett (1983) referred to learning style as the preferred way in which individuals modified and absorbed information. They were comprehensive patterns that gave direction to learning behavior. In addition learning styles reflected many student characteristics, including genetic coding, personality traits, and environmental adaptation abilities (Kolb, 1976; Green and Parker, 1989).

Keefe (1982) provided still another definition of learning styles. He posited that learning styles were cognitive, affective, and physiological traits that served as relatively stable indicators of how learners perceived, interacted with, and responded to the learning environment.

According to McCarthy (1980), there were two major differences in how an individual learns. One learns by how things are perceived and processed. Individuals perceived things through (1)sensing/feeling (concrete) or (2)thinking (abstract). The way in which an individual processed experiences and information was how one made it a part of him/her self. Some individuals processed information by (1) watching (reflective) and others by (2) doing (active). McCarthy believed that both kinds of perceiving and both kinds of processing of information and experiences were equally valuable in how individuals learn.

Kolb (1971) combined the two dimensions of perceiving (sensing/feeling and thinking) with the two dimensions of processing (acting and watching) (McCarthy, 1980). He developed a model with



four quadrants, one quadrant for each of the four previously mentioned dimensions, to explain his theory of learning styles.

Prior to Kolb's research, Carl Jung had explored the differences in the way people perceived and processed information. Jung defined his theory in four functions or modes of orientation-- (1) thinking, (2) sensation, (3) intuition, and (4) feeling. Individuals could operate each of these functions in two personality attitudes--(1) introversion and (2) extraversion. Primarily people processed data in one of the four ways or functions Jung described through psychological modes of adaptation or personality attitudes-- introversion or extraversion (Jung, 1946, Sharp, 1987). Kolb assigned learning styles to Jung's typology (Jones, 1985). Thinking types were labeled as abstract conceptualizers, sensing types used active experimentation, feeling personalities relied on concrete experience, while intuition types used reflective observation to acquire and process information (Jones, 1985). Many other researchers after Kolb developed models of how people learn. Most of the models dealt with four quadrants and the renaming of those quadrants by use of the basic four elements identified by Kolb.

It was widely accepted that differences in student learning styles did exist. This was evidenced by the preceding documentation. Although definitions of learning styles varied, findings have shown there were clear-cut and systematic differences in learning style preferences within any given classroom of students (Smith and Renzulli, 1984).

Learning Styles--Cognitive, Affective  
and Physiological

In previous research, definitions were listed for learning styles, however, little was said about the amplitude of learning styles. "The framework of learning style inquiry could be examined from three broad perspectives: cognitive, affective, and physiological" (Sanders and Galbraith, 1990, p. 29).

The cognitive aspect of learning styles encompassed the ways in which individuals decoded, encoded, processed, stored, and retrieved information. The process was done randomly or sequentially, concretely or abstractly, or by focusing or scanning. The pairs were polar, each pair representing opposite ends of a continuum. Individuals usually fell somewhere along the continuum, although it was possible to use each of the four operations to some degree. Cognitive was definitive of using the brain's thinking process. Therefore, it was not surprising that much of a person's cognitive learning style could be related to the hemispheric brain functioning in which the processes fell either to the right hemisphere or the left hemisphere (Cornett, 1983).

The second learning style dimension examined was the affective domain. Cornett (1983) postulated that the

Affective aspects of learning style include emotional and personality characteristics related to such areas as motivation, attention, locus of control, interests, willingness to take risks, persistence, responsibility, and sociability (p. 10).

The physiological aspects of learning, the third dimension, included the sensory perception, environmental characteristics, the

need for food during study, and times of day for optimum learning. Examples of sensory perception involved the aspects of visual, auditory, kinesthetic, taste, and smell. Included in the environmental characteristics were noise level, light, temperature, and room arrangement (Cornett, 1983).

A fourth dimension of learning was the Jungian multidimensional approach which included personality attitudes, mental processes, action and reflection, and physiological stimuli. "Jung focused on the optimistic or creative side of humanity, the striving for wholeness, and the role of living for purpose and meaning" (Corey, 1977, p. 33). Jung postulated that by recognizing and developing the various dimensions of individual personalities, a person would become functional (Corey, 1977).

#### Right/Left Hemisphere Learning Style

In the early 1920s, Carl Jung described human behaviors that were influenced by left or right brain dominance. Jung's typology of personality included a category for "intuitive personalities" that foreshadowed the discovery of the right brain functions of the neocortex (Jones, 1985). Jung likened the left-brain dominant people to thinkers who were logical, analytical, objective, organized, just, and critical. The right-brain dominant people exhibited similar characteristics of the feeling type in that they were sensitive to the feelings of others, understood human needs and could persuade. Jung's sensing types exhibited patience, care, and had good memories (Jones, 1985). Researchers have found that three

out of four people in the population primarily relied on the left brain functions and only one in four consistently used the capacities of the right brain to solve problems (Jones, 1985).

Levy (1985), a biopsychologist at the University of Chicago, led the field as an authority in the study of the right and left hemispheric functions of the brain. Her historical research findings indicated that people's fascination with relating mental function to brain organization went back at least to Hippocrates. In the 17th century, Rene Descartes developed the theory that the brain worked as a unified whole to produce a unified mental world (Levy, 1985). During the 1860s and 1870s, Paul Broca, a French neurologist, and Karl Wernicke, a German neurologist, reported that damage to the left cerebral hemisphere produced severe disorders of language, but that comparable damage to the right hemisphere did not (Levy, 1985). This finding led to the theory that the left hemisphere was the seat of humanity and that the right hemisphere played no role in thinking (Levy 1985).

In the 1880s, John Hughlings Jackson, a renowned English neurologist, described a patient with right-hemisphere damage who showed selective losses in certain aspects of visual perception-- losses that did not appear with similar damage of the left hemisphere (Levy, 1985). Jackson's study supplied the data that suggested the right hemisphere's specialty was visual while the left hemisphere's was language.

The thinking that people had half a thinking brain was a prevalent view until the early 1960s when Nobel Prize winner Roger

W. Sperry and his colleague demonstrated findings using human patients who had undergone complete surgical division of the corpus callosum (Levy, 1985). (The corpus callosum is the connecting bridge between the two sides of the brain [Funk and Wagnalls, 1957].) By 1970 or soon thereafter, the reign of the left brain was essentially ended. The large majority of researchers concluded that each side of the brain was a highly specialized organ of thought, with the right hemisphere predominant in a set of functions that complemented those of the left (Levy, 1985).

As previously established, the brain was divided into two hemispheres, right and left. The left side was responsible for rational, logical, sequential and abstract thinking. Language was also stored in the left hemisphere. The right side was thought of as being the creative hemisphere. It was credited with intuitive, spatial, visual and concrete thinking.

Researchers and psychologists have known for a long time that the two hemispheres were different. It was also known that speech resided in the left hemisphere and spatial capability in the right. What was not known was that in processing information and stimuli, the left brain utilized a lineal type of processing, a sequential type, while the right brain used a global process in which data was perceived, absorbed, and processed even while it was in the process of changing (McCarthy, 1980).

Sperry made a conclusion, based on his experimentation and research, that there appeared to be two modes of thinking, verbal and non-verbal, represented rather separately in left and right

hemispheres (McCarthy, 1980). The educational system, as well as science in general, tended to neglect the nonverbal form of intellect therefore discriminating against the right hemisphere (McCarthy, 1980).

Some learning experiences that are associated with the left brain are: (1) critical thinking, (2) logical thinking, (3) convergent thinking, (4) verbal instructions, (5) verbal memory, (6) writing, (7) sequencing, (8) reading, especially nonfiction, and, (9) duplicating (Hirsch, 1990). Hirsch, (1990) also listed the following for right-brain functions: (1) creative thinking, (2) intuitive thinking, (3) evaluative thinking, (4) humor, (5) sight reading, (6) dreaming, (7) analogies, (8) music, and (9) improvising.

In relation to individual differences, Levy (1985) concurred that there was both psychological and physiological evidence that people varied in the relative balance of activation of the two hemispheres. She stated that there was a significant correlation between which hemisphere was more active and the relative degree of verbal or spatial skills, but that there was no evidence that people were purely "left brained" or "right brained."

Levy's work negated the theory that people learned through only left or right hemispheres of the brain. However, it did support the fact that people learned through various types of learning styles. Incorporating the research conducted on brain behavior with the learning style, researches created a stronger tool for helping individuals learn.

Gregorc (1982) verified the combining of learning style and brain research by saying, "My experience tells me that learning style and brain research has the potential to serve as a framework that could put the various facets and psychologies into a perspective and thereby lead us toward becoming a united profession" (meaning education) (p. 10).

### Jungian Typology

The notion that not everyone functioned in the same way has been the basis for numerous systems of typology. Since the philosophers of ancient Greece and Rome, attempts have been made to categorize individual attitudes and behavior patterns, in order to explain the differences between people (Cornett, 1983 and Sharp, 1987). Jung's model of typology grew out of an extensive historical review of the type question in literature, mythology, aesthetics, philosophy and psychopathology (Sharp, 1987).

Carl Jung theorized that human behavior was not random but was predictable and classifiable (Kroeger and Thuesen, 1988). Jung named these patterns of behavior "psychological types" (Lawrence, 1982). He also posited that a person was born with a predisposition for certain personality preferences. The preferences reflected both genetic predispositions and other influences such as culture and environment (Kroeger and Thuesen, 1988).

Jung differentiated eight typological groups: two personality attitudes--introversion and extraversion--and four functions (mental processes) or modes of orientation--thinking, sensation, intuition

and feeling--each of which may operate in an introverted or extraverted way (Sharp, 1987). Jung postulated two functions for perceiving--sensing and intuition--and two for making judgements--thinking and feeling (Keefe and Ferrell, 1990). In his theory, all conscious mental activity was classified in these four mental processes. Stimuli that came into consciousness entered either through the senses or through intuition. Perception caused the stimuli to remain in consciousness where they were sorted, weighted, analyzed, or evaluated by the judgment processes of thinking and feeling (Lawrence, 1982).

Jung's theory expressed that everyone regularly used all four mental processes, but not all processes were used equally. Through experience, individuals chose one process over the others because it seemed more trustworthy. The more the process was used, the more reliable it became. This process became the axis of an individual's personality. Jung labeled this mental process (function) as the dominant process (Lawrence, 1982).

In Jung's theory, sensing and intuition were polar opposites of each other as was thinking and feeling. If individuals developed only one of the four dominant mental processes, then their lives would be essentially one-dimensional. To avoid this, an individual must develop an auxiliary process to balance the dominant process. The auxiliary was always formed in the dimension that did not include the dominant process. For example, a person having sensing or intuition as the dominant process would develop either thinking or feeling as the auxiliary process (Lawrence, 1982). By combining



the dominant and auxiliary processes, eight sets could be formed.

The last function, or least developed function was the inferior function. It was sometimes referred to as the "shadow." The inferior function was the process that was most opposite to the dominant process (Arraj and Arraj, 1985 and Lawrence, 1982).

Jung's third dimension of personality structure expanded the eight sets to sixteen by adding the variables of introversion and extraversion. Arraj and Arraj (1985) figured the sixteen preference types by multiplying the two possible conscious attitudes, four possible dominant functions and two possible second functions-- $2 \times 4 \times 2 = 16$ .) These sixteen were referred to as the Jungian preference types (Lawrence, 1982).

