



Influence of agricultural education curriculum on MBTI (Myers-Briggs Type Indicator) temperament
by Heidi Jean Brewer

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in
Agricultural Education

Montana State University

© Copyright by Heidi Jean Brewer (2002)

Abstract:

The purpose of this study was to determine if the Myers-Briggs Type Indicator temperament styles of students enrolled in Agricultural Education at Montana State University are influenced by: 1) increased knowledge received through college classes; 2) selected demographic characteristics such as age, gender, and officers in collegiate FFA, 4-H or ACT; and 3) which students took first time employment as Agricultural Education instructors.

Data for this study were collected from those students enrolled in AGED 251 (Leadership Development) and EDSD 352 (Instructional Methods for Agriculture and Technology Education) who completed the Myers-Briggs Type Indicator (MBTI) Form G in both courses. The students were identified by enrollment in AGED 251 and EDSD 352 during the years of 1993 through 2002.

Analysis of the data revealed the students temperament style and temperament score changed while being enrolled in Agricultural Education between the years 1993-2002.

**INFLUENCE OF AGRICULTURAL EDUCATION CURRICULUM ON MBTI
(MYERS-BRIGGS TYPE INDICATOR) TEMPERAMENT**

By

Heidi Jean Brewer



**A thesis submitted in partial fulfillment
of the requirements for the degree**

of

Master of Science

in

Agricultural Education

**MONTANA STATE UNIVERSITY
Bozeman, Montana**

December, 2002

Spec Upub

N378

B75794

ii

APPROVAL

of a thesis submitted by

Heidi Jean Brewer

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

Dr. Van Shelhamer, Chair of Committee

C. Van Shelhamer
(Signature)

12-2-02
Date

Approved for the Department of Entomology/Agricultural Education Division

Dr. Greg Johnson, Department Head

Greg Johnson
(Signature)

12-02-02
Date

Approved for the College of Graduate Studies

Dr. Bruce McLeod, Graduate Dean

Bruce McLeod
(Signature)

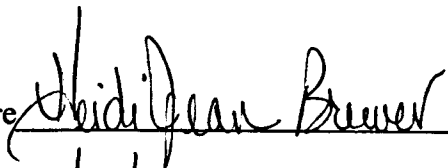
12-12-02
Date

STATEMENT OF PERMISSION TO USE

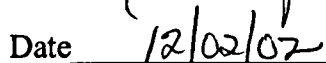
In presenting this thesis in partial fulfillment of the requirements for a master's degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library.

If I have indicated my intention to copyright this thesis by including a copyright notice page, copying is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for permission for extended quotation from or reproduction of this thesis in whole or in parts may be granted only by the copyright holder.

Signature

Handwritten signature of Heidi Jean Brewer in cursive script, written over a horizontal line.

Date

Handwritten date 12/02/07 in cursive script, written over a horizontal line.

ACKNOWLEDGMENTS

The researcher genuinely wishes to express her gratitude to those who contributed to her graduate program and assisted in the completion of this study. Contributors who made this a successful and educationally meaningful experience included: Dr. Van Shelhamer, my major advisor, who without his persistence, willingness to believe in me, and patience; this study would not have been a success. Dr. Martin Frick and Dr. Clayton Marlow, for their assistance and guidance during my graduate program; and my family, for your persistent reminders and patience to allow this study to be completed.

TABLE OF CONTENTS

LIST OF TABLES.....	vii
ABSTRACT.....	viii
1. THE PROBLEM AND ITS SETTING.....	1
Introduction.....	1
Purpose of the Study.....	3
Need for the Study.....	4
Specific Objectives.....	6
Hypothesis.....	7
Assumptions.....	7
Limitations.....	8
Definition of terms.....	8
2. REVIEW OF LITERATURE.....	10
Historical View of Temperament.....	10
Myers-Briggs Type Indicator Theory.....	11
Learning Preferences.....	15
3. METHODS AND PROCEDURES.....	20
Population and Sample.....	20
Instruments and Design.....	20
Analysis of Data.....	23
4. RESULTS OF THE STUDY.....	28
Introduction.....	28
Population.....	28
Style.....	29
Score.....	31
Age.....	32
Gender.....	34
Officer.....	35
Individual Temperament Indices and Preferences.....	37
First Time Agricultural Education Instructors Following College Graduation.....	41

TABLE OF CONTENTS-CONTINUED

5. CONCLUSIONS,IMPLICATIONS, RECOMMENDATIONS,
AND SUMMARY43
Conclusions.....44
Implications.....45
Recommendations.....46
Recommendations for Further Study.....47
Summary.....47
REFERENCES48
APPENDIX: A.Table containing data from AGED 251 and EDSD 35251