Based on Jung's two personality attitudes and four functions, Isabel Myers and her mother Katheryn Briggs devised the Myers-Briggs Type Indicator (MBTI) as a tool for identifying sixteen different patterns of action. Briggs and Myers explicated a fourth dimension by elaborating Jung's idea of psychological type (Lawrence, 1979). This fourth dimension was the attitude taken toward the outer world (Lawrence, 1979). As a result of Myers' studies of typology, in 1962 she added action and reflection (judging and perceiving) functions to her instrument. A preference for one function on each polarity resulted in 16 different types (Hanson, Silver and Strong, 1984).

According to Myers and McCaulley, "The purpose of the Myers-Briggs Type Indicator . . . was to make the theory of psychological types described by C. G. Jung (1921/1971) understandable and useful

in people's lives" (1985, p. 1). The instrument's aim was to use a self-report to identify the basic preferences of people in regard to perception and judgment to accumulate research data which in turn could be put into practical use (Myers and McCaulley, 1985).

#### Personality Type

The MBTI identified four basic preferences which were referred to as four separate indices. Each index reflected the use of perception and judgment, under Jung's theory, in relation to how people formed conclusions about what they perceived and what people attended to in any given situation. Each of these indices, EI - Extravert/Introvert, SN -Sensing/Intuitive, TF - Thinking/Feeling, and JP - Judging and Perceiving, were designed to point in one direction or the other on a continuum to show preference, not right or wrong choices (Myers and McCaulley, 1985). Although people occasionally used all eight of the preferences, they generally favored only one from each of the four basic preferences, (e.g. prefer extroverted behavior over intraverted behavior), (Hirsh and Kummerow, 1989).

The indices of mental and psychological preferences for performing certain tasks were identified by Hirsh and Kummerow, (1989) and Kroeger and Thuesen (1989) as:

- \* Extraversion vs. Introversion - (Energizing - the way people preferred to interact with the work and the way they preferred to receive stimulation and energy).
- \*Sensing vs. intuition - (Attending - how people preferred to gather data or information.)

\*Thinking vs. Feeling - (Deciding - how people preferred to make decisions.)

\*Judging vs. Perceiving - (Living - how people preferred to orient their lives--structured and organized or spontaneous and adaptive.)

An individual's basic preferences can be identified by taking the Myers Briggs Type Indicator. Once established, interpretive data could help promote a more constructive use of the differences between people (Kroeger and Thuesen, 1989). Each of the sixteen types was written by combining the letters that identified the basic preference from each of the four indices (e.g. ESFJ, INTP).

↙ Type theory assumed that children were born with a genetic predisposition to prefer some functions over others (Myers and McCaulley, 1985, Kirsh and Kummerow, 1989, and Kroeger and Thueson, 1988). In addition, it was postulated that environmental factors could foster or discourage the development of each person's natural preferences (Jung, 1923, Myers, 1980, and Kroeger and Thuesen, 1988). Type development was a lifelong process of establishing command over the functions of perception and judgment (Myers and McCaulley, 1988). The development occurred by striving to perfect those functions that held the greatest interest and becoming able to use the less interesting, but essential functions with limited degree of proficiency (Myers and McCaulley, 1988). The task of youth was to develop the dominant and auxiliary functions while in mid-life, a person worked to gain greater control over the less preferred (inferior) functions (Myers and McCaulley, 1988).

The use of Jung's theory became increasingly popular in the 1980s. The development of the Myers Briggs Type Indicator was

largely responsible. An advantage of using personality type as a model to better understand people was that it was a judgement-free psychological system. It interpreted normal rather than abnormal behavior (Kroeger and Thuesen, 1988). As there were no good or bad types, identifying types celebrated the differences by using them creatively and constructively rather than creating strife (Kroeger and Thuesen, 1988). Negative attitudes could be eliminated while obvious differences were highlighted. This enabled people to view objectively the actions that could otherwise be taken personally (Kroeger and Thuesen, 1988).

#### Temperament

The temperament hypothesis called for the abandonment of Jung's idea of "functions." But in abandoning Jung's "function," his behavior descriptions must not be abandoned, for they have great predictive value (Keirsey, 1984). "Temperament could denote a ← moderation or unification of otherwise disparate forces, a tempering or concession of opposing influences, an overall coloration or tuning, a kind of thematization of the whole, a uniformity of the diverse," (Keirsey, 1984, p. 27). A person's temperament was like a signature or thumb print. It marked one's actions as being recognizably individualistic (Keirsey, 1984).

Temperaments were labeled with two-letter combinations describing the Jungian Typology (Intuitive/Sensing and Thinking/Perceiving). Keirsey and Bates created these temperament combinations to be functional tools to categorize the broad base of

accurate behavior predictions, Keirsey and Bates used the process of how people gathered information to determine the first letters--S or N ("N" is used for "intuition" because "I" is used to represent "introvert"). They concluded that how people gather information was the most basic of human differences. The second letter was derived from how a person preferred to evaluate the data gathered (objectively--Thinking or subjectively--Feeling) (Kroeger and Thuesen, 1988). The temperament type categories were NF, NT, SJ, and SP.

Keirsey postulated that Jungian types emerged from temperaments by way of differentiation instead of being built up by way of combination of "functions." This concept was a change Keirsey made on Jungian typology. The temperament theory replaced the principle of integration with the principle of differentiation (Keirsey, 1987). Temperament determined behavior because behavior was the instrument for getting individuals what they must have and satisfying the desire for the things they lived for (Keirsey, 1987).

Keirsey created the Keirsey Temperament Sorter based on his studies of the Myers-Briggs Type Indicator (Keirsey, 1984), to yield eight subgroups and four temperaments. The eight subgroups were in common with those developed by Myers and Jung (Johnson, 1989). They were (I) introversion, (E) extraversion, (S) sensation, (N) intuition, (T) thinking, (F) feeling, (P) perceiving, and (J) judging (Keirsey, 1984).

From the eight subgroups, Keirsey and Bates have categorized observed behavior into four broad temperament groups, according to

two of the type components they have in common: sensing and judging (SJ), sensing and perceptive (SP), intuitive and thinking (NT), or intuitive and feeling (NF) (Rojewski and Holder, 1990, and Keirsey, 1987). The four quadratic analogies correspond closely with types as defined by Adickes, Sprannger, Ketschmen and Fromm (Keirsey, 1987).

According to Kroeger and Thuesen (1989), each of the sixteen types described by Myers and Briggs could be categorized into the four temperaments identified by Keirsey and Bates (1984).

<u>NF</u>		<u>NT</u>		<u>SJ</u>		<u>SP</u>	
ENFJ	INFJ	ENTJ	INTJ	ESTJ	ISTJ	ESFP	ISFP
ENFP	INEF	ENTP	INTP	ESFJ	ISFJ	ESTP	ISTP

Owing to an error inherited from Carl Jung, Myers misnamed the latter two kinds of people, and so improperly defined two of the variants of each. The 'Sensible Introverts' should have been called the 'Sensible Judges', thus including the 'extroverts' in the group, while the 'Sensible Extroverts' should have been called the 'Sensible Perceptors', thus including the 'introverts' in the group. With this correction, the Myers personality types become the Intuitive Feelers (NF), Intuitive Thinkers (NT), Sensible Judges (SJ), and Sensible Perceptor (SP) (Keirsey, 1987, p. 9).

The temperament theory of behavior incorporated Maslow's theory of motivation and his hierarchy of needs. Keirsey's temperament model described four modes of self-actualization rather than Maslow's one channel for self-esteem and one mode of self-actualization. For this reason, Keirsey's model was categorized as "holistic" while the "functions" in Jung/Myers Type is "reductionist" (Giovannoni, Berens, and Cooper, 1986).

Keirsey's "temperaments" were constructs of activity patterns, not mental processes as were the constructs of Jung/Myers Type Theory. His conception were static, yet holistic. In his theory, the constructs had a uniting theme which persisted from birth through death. Keirsey's model was systemic and focused on the configuration of the whole (Giovannoni, Berens, and Cooper, 1986).

Hippocrates gave us the first fourfold analogy of human differences. His theory included four distinct patterns of habitual behavior. Since Hippocrates, many theologians/psychologists have subscribed to using the fourfold analogy. Each referred to the components by different names.

Keirsey named the different temperaments after the Greek gods who most nearly resembled the characteristics of the temperament. The sensory/perceiving (SP) group was christened the Dionysian Temperament. Dionysians could be described as exciting, optimistic, cheerful, light-hearted, and full of fun. SPs were action oriented, but the action must be its own end--not serving a purpose or being instrumental in achieving goals (Keirsey and Bates, 1984).

In Greek mythology, Epimethean was the dutiful and conscientious son of Zeus. Keirsey named the Epimethean Temperament sensory/judging (SJ) after this mythological character because he symbolized dedication, guarding, rule enforcement, security, lawfulness and dependability (Giovannoni, Berens, Cooper, 1986).

The Promethean Temperament described the intuitive/ thinking (NT) individuals. Prometheus was the Greek god who created man from

clay, then gave him life by stealing fire from the wheel of the sun and applying it to man's breast. NT temperament individuals have a passion for knowledge. They tend to seek careers in sciences, mathematics, philosophy, architecture and engineering. Satisfaction was found in developing models, exploring ideas, and building systems (Keirsey and Bates, 1984).

The last temperament in the quadratic typology was the intuitive/feeling (NF) folks. Apollo was the self-appointed bearer of Truth and interpreter for Zeus, his father. The NF people were mission bound. They were more interested in "people watching than in abstractions and they were dedicated in helping others and empathetic. They preferred working with words to communicate directly or indirectly with people (Keirsey and Bates, 1984).

The book, Portraits of Temperament, (1987) Keirsey renamed the temperament types. The new terms were selected on the basis of suggesting concreteness versus abstractness, cooperation versus pragmatism, directive versus informative and assertive versus responsive. The new names are listed as follows:

(Artisans (SP) -- Concrete Pragmatists  
 Guardians (SJ) -- Concrete Cooperators  
 Rationals (NT) -- Abstract Pragmatists  
 Idealists (NF) -- Abstract Cooperators

#### Summary

The contents of this chapter reviewed the many different perceptions of learning styles, temperament, and types as defined by leading authorities. Because all individual are different in some unique way, defining learning style in concrete terms was



impossible. At best, defining learning styles, types and temperaments in categories or dimensions in which most individuals interacted within the normal range was the closest researchers could come to specific interpretations.

Four elements of human behavior have comprised a four-faceted picture of human nature. These four patterns were commonly referred to as temperament and personality types and were the ways people interacted with the environment to satisfy personal needs. Although much research has been conducted regarding temperament, types, and learning styles, it remained a relatively new field for scientific research. These factors limit the data available to explore the effects learning style, temperament, and type had upon the decision making process of high school students to pursue vocational technical education or liberal education.

## CHAPTER III

### METHODOLOGY

The purpose of this study was to assess the personality type/learning styles of vocational technical education secondary students and non vocational technical education students, then evaluate the differences. The Myers/Briggs Type Indicator developed from the constructs of Carl Jung's theory was used to determine personality type/learning styles. The differences were appraised by comparing various demographic data collected from students enrolled in vocational technical education programs at a vo-tech school with the same data collected from students enrolled full-time at a participating comprehensive high school from the vo-tech school's district. The selected vocational technical education secondary programs were Business Education, Health Occupations Education and Trade and Industrial Education (Auto Service Technology). Junior and senior English classes at the sending comprehensive high school were used for the purpose of this study.

The purpose of this chapter was to describe the methods used to assess the personality types/learning styles specifically by identifying (1) the type of research, (2) the subjects, (3) instrumentation, (4) data collected, and (5) analysis of data and statistical analysis.

### Type of Research

Descriptive research was used in the study. Key (1974) defined descriptive research by stating:

Descriptive research is used to obtain information concerning the current status of the phenomena. The purpose of these methods are to describe 'what exists' with respect to variables or conditions in a situation (p. 126).

Huck, Cormier, and Bounds (1974) expanded the definition of descriptive research to include:

Descriptive statistics are methods used to derive from these raw data certain indices that characterize or summarize the entire set of data. Thus descriptive statistics transform large groups of numbers into more manageable form (p. 19).

Randomized clustering was used to collect the data for this study. Key (1974) postulated that cluster sampling was the most frequently used method in education research. Groups or clusters (classes of students) were defined and randomly selected instead of selecting individuals from the population. Cluster sampling was more convenient because of the large population (Key, 1974).

### Subjects

The population for this study included all secondary students in the states of Arkansas, Kansas, Louisiana, Missouri, and Oklahoma, that resided within a vo-tech school district which offered programs in Business Education, Health Occupations Education and Trade and Industrial Education (n = 40,982) and all students enrolled in junior and senior classes at comprehensive high schools in the five identified states (n = 378,702). The sample size for

secondary vo-tech students enrolled in Business Education, Health Occupations Education and Trade and Industrial Education was one hundred ninety-three students ( $s = 193$ ). The non-vocational technical education secondary student sample was comprised of two hundred seventy-five ( $s = 275$ ) comprehensive high school students enrolled in junior and senior English classes.

The three vocational-technical education program areas of Business Education, Health Occupation Education, and Trade and Industrial Education (Auto Service Technology) were selected for this study because they were common programs to many vo-tech schools. Junior and senior English classes from the comprehensive high schools were chosen because they were required subjects of all high school students.

The selection of the vo-tech schools and comprehensive high schools was made by: (1) Identifying all the vo-tech schools in each of the five states; (2) Limiting the possible vo-tech schools in the sample to those vo-tech schools that had programs in Business Education, Health Occupations Education, and Trade and Industrial Education; and (3) Limiting the comprehensive high schools to one school from the identified vo-tech school's district. This information was obtained by using The American Trade Directory (1990). The directory listed all trade schools and vo-tech schools in the United States. The book included the names, addresses and telephone numbers as well as the name and number of vocational programs being taught in each of the vo-tech schools.

Each identified vo-tech school which met the criteria was given a number according to its alphabetical position. A table of computer generated random numbers was used to select the vo-tech school from each state. Once the vo-tech school was identified, telephone contact was made with the school to request its participation in the research project, to supply the names of the comprehensive high schools in its district, and to identify a person to administer the research instrument. From this information, the sending comprehensive high schools were identified, given a number and selected by computer generated random numbers. Telephone communication was then made with the comprehensive high school to request participation in the research project and to identify a contact person to administer the research instrument.

Area vocational-technical schools and programs selected for this project are listed in Table I. The comprehensive high schools from each of the five vo-tech school districts are listed in Table II.

#### Instrumentation

##### The Myers-Briggs Type Indicator (MBTI)

Many instruments were available to reasonably measure personality type/learning style preference. The Myers-Briggs Type Indicator (MBTI) was designed expressly as a vehicle to test Carl Jung's theory of psychological types and put it into practical use (Myers and McCaulley, 1985). The MBTI, which was a psychometric questionnaire, was the simplest and most reliable method of

TABLE I  
VO-TECH SCHOOL SAMPLE POPULATION

Vo-Tech School Name	Town/City	State	BE Name	HOE Name	T&I Name
Metropolitan Voc. Tech Educ. Center	Little Rock	AK	Computer Program.	Health Occupa. Educ.	Auto Tech.
N.E. Kansas AVTS	Atchison	KS	Business	-----	Auto Mech.
Lafayette Parrish Career Center	Lafayette	LA	Business Admin.	Health Occupa. Educ.	Auto Mech.
Lake AVTS	Camdenton	MO	Acct. I	Health Occupa.	Auto Mech.
Chisholm Trail AVTS	Omega	OK	Business Office Tech.	Allied Health Careers	Auto Serv. Tech.

TABLE II  
COMPREHENSIVE HIGH SCHOOL SAMPLE POPULATION

High School Name	Town/City	State	Class Name	Class Name
Cabot H.S.	Little Rock	AK	Jr. English	Sr. English
Lansing H.S.	Lansing	KS	Jr. English	Sr. English
Carencro H.S.	Lafayette	LA	Jr. English	Sr. English
Camdenton H.S.	Camdenton	MO	Jr. English	Sr. English
Kingfisher H.S.	Kingfisher	OK	Jr. English	Sr. English

determining a person's Jungian type (Myers and Myers, 1980).

The MBTI measured the relative preferences of two important but opposite functions. The identification of "type" indicated which function was preferred and became better developed (Vogt and Holder, 1988). The preferences were classified along four dichotomous continuums: Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), and Judging-Perceiving (J-P) (Myers and McCaulley, 1985, and Vogt and Holder, 1988). Type was formulated from four-letter combinations from all four scores which provided a compact definition of each type (e.g., ESFJ, INFP) (Myers and McCaulley, 1985, and Vogt and Holder, 1988). The continuum is shown in Figure I.

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Extraverted.....	Energizing.....	Introverted
Sensing.....	Attending.....	iNtuition
Thinking.....	Deciding.....	Feeling
Judgment.....	Living.....	Perception

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Figure 1. Four Dichotomous Continuums As Designed by Myers and Briggs

Source: Hirsh, Sandra and Kummerow, Jean. Life Types, New York, NY: Warner Books, Inc., 1989.

The MBTI Form G was used to determine each student's personality type preference. The instrument contained 126 forced-choice questions which were designed to elicit an individual's preference on the four dichotomous scales (Rojewski and Holder, 1990). The questionnaire contained incomplete statements, each of which was followed by two selections. The respondent had to choose one of the two selections which most nearly typified his/her preference. A copy of the MBTI, Form G is contained in Appendix K. The theory assumed all types were valuable and necessary, and that each had its own special gifts and strengths as well as its own vulnerability and pathway for development (Myers and McCaulley, 1985).

The reading level of the MBTI was estimated to be seventh to eighth grade with a spread from sixth to eleventh grade, based on the Dale-Chall formula for determining reading levels (Myers and McCaulley, 1985). It was appropriate for adults and high school students (Myers and McCaulley, 1985). The MBTI was published in three forms--Form F (166 items), Form G (126 items), and Form AV, the Abbreviated Version (50 items.) Research items were found in Forms F and G while Form AV contained no research items. As of the time of this study, Form G was the standard MBTI form (Myers and McCaulley, 1985). Other factors that made the MBTI a satisfactory instrument for this study were that it had no time limits, and, when being administered to poor readers, the questions could be read aloud. Also, omissions were permitted if the respondents did not



understand a question or could not choose an answer (Myers and McCaulley, 1985).

A demographic questionnaire was administered with the MBTI to collect personal data to include age, grade, type of vocational program or English class, number of years enrolled in a vocational, technical education program, gender, ethnic class and size of community. The vocational demographic questionnaire is exhibited in Appendix B and the non-vocational technical education demographic questionnaire is in Appendix C. Additional statistical information was obtained from program/class summary sheets that were sent to each contact person at each vo-tech and comprehensive high school. See Appendixes D, E, F, and G.

#### Data Collection

The Myers-Briggs Type Indicator test materials were available only to qualified professionals in accordance with the principles stated in the Ethical Standards for Psychologists published by the American Psychological Association. Eligibility to purchase restricted materials was determined on the basis of training and experience. Application had to be made through the Center for Applications of Psychological Type (CAPT) in Gainesville, Florida to receive authorization to order and use the instrument. A counseling background with a course in tests and measurements met the qualification standards. The instrument was administered in the cooperating vo-tech schools and comprehensive high schools by counseling personnel or by administrators who had taken a class in

tests and measurements. This was permissible by CAPT since it was a research project and no interpretative information on individuals would be given.

An official from each vo-tech school selected in the random sampling was contacted to request support and participation in this study. The contact person (director or counselor) from each vo-tech school was asked to help administer the Myers Briggs Type Indicator to the students enrolled in the three identified vo-tech programs. This identified person was also asked to serve as the liaison to the sending school to administer or make arrangements for administering the instruments to the junior and senior English students in the sample.

The Myers Briggs Type Indicator was sent to the selected schools beginning on January 17, 1992. The identified officials were asked to return the instruments and data sheets by February 10, 1992. The contact officials were assured of the confidentiality of their returned responses. Copies of the correspondence and a list of the contact people can be found in Appendix H.

Three weeks after sending the instrument, a follow-up telephone call was made to the identified officials to remind them to administer and return the instrument and answer sheets. When these were returned to the researcher a followup thank you letter was sent (See Appendix K).

#### Scoring the Instrument

The MBTI answer sheets were hand scored. Each student's scores

were expressed in combinations of four letters, one from each of the four continuums. The responses from the demographic information questionnaire were then recorded into categories according to personality type, vocational technical educational secondary program enrollment or non-vocational technical education secondary class enrollment, occupational program, age and gender. These data were used to develop frequency tables. See Appendix L for additional statistical information.

#### Statistical Treatment of the Data

The responses of the Myers Briggs Type Indicator instrument were sorted into the appropriate type category (e.g., ESTP), and arranged in frequency distribution tables and in rank order by groups.

The Kruskal-Wallis one-way analysis H-test was used to examine the variance between ranked temperament/learning styles scores of vocational technical education secondary students enrolled in business education, health occupation education and trade and industrial education (auto service technology) programs. An alpha level of .05 was used to determine significance for the test. Huck, Cormier, and Bounds (1974) defined the Kruskal-Wallis one-way analysis of variance of ranks as follows:

The nonparametric Kruskal-Wallis one-way ANOVA is analogous to the parametric one-way ANOVA. The Kruskal-Wallis ANOVA (H) is used when a researcher wants to determine whether three or more independent samples come from the same population. It is not necessary to have an equal number of subjects or measurements for each sample (p. 210).

The Mann-Whitney U test for two independent samples was used to determine the variance between the ranked personality type/learning style scores of vocational technical education secondary students in relation to gender and the variance between the scores of vocational technical education secondary students and non-vocational technical education secondary students. An alpha level of .05 was used to determine significance for the test. According to Huck, Cormier, and Bounds (1974), the Mann-Whitney U Test is defined as:

A nonparametric statistical test is an analogous test to the parametric independent 't' test. It tests whether there is a significant difference between two independent samples. The null hypothesis for the Mann-Whitney U is that the two samples are from the same distribution. It can be used with two samples of unequal number (p. 209).

## CHAPTER IV

### PRESENTATION OF FINDINGS

#### Introduction

The purpose of this study was to assess the personality type/learning styles of vocational technical education secondary students and non vocational technical education students, then evaluate the differences. The Myers/Briggs Type Indicator developed from the constructs of Carl Jung's theory was used to determine personality type/learning styles. The differences were appraised by comparing various demographic data collected from students enrolled in vocational technical education programs at a vo-tech school with the same data collected from students enrolled full-time at a participating comprehensive high school from the vo-tech school's district. The selected vocational technical education secondary programs were Business Education, Health Occupations Education and Trade and Industrial Education (Auto Service Technology). Junior and senior English classes at the sending comprehensive high school were used for the purpose of this study.

This chapter presents the analysis of data collected from 143 (n = 143) respondents enrolled in vocational technical education programs (Business Education, Health Occupations Education, and Trade and Industrial Education) and 259 (n = 259) respondents enrolled in comprehensive high school junior and senior English

classes. The instruments used to collect the data were the Myers Briggs Type Indicator and a demographic questionnaire. The information procured was used to determine a personality type category for each respondent. Using the type categories, learning styles could be identified for each personality type. The data also provided information to compare preferred learning styles/ personality types to the demographics of the sample and to the vocational technical education secondary enrollment or non-vocational technical education secondary enrollment of the students in the sample.

The first section of this chapter described the demographic characteristics of the subjects. Statistical analysis of the samples' personality type was examined in the second section. The third section compared the subjects' personality type by demographic characteristics of the subjects. Section four addressed the research question and null hypotheses based on the results of the data analysis. The sums of the percent columns may not always total 100 percent because of rounding up to the next number.

#### Responses

Five hundred twenty Myers Briggs Type Indicator question booklets, answer sheets and demographic sheets were sent to five vo-tech schools and five comprehensive high schools. The population for this sample was 40,982 for vocational technical education secondary students and 378,702 for non-vocational technical education secondary students. The vo-tech schools respondents are

listed in Table III and the comprehensive high school respondents are listed in Table IV. One hundred ninety-three (n=193) vocational technical education secondary students and 327 (n=327) non vocational technical education secondary students constituted the sample size, 520 students (s = 520). Four hundred two students completed and returned the MBTI instrument for a return rate of 77 percent. One hundred percent return was not attained due to absences from classes because of illness, on-the-job training, or preference to not participate in the study.

#### Description of the Subjects

##### Vocational Technical Education

##### Secondary Students

One hundred and forty-three (n = 143) students enrolled in Business Education, Health Occupations Education and Trade and Industrial Education (Auto Service Technology) programs in an area vo-tech school in each of the identified five states comprised the random clustered sample for vocational technical education secondary students. The demographic characteristics of the vocational technical education secondary students are summarized in Table V.

The sample included 67 (n = 67) (47%) males and 76 (n = 76) (53%) females in the vocational technical education secondary student sample group. Age groups represented five teen years. The age category 15 years had 2 students (2%), the age category 16 years had 23 students (16%), age category 17 years contained the largest student population with 60 students (42%), age category 18 years had

TABLE III  
 VOCATIONAL TECHNICAL EDUCATION SECONDARY  
 STUDENT SAMPLE

Vo-Tech Program Area	n=193 Student Sample					n=143 Respondents				
	AK	KS	LA	MO	OK	AK	KS	LA	MO	OK
Business Education	7	23	17	12	7	5	3	13	9	6
Health Occupation Education	24	00	22	12	8	15	00	19	10	8
Trade and Industrial Education	10	15	16	9	11	8	15	13	8	11

TABLE IV  
 NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY  
 STUDENT SAMPLE

Subject Area	n=327 Student Sample					n=259 Respondents				
	AK	KS	LA	MO	OK	AK	KS	LA	MO	OK
Junior English	22	22	29	16	68	22	18	22	15	44
Senior English	24	30	28	24	64	24	29	28	22	35



TABLE V  
 FREQUENCY DISTRIBUTION OF DEMOGRAPHIC INFORMATION FOR  
 VOCATIONAL TECHNICAL EDUCATION SECONDARY STUDENTS

Variables	Frequency n = 143	Percentage
<u>Age</u>		
15	2	.01
16	23	.16
17	60	.42
18	44	.31
19	14	.10
<u>Type of Vocational Program</u>		
Business	36	.25
Health	52	.36
Trade & Industrial	55	.39
<u>Number of Years Enrolled in a Vocational Program</u>		
1 Year	114	.80
2 Years	29	.20
3 Years	0	.00
4 Years	0	.00
<u>Gender</u>		
Male	67	.47
Female	76	.53
<u>Ethnic Classification</u>		
Black American	32	.22
Caucasian American	86	.60
Indian American	8	.06
Oriental American	3	.02
Spanish-Surnamed American	3	.02
Other	11	.08
<u>Size of Community</u>		
Rural less than 2,000	33	.23
Small 2,000 to 49,000	92	.64
Suburb of city over 50,000	18	.13
Urban more than 50,000	0	.00

the next largest population with 44 students (31%), and 14 students (10%) were in the age category 19 years of age.

The Business Education vocational technical education program had 36 students (25%). The Health Occupations Education program contained 52 students (36%) and the Auto Service Technology program for Trade and Industrial Education had 55 students (39%).

The respondents were asked to indicate how many years they had been enrolled in a vocational technical education program. Students indicating one year of enrollment numbered 114 which was 80% of the sample. The remaining 29 students (20%) were enrolled for a second year. No students reported being enrolled in vocational technical education programs for a length of time longer than two years.

The ethnic classification represented in the study were: Black American - 32 (22%), Caucasian American - 86 (60%), Indian American - 8 (6%), Oriental American - three (2%), Spanish-Surnamed American, three (2%), and Other - 11 (8%).

The respondents reported the size of the community in which they lived as follows: 33 (23%) resided in a rural area with less than 2,000 population, 92 (64%) indicated that they lived in a small community of 2,000 to 49,000 population, and 18 (13%) disclosed that they lived in a suburb of a city with a population over 50,000. No respondents indicated they lived in an urban area with a population of more than 50,000.

## Non-Vocational Technical Education

### Secondary Students

Two hundred fifty-nine (n = 259) students enrolled in a comprehensive high school junior and senior English class from the five vo-tech school districts comprised the non-vocational technical education secondary students random clustered sample for the study. The demographic characteristics of the secondary non-vocational technical education students are summarized in Table VI.

Five (5) teenage years represented the age category. No respondents indicated being in the 15 year age category. The age category 16 years had 67 students (26%), age category 17 contained the largest student population with 136 students (53%), age category 18 years had 55 (21%) students, and age category 19 had only one (1%) respondent.

The sample was comprised of students being enrolled in either junior English or senior English. The junior English class had a total of 121 (47%) respondents and the senior English class had 138 (53%) respondents. Of that population, 120 (46%) students were of the male gender and 139 (54%) students were of the female gender.

The ethnic classification represented in the study were: Black American - 12 (5%), Caucasian American - 232 (90%), Indian American - one (.04%), Spanish-Surnamed American - 4 (2%), and Other - 10 (4%).

The respondents reported the size of the community in which they lived as follows: Seventeen (7%) resided in a rural area with less than 2,000 population, 242 (94%) indicated that they lived in a

TABLE VI  
 FREQUENCY DISTRIBUTION OF DEMOGRAPHIC INFORMATION  
 FOR NON-VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Variables	Frequency n = 259	Percentage
<u>Age</u>		
15	0	.00
16	67	.26
17	136	.53
18	55	.21
19	1	.01
<u>English Class</u>		
Junior	121	.47
Senior	138	.53
<u>Gender</u>		
Male	120	.46
Female	139	.54
<u>Ethnic Classification</u>		
Black American	12	.05
Caucasian American	232	.90
Indian American	1	.004
Spanish-Surnamed American	4	.02
Other	10	.04
<u>Size of Community</u>		
Rural less than 2,000	17	.07
Small 2,000 to 49,000	242	.94
Suburb of city over 50,000	0	.00
Urban more than 50,000	0	.00

small community of 2,000 to 49,000 population, and no respondents reported living in a suburb of a city over 50,000 population or in an urban area more than 50,000 population.

### Research Question Findings

#### Research Question

The research question for this study asked, "What are the personality types/learning styles of secondary vocational technical education students?"

Table VII shows the frequency distribution of vocational technical education students in each of the sixteen personality types identified in the Myers Briggs Type Indicator. Fifty percent of the students were identified in four of the sixteen types (ISTP -14%, ESTP -14%, ESTJ - 13% and ENTP - 9 %). Forty-six percent (46%) of the students were classified into eight of the sixteen types (ESFP -8%, ISTJ and ESFJ-7%, ISFJ and ISFP-6%, ENFP-5%, INTJ -4%, and INTP-3%). The remaining four categories comprised only 4% of the student sample (INFJ - 1%, INFP - 1%, ENTJ -1%, and ENFJ - 1%).

Hypothesis One: Hypothesis one for this study was, "There are no differences in the personality types/learning styles of secondary vocational technical education students enrolled in business education programs, health occupation programs and trade and industrial education programs."

Ho: BE types = HOE types = T&I types  
H1: Ho is false

Decision Rule: Reject Ho at the .05 level if H equals or exceeds 5.99.

TABLE VII  
 FREQUENCY DISTRIBUTION OF PERSONALITY TYPE  
 FOR VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Type	<u>Frequency</u>			Total n = 143	%
	BE n1 = 36	HOE n2 = 52	T&I n3 = 55		
ISTJ	3	5	2	10	.07
ISFJ	1	6	1	8	.06
ISTP	4	6	10	20	.14
ISFP	3	4	2	9	.06
INFJ	2	0	0	2	.01
INTJ	1	1	4	6	.04
INFP	0	1	1	2	.01
INTP	0	1	3	4	.03
ESTP	5	3	12	20	.14
ESFP	7	2	3	12	.08
ESTJ	3	8	7	18	.13
ESFJ	1	9	0	10	.07
ENTP	3	2	8	13	.09
ENFP	2	2	3	7	.05
ENTJ	0	1	0	1	.01
ENFJ	1	1	0	2	.01

BE = Business Education, HOE = Health Occupations Education,  
 T&I = Trade and Industrial Education

The MBTI scores were evaluated for differences in personality types. For the comparisons between types, a Kruskal-Wallis H test for ranked data for three or more independent samples was performed utilizing a statistical package designed for personal computers (Witte, 1985, and Bolding, 1985). Table VIII presents the summary of ranked order for the results for the MBTI scores for each vocational technical education area. The calculated Kruskal-Wallis ANOVA H-value, corrected for ties ( $H = 0.7455$ ;  $df = 2$ ) was not significant at the .05 alpha level; therefore, the null hypothesis was not rejected. There was no evidence of significant differences between the personality types of business education, health occupations education, and trade and industrial education vocational technical education secondary students.

Hypothesis Two: Hypothesis two for this study was, "There are no differences in the personality types/learning styles of secondary vocational technical education students in relation to their gender."

Ho: Male gender = Female gender

H1: Male gender  $\neq$  Female gender

Decision Rule: Reject Ho at the .05 level of significance if U equals or is less than 10.

The MBTI scores were used to evaluate the differences in personality types. Table IX shows the frequency distribution of personality type for male and female vocational technical education secondary students. As gender (male and female) constitutes only two groups of ranked responses, the Mann-Whitney U test for two

TABLE VIII  
 SUMMARY OF RANKED ORDER OF PERSONALITY TYPE FOR VOCATIONAL  
 TECHNICAL EDUCATION SECONDARY STUDENTS,  
 AS MEASURED BY MBTI

Type	<u>Ranked Order</u>		
	BE r1 = 36	HOE r2 = 52	T&I r3 = 55
ISTJ	30.5	38.5	23
ISFJ	14	40.5	4.5
ISTP	36	40.5	47
ISFP	30.5	36	23
INFJ	23	4.5	4.5
INTJ	14	14	36
INFP	4.5	14	14
INTP	4.5	14	30.5
ESTP	38.5	30.5	48
ESFP	42.5	23	30.5
ESTJ	30.5	44.5	30.5
ESFJ	14	46	4.5
ENFP	30.5	23	44.5
ENTP	23	23	30.5
ENFJ	4.5	4.5	4.5
ENTJ	14	4.5	4.5

BE = Business Education, HOE = Health Occupations Education,  
 T & I = Trade and Industrial Education.

H corrected for ties = 0.746; df = 2; significance = 0.688; p >.05.  
 n=143



TABLE IX  
 FREQUENCY DISTRIBUTION OF PERSONALITY TYPE FOR MALE AND  
 FEMALE VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Type	Males n1 = 67					Females n2 = 76				
	BE Frequency	HOE	T&I	Total	%	BE Frequency	HOE	T&I	Total	%
ISTJ	1	2	2	5	.03	2	3	0	5	.03
ISFJ	0	0	1	1	.01	1	6	0	7	.05
ISTP	2	1	10	13	.09	2	5	0	7	.05
ISFP	0	0	2	2	.01	3	4	0	7	.05
INFJ	1	0	0	1	.01	1	0	0	1	.01
INTJ	1	0	3	4	.03	0	1	0	1	.01
INFP	0	0	1	1	.01	0	1	0	1	.01
INTP	0	0	3	3	.03	0	1	0	1	.01
ESTP	2	0	12	14	.10	3	3	0	6	.04
ESFP	0	0	3	3	.03	7	2	0	9	.06
ESTJ	0	0	7	7	.05	3	8	0	11	.08
ESFJ	0	0	0	0	.00	1	9	0	10	.07
ENTP	2	0	8	10	.07	1	2	0	3	.03
ENFP	0	0	3	3	.03	2	2	0	4	.03
ENTJ	0	0	0	0	.00	0	1	0	1	.01
ENFJ	0	0	0	0	.00	1	1	0	2	.01
Total	9	3	55	67	.50	27	59	0	76	.55

BE = Business Education, HOE = Health Occupations Education,  
 T&I = Trade and Industrial Education

n = 143

independent samples was performed using a statistical package designed for personal computers (Witte, 1985, and Bolding, 1985). Table X presents a summary of ranked order for the results of the MBTI scores for each gender. The calculated Mann-Whitney U value, corrected for ties ( $Z = 0.819$ ; significance = 0.211) was not significant at the .05 alpha level; therefore, the null hypothesis was not rejected. There was no evidence of differences between the personality types of males or females enrolled in vocational technical education secondary programs.

Hypothesis Three: Hypothesis three for this study was, "There are no differences in personality types/learning styles of secondary vocational technical education students and non-vocational technical education students."

Ho: Vocational Technical Education secondary students =  
Non-Vocational Technical Education secondary  
students.

H1: Vocational Technical Education secondary students  $\neq$   
Non-Vocational Technical Education secondary  
students.

Decision Rule: Reject Ho at the .05 level of significance if U equals or is less than 10.

The MBTI scores were evaluated for differences in personality types. Table XI shows the frequency distribution for vocational technical education secondary students and non-vocational technical education secondary students. The Mann-Whitney U test for two independent samples was performed using a statistical package designed for personal computers (Witte, 1985 and Bolding, 1985). Table XII presents the results for the MBTI scores for the two

TABLE X  
 SUMMARY OF RANKED ORDER OF PERSONALITY TYPE FOR MALE  
 AND FEMALE VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Type	Male r1 = 67	<u>Ranked Order</u>	Female r2 = 76
ISTJ	20.5		20.5
ISFJ	7.5		24.5
ISTP	31		24.5
ISFP	12.5		24.5
INFJ	7.5		7.5
INTJ	18.5		7.5
INFP	7.5		7.5
INTP	15.5		7.5
ESTP	32		22
ESFP	15.5		27
ESTJ	24.5		30
ESFJ	2		28.5
ENTP	28.5		15.5
ENFP	15.5		18.5
ENTJ	2		7.5
ENFJ	2		12.5

U Value = r1 = 149.50, r2 = 106.50; Z Value for ties = 0.819;  
 Significance = 0.2108; p > .05.

n = 143

TABLE XI  
 FREQUENCY DISTRIBUTION FOR PERSONALITY TYPE OF VOCATIONAL  
 TECHNICAL EDUCATION SECONDARY STUDENTS AND  
 NON-VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Type	Vo-Tech	Frequency n1 = 143	Non-Vo-Tech	Frequency n2 = 259
ISTJ	10	.07	11	.04
ISFJ	8	.06	12	.05
ISTP	20	.14	16	.06
ISFP	9	.06	7	.03
INFJ	2	.01	7	.03
INTJ	5	.04	8	.03
INFP	2	.01	14	.05
INTP	4	.03	18	.07
ESTP	20	.14	22	.09
ESFP	12	.08	19	.07
ESTJ	18	.13	22	.09
ESFJ	10	.07	22	.09
ENTP	13	.09	21	.08
ENFP	7	.05	44	.17
ENTJ	1	.01	6	.02
ENFJ	2	.01	10	.04

Vo-Tech = Vocational Technical Education Secondary Students,  
 Non-Vo-Tech = Non Vocational Technical Education Secondary  
 Students

n = 402

TABLE XII  
 SUMMARY OF RANKED ORDER OF PERSONALITY TYPE OF VOCATIONAL  
 TECHNICAL EDUCATION SECONDARY STUDENTS AND  
 NON-VOCATIONAL TECHNICAL EDUCATION  
 SECONDARY STUDENTS

Type	Ranked Order	
	Vo-Tech r1 = 143	Non-Vo-Tech r2 = 259
ISTJ	15	17
ISFJ	11.5	18.5
ISTP	26.5	22
ISFP	13	9
INFJ	3	9
INTJ	6	11.5
INFP	3.5	21
INTP	5	23.5
ESTP	26.5	31
ESFP	18.5	25
ESTJ	23.5	29
ESFJ	15	30
ENFP	20	28
ENTP	9	32
ENFJ	1	7
ENTJ	3	15

Vo-Tech = Vocational Technical Education Secondary Students,  
 Non-Vo-Tech = Non Vocational Technical Education Secondary Students

U Value - r1 = 192.50; r2 = 63.50; Z Values for ties = 2.431;  
 Significance = 0.0007; \*p<.05; \*\*p<.01  
 n = 402

groups. The calculated Mann-Whitney U value, corrected for ties ( $Z = 0.819$ ; significance = 0.007) was significant at the .05 and .01 alpha levels; therefore the null hypothesis was rejected and the alternative hypothesis was accepted. There was evidence of significant differences between the personality types of vocational technical education secondary students and non-vocational technical education secondary students.

In the vocational technical education secondary student sample, the four MBTI scores which most frequently occurred were ESTP (14%), ISTP (14%), ESTJ (13%), and ENTP (9%). Of the 143 ( $n_1 = 143$ ) students in the sample, 71 ( $s = 71$ ) students totalling 50 percent of the sample were represented by the personality types of ESTP, ISTP, ESTJ, and ENTP. The four least frequently occurring MBTI scores were INFJ (1%), INFP (1%), ENTJ (1%), and ENFJ (1%). A total of 7 ( $s = 7$ ) students comprised 5 percent of the sample represented by the personality types of INFJ, INFP, ENTJ, and ENFJ.

The four most frequently occurring MBTI scores in the non-vocational technical education student sample were ENFP (17%), ESFJ (9%), ESTP (9%), and ESTJ (9%). Of the 259 ( $n = 259$ ) students in the sample, 110 ( $s = 110$ ) students represented 44 percent of the sample with personality types of ENFP, ESFJ, ESTP, and ESTJ. The four less frequently occurring MBTI scores were ENTJ (2%), INTJ (3%), ISFJ (3%), and ISFP (3%). Twenty-eight ( $s = 28$ ) students contributed to the lower 11 percent of the sample with personality types of ENTJ, INTJ, ISFJ, and ISFP.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to assess the personality type/learning styles of vocational technical education secondary students and non vocational technical education students, then evaluate the differences. The Myers/Briggs Type Indicator developed from the constructs of Carl Jung's theory was used to determine personality type/learning styles. The differences were appraised by comparing various demographic data collected from students enrolled in vocational technical education programs at a vo-tech school with the same data collected from students enrolled full-time at a particular comprehensive high school from the vo-tech school's district. The selected vocational technical education secondary programs were Business Education, Health Occupations Education and Trade and Industrial Education (Auto Service Technology). Junior and senior English classes at the sending comprehensive high school were used for the purpose of this study.

The study was a descriptive study. The data collected and analyzed were obtained from observations that were representative of the personality types/learning styles of the sample population. The statistical data was reflective of existing personality types, not reflective of generalized population personality types as posited by Keirsey and Bates (1984).

There was one research question and three specific hypotheses for the study. The research question was, "What are the personality types/learning styles of secondary vocational technical education students?"

The subjects of this study were students enrolled in Business Education programs, Health Occupations Education programs and Trade and Industrial Education (Automotive Service Technology) programs at vo-tech schools and junior and senior English classes at comprehensive high schools in a five state region. The states included in this study were Arkansas, Kansas, Louisiana, Missouri, and Oklahoma. The population for the study was 40,982 for vocational technical education secondary students and 378,702 for non-vocational technical education secondary students. Five hundred twenty Myers-Briggs Type Indicator booklets and answer sheets were mailed to the five vo-tech schools and the five comprehensive high schools that were randomly selected. Seventy-seven percent were completed and returned. The instrument contained 126 forced-choice questions which were designed to elicit an individual's preference on the four dichotomous scales depicting the personality functions.

The literature review consisted of three major areas: a discussion of the many-faceted views of learning styles, the Jungian typology, and personality types.

An analysis of the data revealed that personality types/learning styles were not different for students enrolled in business education, health occupations education and trade and industrial education (auto service technology). Personality types/learning



styles did not vary according to the gender of vocational technical education secondary students.

A difference in personality types/learning style was found to exist between vocational technical education secondary students and non-vocational technical education secondary students.

The vocational technical education secondary students in this study operated in the cognitive and affective processes which were knowledge and skill areas. Based on the two most frequently occurring personality type/learning styles (ESTP and ISTP), they learned by observing, describing, memorizing, translating, comparing and contrasting, categorizing, convergent thinking, and performing specific skills of ability. Compared to the general population, ESTP and ISTP personality types respectively represent 13 percent and 7 percent of the population (Keirsey and Bates, 1984). The non-vocational technical education secondary students in this study were identified as using critical and logical thinking and problem solving skills along with socialization skills. Based on the two personality type/learning styles categories of highest frequency (ENFP and ESFJ), they learned by describing feelings, empathizing, communication skills, personal and group decision-making skills, summarizing, classifying, comparing and contrasting, inductive and deductive reasoning, divergent thinking, analyzing and synthesizing. Five percent of the general population is represented by the ENFP personality type while ESFJ personality type represents 13 percent of the general population (Keirsey and Bates, 1984).

## Conclusions

Conclusions from this research are:

1. It was found that students enrolled in vocational technical education classes of business education, health occupations, and trade and industrial education have similar personality types. Therefore, it is concluded that curricular objectives, the learning environment, teaching strategies and evaluation procedures that are similar will accommodate the needs of the secondary vocational technical education student.
2. Based on the findings that personality type was not different for male or female students enrolled in secondary vocational technical education programs, curriculum and teaching strategies do not need to be different for these two groups.
3. Differences do exist between students enrolled in vocational technical education secondary programs and students enrolled in non-vocational technical education programs. Based on this finding, it is concluded that different teaching techniques, curricular objectives, learning environments, and evaluation procedures should be implemented to accommodate the different educational needs of vocational technical education secondary students and non-vocational technical education secondary students.

## Recommendations

The findings and conclusions of this study have implications both for current educational concerns about providing appropriate

educational strategies to meet individual needs for secondary students and for future research directions. With respect to current practice, it is recommended that: (1) teaching methods be directly related to students personality types/learning styles and (2) curriculum should be presented in a variety of methods to meet the individual differences in students.

Based on findings characterizing the highest frequency of personality type/learning style scores recorded for the vocational technical education secondary student, it is recommended that the educational needs of this group can best be met by the following teaching methods:

- (1) The learning environment - should emphasize purposeful work and stress organization and completion of tasks.
- (2) The curriculum - should emphasize basic skills and acquisition of content.
- (3) Instructional strategies - should include behavior modification, practice and drill, convergent thinking tasks, demonstrations, and producing products.
- (4) Teaching strategies - should incorporate programed instruction, command style teaching, mastery learning, drill and repetition, and memorization.
- (5) Evaluation procedures - should include objective tests, checklists, behavioral objectives, use of mechanical devices, demonstrations and specific skills, and criterion referenced tests.  
(Silver, Harvey, et. al., 1980, pp. 15-22).

The frequency of scores for personality type occurrence for non-vocational technical education secondary students were categorized as ENFP and ESFJ--two different types. Based on findings characterizing the highest frequency of scores recorded for

personality type/learning style for the non-vocational technical education secondary students, it is recommended that the educational needs can best be met by the following teaching methods:

- (1) The learning environment - (ENFP) should emphasize originality, flexibility and imagination and (ESFJ) should emphasize personal warmth, interaction, and collaboration.
- (2) The curriculum objectives - (ENFP) should encourage creative thinking and moral development and (ESFJ) promote positive self concept and socialization.
- (3) Instructional strategies - (ENFP) should stress self expression, imagination, divergent expression, creative-artistic expression and values clarification and (ESFJ) should emphasize personal and social awareness, group projects, personal sharing, oral reports and communications.
- (4) Teaching strategies - (ENFP) include non-directive teaching, synectics, breaking mind sets, analyzing and working with moral dilemmas, and problem-solving activities and (ESFJ) emphasize group investigations, classroom meetings, peer tutoring, lab training, and team games.
- (5) Evaluation procedures - (ENFP) should allow for fluency of expression, flexibility of response, originality of response, elaboration of detail, observations of value systems in action and unobtrusive data collection and (ESFJ) encourage writing personal journals, sociograms, oral reports, ranking procedures, trained observations, and self reporting (Silver, Harvey, et. al, 1980, pp. 15-22).

The frequency distribution of personality type/learning style of both vocational technical education secondary students and non-vocational technical education secondary students revealed that each group contained a diversity of all of the sixteen personality types. Therefore, it is recommended that a variety of methods should be used in curriculum development and delivery to accommodate the differences for each of the 16 personality type/learning styles.

Recommendations for future research are as follows:

1. Assess personality types in vo-tech schools by expanding the number of secondary vocational technical education programs to include programs from each occupational division.
2. Use the MBTI to assess the personality types of adult students in vo-tech schools and compare the scores with secondary students in like programs.
3. Explore the practicality of using the MBTI to develop better teaching techniques in relation to student needs based on identifying instructors' personality types and their teaching styles.
4. Conduct studies using the MBTI as a career counseling tool.

## REFERENCES

- American Trade Schools Directory. (1990). Queens Village, NY: Croner Publications, Inc.
- Arraj, Tyra and Arraj, Jim. (1985). A Tool for Understanding Human Differences. Chiloquin, OR: Tools for Inner Growth.
- Bargar, Robert R. and Hoover, Randy L. Psychological Type and the Matching of Cognitive Styles. Theory Into Practice, 23 (1), pp. 56-63.
- Bolding, J. (1984). Statistics with Finesse [Computer Program]. Fayetteville, AR.
- Conti, G. J., & Welborn, R. B. (1986, June). Teaching Learning Styles and the Adult Learner. Lifelong Learning, 9 (8), pp. 20-24.
- Cornett, C. (1983). What You Should Know About Teaching and Learning Styles. Kappan Educational Research. Bloomington: IL: Phi Delta Kappa.
- Cross, K. P. (1976). Accent on Learning: Improving Instruction and Reshaping Curriculum. San Francisco, CA: Jossey Bass.
- Dunn, Rita. (1984). Learning Style: State of the Science. Theory Into Practice, 23 (1), pp. 10-17.
- Giovannoni, Louise, Berens, Linda V., and Cooper, Sue A. (1986). Introduction to Temperament. Huntington Beach, CA: Telos Publications.
- Gregorc, A. F. (1982). Learning Style/Brain Research: Harbinger of an Emerging Psychology. Student Learning Styles and Brain Behavior, pp. 3-10.
- Green, Donald, and Parker, Randall M. (1988, September). Vocational and Academic Attributes of Students with Different Learning Styles. Journal of College Student Development, 30, pp. 395-400.
- Guild, Pat Burk. (1989, August). Meeting Students' Learning Styles. Instructor, pp. 14-17.
- Hanson, Robert J., Silver, Harvey F., and Strong, Richard. (1984, February). Research on the Roles of Intuition and Feeling. Roeper Review, pp. 167-170.

- Hirsch, A. J. (1990, March). The Special Needs of the Right-Brain Thinker. Guidance Clinic, pp. 8-11.
- Hirsch, Sandra and Kummerow, Jean. (1989). Life Types. New York, NY: Warner Books, Inc.
- Huck, Schuyler W., Cormier, William H., and Bounds, William G. (1974). Reading Statistics and Research. New York, NY: Harper and Row.
- Johnson, Adge J. (1989). Temperament and Preference for Supervision Among Oklahoma Educators. (Unpub. Ed.D. dissertation, Oklahoma State University, Stillwater, Oklahoma).
- Jones, James R. (1985). The Holographic Brain: Implications for Training Design. Washington DC: Personal Awareness Institute.
- Jones, M. (1982). Getting High on Creativity. New York, NY: Richard Rosen Press, Inc.
- Jung, C. G. (1923). Psychological Types. New York, NY: Harcourt, Brace.
- Keirsey, David. (1987). Portraits of Temperament. Del Mar, CA: Prometheus Nemesis Book Company.
- Keirsey, David and Bates, Marilyn. (1984). Please Understand Me. Del Mar, CA: Prometheus Nemesis Book Company.
- Keefe, J. W. (1982). Assessing Student Learning Styles: An Overview. Student Learning Styles and Brain Behavior, pp.43-53. Reston, VA: National Association of Secondary School Principals.
- Keefe, J. W. and Ferrell, Barbara, G. (1990, October) Developing a Defensible Learning Style Paradigm. Educational Leadership, pp. 57-58.
- Key, J. P. (1974). Research Design. Stillwater, OK: Oklahoma State University.
- Kirrane, D. E. (ed.). (1988, April). Teaching and Learning Styles. Alexandria, VA: American Society for Training and Development.
- Kolb, D. A. (1984). Experiential Learning: Experience as the Source of Learning and Development. Englewood Cliffs, NJ: Prentice-Hall.
- Kroeger, Otto and Thuesen, Janet M. (1988). Type Talk. New York, NY: Bantam Doubleday Dell Publishing Group, Inc.

- Lawrence, Gordon. (1982). People Types and Tiger Stripes. Gainsville, FL: Center for Application of Psychological Type, Inc.
- Levy, J. (1982). Children Think with Whole Brains: Myth and Reality. Student Learning Styles and Brain Behavior, Reston, VA: National Association of Secondary School Principals. pp. 173-184.
- Levy, J. (1985, May). Right Brain, Left Brain: Fact and Fiction. Psychology Today, pp. 38-44.
- Myers, Isabel Briggs. (1980). Gifts Differing. Palo Alto, CA: Consulting Psychologists Press, Inc.
- Myers, Isabel B. (1962). The Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press.
- Myers, I. and McCaulley, M. (1988). Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologist Press.
- McCarthy, B. (1980). The 4MAT System: Teaching to Learning Styles with Right/Left Mode Techniques. Barrington, IL: EXCEL, Inc.
- Oklahoma State Department of Education. (1983). One of a Kind: A practical Guide to Learning Styles 7-12. Oklahoma City, OK: Bear Prints.
- Rojewski, Jay W. and Holder, Birdie H. (1990, Spring). Personality Type Profiles of Students in Vocational Education Teacher Preparation Programs. Journal of Vocational Education Research, 15 (2), pp. 77-91.
- Sanders, Ray E. and Galbraith, Michael W. (1990). Learning and Teaching Style Perceptions of Vocational Educators. Southern Journal of Occupational Education, 4 (1).
- Sharp, Daryl. (1987). Personality Types. Toronto, Canada: Inner City Books.
- Silver, Harvey, et. al. (1980). Teaching, Learning and Curriculum (TLC): Putting It All Together for Improved Teaching and Intercultural Relationships. Workshop presented at Columbia University, New York. Moorestown, NJ: Hanson, Silver and Associates, Inc.
- Smith, Linda H. and Rensulli, Joseph S. (1984). Learning Style Preferences: A Practical Approach for Classroom Teachers. Theory Into Practice, 23 (1), pp. 44-49.



Vogt, Gloria and Holder, Birdie. (1988). Myers-Briggs Type Indicator Personality Characteristics of Business Teacher Education Majors. National Association for Business Teacher Education (NABTE) Review, pp. 39-41.

Witte, Robert S. (1985). Statistics. New York, NY: Holt, Rinehart and Winston.

**APPENDIXES**

**APPENDIX A**

**DIRECTIONS FOR ADMINISTERING THE  
MYERS BRIGGS TYPE INDICATOR**

1. The Myers-Briggs Type Indicator should be given to only one class each of the following vocational technical education classes:

Vocational Business  
Health Occupations  
Trade and Industrial Education (preferably Auto Mechanics)

The MBTI should be given to one class each of the following non-vocational technical education classes:

11th grade English  
12th grade English

These five classes will serve as the sample population for each of the five states in this study.

2. The students in this study are all secondary. Therefore, if you have adult students in your class, please administer the MBTI ONLY to your high school students.
3. Data will be interpreted as it relates to each class. Students' names will NOT be used when compiling the statistical data.
4. When introducing the MBTI, please do not use the word "test." Use "MBTI" or "the Indicator" instead. This is not an achievement test.
5. Be sure to tell the students there are no "right" or "wrong" answers to the questions. The students' answers will show them how they look at things and how they like to go about deciding things.
6. PLEASE READ ALOUD and verbatim to the students the directions on the front of the question booklet and the back of the student answer sheet. This is important for the reliability of the data compiled.
7. It is permissible to read the MBTI to poor readers. If this is necessary, please remember to sound open-minded about both choices, with no bias in either direction.
8. Do not explain questions or meaning of words to students who ask questions. A student may skip a question if he/she does not understand it or cannot choose an answer.

9. The MBTI is not a timed instrument. However, the students should be able to complete it in approximately 40 minutes.
10. The students should read each question in the booklet carefully and mark their answers on the answer sheet.
11. Please ask the students to NOT make marks in the question booklets.
12. Students should not think too long about any question.
13. If the student cannot decide on a question, skip it but be careful that the next space the student marks on the answer sheet has the same number as the question the student is answering.
14. The demographic information sheet should be given to each student prior to beginning the MBTI. This sheet collects the respondent's demographic information which is vitally important to this study. Please check to make sure each student turns in a completed demographic information sheet with his/her answer sheet.
15. It is extremely important that the demographic sheets and the answer sheets for each occupational area and each English class be kept separate. Therefore, a labeled envelope is enclosed for the demographic information sheets and the answer sheets of each class that is given the MBTI. Please put the demographic information sheets and the answer sheets in the appropriate envelope.
16. Please complete the "Vocational Technical Education Summary Sheet" (for vocational schools) or the "Non-vocational Technical Education Summary Sheet (for high schools) and put this information in the envelope with the answer sheets and demographic sheets.
17. When the MBTI is completed and the summary sheets filled out, please return the MBTI question booklets along with the answer sheets, demographic information sheets, the summary sheets, and any unused answer sheets to me in the box in which you received them. You should find a self-addressed label and the proper postage enclosed. Should additional postage be necessary, I will reimburse you.

**APPENDIX B**

**DEMOGRAPHIC INFORMATION SHEET VOCATIONAL  
TECHNICAL EDUCATION SECONDARY STUDENTS**

TABLE XIII  
VOCATIONAL TECHNICAL EDUCATION SECONDARY RESPONDENT  
DEMOGRAPHIC INFORMATION

---

Vocational Technical Education Students

---

Age

15  
16  
17  
18  
19

Type of Vocational Program

Business  
Health  
Marketing  
Trade and Industrial

Number of Years Enrolled in Vocational Program

1  
2  
3  
4

Gender

Male  
Female

Ethnic Class

Black American  
Caucasian American  
Indian American  
Oriental American  
Spanish-Surnamed American  
Other

Size of Community

Rural less than 2,000  
Small 2,000 to 49,000  
Suburb of city over 50,000  
Urban more than 50,000

---

**APPENDIX C**

**DEMOGRAPHIC INFORMATION SHEET NON-VOCATIONAL  
TECHNICAL EDUCATION SECONDARY STUDENTS**



TABLE XIV  
NON-VOCATIONAL TECHNICAL EDUCATION RESPONDENT  
DEMOGRAPHIC INFORMATION

---

Characteristics of Non-Vocational Technical Students

---

Age

15  
16  
17  
18

English Class

Junior  
Senior

Gender

Male  
Female

Ethnic Class

Black American  
Caucasian American  
Indian American  
Spanish-Surnamed American  
Other

Size of Community

Rural less than 2,000  
Small 2,000 to 49,000  
Suburb of city over 50,000  
Urban more than 50,000

---

**APPENDIX D**

**VOCATIONAL TECHNICAL EDUCATION SECONDARY**

**STUDENTS SUMMARY SHEET**

Name of Business Class \_\_\_\_\_

Number of students in Business Class \_\_\_\_\_

Number of students who took the MBTI \_\_\_\_\_

Name of Health Class \_\_\_\_\_

Number of students in Health Class \_\_\_\_\_

Number of students who took the MBTI \_\_\_\_\_

Name of Trade and Industry Class \_\_\_\_\_

Number of students in T & I Class \_\_\_\_\_

Number of students who took the MBTI \_\_\_\_\_

**APPENDIX E**

**NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY**

**STUDENT SUMMARY SHEET**

**Junior English**

Number of students in class \_\_\_\_\_

Number of students who took the MBTI \_\_\_\_\_

**Senior English**

Number of students in class \_\_\_\_\_

Number of students who took the MBTI \_\_\_\_\_

**APPENDIX F**

**AREA VOCATIONAL TECHNICAL EDUCATION CENTER  
INFORMATION SHEET**

TABLE XV  
AREA VOCATIONAL TECHNICAL EDUCATION CENTER INFORMATION

Vo-tech School	Town/City	State	Student Population	# H.S. in Vo-Tech District
Metropolitan Voc. Tech Educ. Center	Little Rock	AK	850	23
N.E. Kansas AVTS	Atchison	KS	250	10
Lafayette Parrish Career Center	Lafayette	LA	645	5
Lake AVTS	Camdenton	MO	368	4
Chisholm Trail AVTS	Omega	OK	102	4

n = 2233

**APPENDIX G**

**NON-VOCATIONAL TECHNICAL EDUCATION SECONDARY**

**STUDENT INFORMATION SHEET**



TABLE XVI  
COMPREHENSIVE HIGH SCHOOL INFORMATION STUDENT POPULATION

High School Name	Town/City	State	Student Population
Cabot H.S.	Little Rock	AK	1350
Lansing H. S.	Lansing	KS	495
Carencro H. S.	Lafayette	LA	1185
Camdenton H. S.	Camdenton	MO	798
Kingfisher H.S.	Kingfisher	OK	332

n = 4160

**APPENDIX H**

**LETTER SENT TO EACH IDENTIFIED CONTACT PERSON  
IN THE VOCATIONAL TECHNICAL EDUCATION SCHOOLS  
AND IN THE NON-VOCATIONAL TECHNICAL  
EDUCATION SCHOOLS**



Bob Patton  
Superintendent  
P.O. Drawer 848  
Shawnee, Oklahoma 74802-0848  
405/273-7493  
Fax: 405/273-6354

February 17, 1992

Mr. C. Michael Wingate, Director  
Lake Area Vocational Technical School  
Township Road  
P.O. Box 1409  
Camdenton, Missouri 65020

Dear Mr. Wingate,

Thank you for agreeing to help me with the research data for my dissertation. Without your support and cooperation, securing the necessary data would be very difficult.

Enclosed, you will find a Myers-Briggs Type Indicator (MBTI) booklet and answer sheet for each of the students in the sample group. You will also find an instruction sheet for administering the survey instrument.

Please administer the MBTI to your morning classes if at all possible. Keeping the time of day variable consistent will allow for more accurate reporting of my data.

Thank you again for your help. If you have a question or need more information, please feel free to call me during the day at 405/273-7493 or of an evening at 405/279-2482.

Sincerely,

Francie Soliday  
Assistant Director

CONTACT PEOPLE FOR AREA VOCATIONAL TECHNICAL SCHOOLS  
IN THE STUDY

Arkansas: Dr. Doyle Dillahunt  
Associate Director  
Metropolitan Voc. Tech Education Center  
7701 Scott Hamilton Drive  
Little Rock, Arkansas 72209

Kansas: Mr. Chuck Stansbery, Director  
Northeast Kansas Area Voc. - Tech. School  
P.O. Box 277  
1501 W. Riley  
Atchison, Kansas 66002

Louisiana: Mr. Francis Arceneaux  
Lafayette Parish Career Center  
200 18th Street  
Lafayette, Louisiana 70501

Missouri: Mr. C. Michael Wingate, Director  
Lake Area Vocational Technical School  
Township Road  
P.O. Box 1409  
Camdenton, Missouri 65020

Oklahoma: Mr. Chuck Henderson  
Adult Education Coordinator  
Chisholm Trail AVTS  
Route 1, Box 60  
Omega, Oklahoma 73764

CONTACT PEOPLE IN THE VON-VOCATIONAL TECHNICAL EDUCATION  
COMPREHENSIVE HIGH SCHOOLS

Arkansas: Mr. Scott Goad  
Head Counselor  
504 E. Locust  
Cabot, Arkansas 72023

Kansas: Mr. Ted Lepresti  
Lansing High School  
220 Lion Lane  
Lansing, Kansas 66043

Louisiana: Mr. Dave Lutgrig  
Carencro High School  
Lafayette, Louisiana 70501

Missouri: Mr. C. Michael Wingate, Director  
Lake Area Vocational Technical School  
Township Road  
P.O. Box 1409  
Camdenton, Missouri 65020

Oklahoma: Mr. Mike Combs  
Counselor  
Kingfisher High School  
600 S. 9th Street  
Kingfisher, Oklahoma 73756

**APPENDIX I**

**AUTHORIZATION FROM CENTER FOR APPLICATIONS  
OF PSYCHOLOGICAL TYPE (CAPT) TO USE  
THE MYERS-BRIGGS TYPE  
INDICATOR (MBTI)**



**CENTER FOR APPLICATIONS OF PSYCHOLOGICAL TYPE, INC.**

Concerned with the constructive use of differences

*a non-profit public organization for education, research and services*

---

2720 N.W. 8th Street • Gainesville, Florida 32608 • (904) 375-0180

Date: 12-20-91

To: *S. Francie Soliday*

In response to the information you provided us on your professional qualifications for purchasing psychological tests, we have marked our records here at CAPT to show that you are qualified to purchase restricted materials for the Myers-Briggs Type Indicator and for the Murphy-Meisgeier Type Indicator for Children. You are also qualified to use CAPT's computer scoring services for the MBTI.

**MBTI/MMTIC TESTING MATERIALS:**

MBTI materials are listed in the CAPT catalog which we are enclosing with this letter. Form G is recommended for general use and is also available in Spanish. Form F adds research items and is recommended primarily to those interested in helping CAPT's research. The MMTIC was designed for children in grades 2-8.

**MBTI COMPUTER SCORING:**

CAPT was the first organization to provide computer scoring for the MBTI. Our original program was developed by Isabel Briggs Myers and Mary McCaulley. We are constantly upgrading our reports. You will find our schedule of charges in the catalog, followed by a sample of the three-page report for the individual and the one-page detailed scoring information report for your records. You may also order the optional Expanded Interpretive Report which shows how individuals differ in their reports of EI, SN, TF, and JP. When you send in a group of answer sheets to be scored, we include two listings of your group alphabetically and by type, plus a type table for the group. Samples of all these are also in the Catalog. We are enclosing instruction sheets with helpful hints for administering the MBTI and preparing your answer sheets for computer scoring. In addition, on the back of each answer sheet are instructions for the person responding to the MBTI. If you make sure the instructions are followed, your answer sheets will run through the computer scoring process with no problems and no additional charges to you for correcting them.

CAPT tries hard to give you the tools to provide quality use of the MBTI. Notice that we can put a six-line message from you on each client's report. We can divide your large group into subgroups. CAPT also has special support for researchers, and can show you how to code information on Form G answer sheets which will be scored along with the MBTI, and reported to you for no additional cost. If you are interested, call our Research Department.

The first time you send us answer sheets to score, we will assign you a CAPT Scoring Code to use whenever you submit scoring thereafter. The Scoring Code is your link to all your scoring activity with CAPT.

**APPENDIX J**

**PERMISSION LETTER TO COPY THE MYERS-BRIGGS  
TYPE INDICATOR TO INCLUDE IN THIS STUDY**





Bob Patton  
Superintendent  
P.O. Drawer 848  
Shawnee, Oklahoma 74802-0848  
405/273-7493  
Fax: 405/273-6354

March 2, 1992

Consulting Psychological Press  
3803 E. Bayshore Road  
Palo Alto, California 94303  
Attention: Lisa Sisneros

Dear Ms. Lisneros,

In our telephone conversation of March 2, 1992, I asked how to receive permission to include a copy of the Myers Briggs Type Indicator Booklet and Answer Sheet in the Appendices of my dissertation. You directed to me send you the following information:

Name:

Francie Soliday  
Gordon Cooper Vo-Tech  
4801 N. Harrison  
Shawnee, OK 74801  
Telephone - 405/273-7493

Title and Form of Test Booklet:

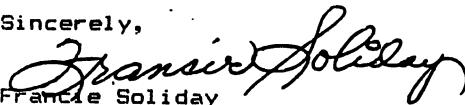
Myers Briggs Type Indicator, Form G

Title of Dissertation:

Assessing Temperament and Learning Styles  
of Secondary Vocational Students by Using  
the Carl G. Jung Theory

I will be anticipating your reply. Thank you for your time and help with this request.

Sincerely,

  
Francie Soliday  
Assistant Director

APPENDIX K

THANK YOU LETTER TO CONTACT PEOPLE VOCATIONAL  
TECHNICAL EDUCATION SCHOOLS AND  
NON-VOCATIONAL TECHNICAL  
EDUCATION SCHOOLS



Bob Patton  
Superintendent  
P.O. Drawer 848  
Shawnee, Oklahoma 74802-0848  
405/273-7493  
Fax: 405/273-6354

March 1, 1992

Chuck Henderson  
Chisholm Trail AVTS  
Route 1, Box 60  
Omega, OK 74764

Dear Mr. Henderson,

Thank you so very much for the support and cooperation you provided in collecting research data for my dissertation. I am now in the process of assembling all the information and putting it into statistical form for readability.

At a later date, I will be providing some information identifying the temperament types of the students from your school who participated in taking the Myers Briggs Type Indicator. I hope this information will be helpful in identifying teaching methods to meet the different temperament types and learning styles for the participating students.

Thank you again for all your help and the time obligated to this endeavor. If I may ever be of assistance to you, please call on me.

Sincerely,

  
Francie Soliday  
Assistant Director

APPENDIX L

ADDITIONAL STATISTICAL INFORMATION

TABLE XVII

PERSONALITY TYPE OF VOCATIONAL TECHNICAL EDUCATION SECONDARY  
STUDENTS, PER INDIVIDUAL PROGRAM

Type	Variable	Frequency n = 143	Percentage
<u>ISTJ</u>	Business Education	3	.02
	Health Occupations Ed.	5	.03
	Trade & Industrial Ed.	2	.01
<u>ISFJ</u>	Business Education	1	.01
	Health Occupations Ed.	6	.04
	Trade & Industrial Ed.	1	.01
<u>ISTP</u>	Business Education	4	.03
	Health Occupations Ed.	6	.04
	Trade & Industrial Ed.	10	.07
<u>ISFP</u>	Business Education	3	.02
	Health Occupations Ed.	4	.03
	Trade & Industrial Ed.	2	.01
<u>INFJ</u>	Business Education	2	.01
	Health Occupations Ed.	0	.00
	Trade & Industrial Ed.	0	.00
<u>INTJ</u>	Business Education	1	.01
	Health Occupations Ed.	1	.01
	Trade & Industrial Ed.	3	.02
<u>INFP</u>	Business Education	0	.00
	Health Occupations Ed.	1	.01
	Trade & Industrial Ed.	1	.01
<u>INTP</u>	Business Education	0	.00
	Health Occupations Ed.	1	.01
	Trade & Industrial Ed.	3	.02

TABLE XVII (Continued)

Type	Variable	Frequency	Percentage
<u>ESTP</u>	Business Education	5	.03
	Health Occupations Ed.	3	.02
	Trade & Industrial Ed.	12	.08
<u>ESFP</u>	Business Education	7	.05
	Health Occupations Ed.	2	.01
	Trade & Industrial Ed.	3	.02
<u>ESTJ</u>	Business Education	3	.02
	Health Occupations Ed.	8	.06
	Trade & Industrial Ed.	7	.05
<u>ESFJ</u>	Business Education	1	.01
	Health Occupations Ed.	9	.06
	Trade & Industrial Ed.	0	.00
<u>ENTP</u>	Business Education	3	.02
	Health Occupations Ed.	2	.01
	Trade & Industrial Ed.	8	.06
<u>ENFP</u>	Business Education	2	.01
	Health Occupations Ed.	2	.01
	Trade & Industrial Ed.	3	.02
<u>ENTJ</u>	Business Education	0	.00
	Health Occupations Ed.	1	.01
	Trade & Industrial Ed.	0	.01
<u>ENFJ</u>	Business Education	1	.01
	Health Occupations Ed.	1	.01
	Trade & Industrial Ed.	0	.00

---

 n = 143

TABLE XVIII

FREQUENCY DISTRIBUTION OF PERSONALITY TYPE FOR MALE AND  
FEMALE BUSINESS EDUCATION SECONDARY STUDENTS

Type	Variable	Frequency n = 36	Percentage
ISTJ	Males	1	.03
	Females	2	.06
ISFJ	Males	0	.00
	Females	1	.03
ISTP	Males	2	.06
	Females	2	.06
ISFP	Males	0	.00
	Females	3	.08
INFJ	Males	1	.03
	Females	1	.03
INTJ	Males	1	.03
	Females	0	.00
INFP	Males	0	.00
	Females	0	.00
INTP	Males	0	.00
	Females	0	.00
ESTP	Males	2	.06
	Females	3	.08
ESFP	Males	0	.00
	Females	7	.19

TABLE XVIII (Continued)

Type	Variable	Frequency	Percentage
ESTJ	Males	0	.00
	Females	3	.08
ESFJ	Males	0	.00
	Females	1	.03
ENTP	Males	2	.06
	Females	1	.03
ENFP	Males	0	.00
	Females	2	.06
ENTJ	Males	0	.00
	Females	0	.00
ENFJ	Males	0	.00
	Females	1	.03

n = 36



TABLE XIX  
 FREQUENCY DISTRIBUTION OF PERSONALITY TYPE FOR MALE  
 AND FEMALE HEALTH OCCUPATIONS EDUCATION  
 SECONDARY STUDENTS

Type	Variable	Frequency n = 52	Percentage
ISTP	Males	2	.04
	Females	3	.06
ISFJ	Males	0	.00
	Females	6	.12
ISTP	Males	1	.02
	Females	5	.10
ISFP	Males	0	.00
	Females	4	.08
INFJ	Males	0	.00
	Females	0	.00
INTJ	Males	0	.00
	Females	1	.02
INFP	Males	0	.00
	Females	1	.02
INTP	Males	0	.00
	Females	1	.02
ESTP	Males	0	.00
	Females	3	.06
ESFP	Males	0	.00
	Females	2	.04

TABLE XIX (Continued)

Type	Variable	Frequency	Percentage
ESTJ	Males	0	.00
	Females	8	.15
ESFJ	Males	0	.00
	Females	9	.17
ENTP	Males	0	.00
	Females	2	.04
ENFP	Males	0	.00
	Females	2	.04
ENTJ	Males	0	.00
	Females	1	.02
ENFJ	Males	0	.00
	Females	1	.02

n = 52

TABLE XX  
 FREQUENCY DISTRIBUTION OF PERSONALITY TYPE FOR MALE AND  
 FEMALE TRADE AND INDUSTRIAL EDUCATION  
 SECONDARY STUDENTS

Type	Variable	Frequency n = 55	Percentage
ISTJ	Males	2	.04
	Females	0	.00
ISFJ	Males	1	.02
	Females	0	.00
ISTP	Males	10	.18
	Females	0	.00
ISFP	Males	2	.04
	Females	0	.00
INFJ	Males	0	.00
	Females	0	.00
INTJ	Males	3	.05
	Females	0	.00
INFP	Males	1	.02
	Females	0	.00
INTP	Males	3	.05
	Females	0	.00
ESTP	Males	12	.22
	Females	0	.00

TABLE XX (Continued)

Type	Variable	Frequency	Percentage
ESFP	Males	3	.05
	Females	0	.00
ESTJ	Males	7	.13
	Females	0	.00
ESFJ	Males	0	.00
	Females	0	.00
ENTP	Males	8	.15
	Females	0	.00
ENFP	Males	3	.05
	Females	0	.00
ENTJ	Males	0	.00
	Females	0	.00
ENFJ	Males	0	.00
	Females	0	.00

n = 55

TABLE XXI

FREQUENCY DISTRIBUTION OF PERSONALITY TYPE FOR MALE AND  
FEMALE NON-VOCATIONAL SECONDARY STUDENTS

Type	Males n1 = 120				Females n2 = 139			
	<u>Frequency</u>				<u>Frequency</u>			
	JE	SE	Total	%	JE	SE	Total	%
ISTJ	4	2	6	.02	4	1	5	.02
ISFJ	3	4	7	.03	3	2	5	.02
ISTP	9	3	12	.05	3	1	4	.02
ISFP	1	1	2	.01	3	2	5	.02
INFJ	0	0	0	.00	2	5	7	.03
INTJ	0	4	4	.01	0	3	3	.01
INFP	3	3	6	.02	3	5	8	.03
INTP	7	7	14	.05	0	4	4	.02
ESTP	6	10	16	.06	4	2	6	.02
ESFP	4	1	5	.02	10	4	14	.05
ESTJ	4	5	9	.03	3	10	13	.05
ESFJ	3	3	6	.02	5	11	16	.06
ENTP	5	6	11	.04	6	4	10	.04
ENFP	6	7	13	.05	14	17	31	.12
ENTJ	3	2	5	.01	0	1	1	.01
ENFJ	2	1	3	.01	3	4	7	.03
Total	60	59	119	.44	63	76	139	.55

JE = Junior English, SE = Senior English.

n = 259

VITA<sup>2</sup>

Sarah Frances Little Soliday

Candidate for the Degree of

Doctor of Education

**Thesis:** A STUDY OF PERSONALITY TYPES/LEARNING STYLES OF SECONDARY VOCATIONAL TECHNICAL EDUCATION STUDENTS

**Major Field:** Occupational and Adult Education

**Biographical:**

**Personal Data:** Born in Shawnee, Oklahoma, on April 5, 1948, the daughter of Russell and Estel Little.

**Education:** Graduated from Tryon High School, Tryon, Oklahoma, May 19, 1966; received Bachelor of Science degree in Vocational Home Economics Education from Oklahoma State University in January, 1970; received Master of Education degree from the University of Central Oklahoma in July, 1978; received Standard Counseling Certification from the University of Central Oklahoma in December, 1986; received Standard Certificate in School Administration from the University of Oklahoma in January, 1987; received Standard Superintendent's Certification from Oklahoma State University in July, 1988; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1992.

**Professional Experience:** General Homemaking Instructor, Gilcrease Jr. High, Tulsa Public Schools, OK, 1970-72; Research Utilization Specialist for Kiamichi Area Vo-Tech, Wilburton, OK, 1972-73; Fashion Production Instructor, Kiamichi Area Vo-Tech, McAlester, OK, 1973-76; Vocational Home Economics Instructor, McAlester High School, 1976-79; Fashion Production Instructor, Gordon Cooper Vo-Tech, Shawnee, OK, 1979-81; Coordinator of Student Services, Gordon Cooper Vo-Tech, 1981-84; Assistant Principal/Counselor, Gordon Cooper Vo-Tech, 1984-90; Assistant Director of Full-Time Programs, 1990-present.