LIST OF TABLES

Table	Page
1. A comparison of temperament style preference from AGED 251 to EDSD 352.....	30
2. Students showing an increase/decrease in total temperament score between testing.....	31
3. Change in MBTI scores between testing.....	33
4. Age of student related to change in temperament score.....	33
5. Gender and its affect on change of temperament score and temperament style.....	35
6. Change in temperament scores and styles of officers in Collegiate FFA, 4-H or ACT.....	36
7. Temperament style of students showing officers and non-officers temperament styles.....	37
8. Number of students changing temperament preferences by gender.....	39
9. Change in index according to number of preferences changed.....	40
10. Comparison of individual preference scores from AGED 251 to EDSD 352.....	41
11. Summary of first time Agricultural Education Instructors.....	42
12. Table containing data from AGED 251 and EDSD 352.....	52

ABSTRACT

The purpose of this study was to determine if the Myers-Briggs Type Indicator temperament styles of students enrolled in Agricultural Education at Montana State University are influenced by: 1) increased knowledge received through college classes; 2) selected demographic characteristics such as age, gender, and officers in collegiate FFA, 4-H or ACT; and 3) which students took first time employment as Agricultural Education instructors.

Data for this study were collected from those students enrolled in AGED 251 (Leadership Development) and EDSD 352 (Instructional Methods for Agriculture and Technology Education) who completed the Myers-Briggs Type Indicator (MBTI) Form G in both courses. The students were identified by enrollment in AGED 251 and EDSD 352 during the years of 1993 through 2002.

Analysis of the data revealed the students temperament style and temperament score changed while being enrolled in Agricultural Education between the years 1993-2002.

CHAPTER 1

THE PROBLEM AND ITS SETTING

Introduction

Research on temperament dates back to around 190AD when Hippocrates developed the idea that it is neither the stars nor the gods that determine what we want and what we do; rather, it is the balance of our bodily fluids, the four "humors", as they were called (Keirse, 1998). Galen took the ideas of Hippocrates and determined it was the relative predominance of the four bodily fluids in the individual that were supposed to produce, respectively, temperaments designated sanguine (warm, pleasant), phlegmatic (slow-moving, apathetic), melancholic (depressed, sad), and choleric (quick to react, hot-tempered) (Kretschmer, 1925).

For over two thousand years research has been conducted on "what makes people tick" or more professionally explained as a person's temperament or type, also referred to as personality or character. Although these words are used interchangeably, there is a dangerous assumption that they are all used to view a situation in the same way. Tieger (1995) suggested that each individual is born with a certain temperament style (blueprint) which stays the same throughout life, however, it takes some time for definite type preferences to become apparent. Fairhurst (1995) stated temperament theory is static in assuming that a person's core needs (natural constitution or organization) remain constant throughout his or her lifetime. If temperament, personality and character are used interconnectively, according to Fairhurst, then one remains constant from birth to death, no

change occurs. There is a contradiction to this statement. Students in AGED 251 (Leadership Development) and EDSD 352 (Instructional Methods for Agriculture and Technology Education) claim they have changed after two or more years of college. Fairhurst's research stated, temperament is static, remains constant throughout maturation. However, the students in EDSD 352 detect a change within themselves. This may be where confusion takes place. Type or temperament preference is often mistaken as a trait. Lawrence (1995) suggested that type preferences are not traits, or even clusters of traits. They are preferred ways of being in the world, different ways of experiencing life's daily events and processing the experiences.

Using a definition as an explanation, Daniel Webster (1972) defined temperament, personality and character differently. Temperament is defined as "a natural constitution or organization; due mixture of opposite or different qualities." Webster defined personality as "that which constitutes distinction of person; individuality psychologically the sum total of one's characteristics; a composite of emotional tendencies, behavior inclinations, and the like." And he defined character as "distinctive qualities or traits; moral excellence."

Keirsey (1998) suggested personality is the key to what "makes people tick and it has two sides to it." One of which is temperament and the other which is character. Keirsey (1998) explained that temperament is a configuration of inclinations, while character is a configuration of habits. Temperament, character, and personality are configured. We are predisposed to develop certain attitudes and not others, certain actions and not others, but these actions and attitudes are unified—they hang together. The main differences between temperament and personality are almost philosophical in nature (Fairhurst, 1995). Temperament is considered to be inborn, innate, inherent, and of character as exactly

configured, as precisely patterned, as definitively systemic (Keirse, 1998). In essence, Keirse states temperament is internal. We are born with a predisposition of one type or temperament. Lawrence (1995) stated temperament is the preferred way of being in the world, a different mind-set, a different way of experiencing life's daily events and processing the experience. Bama (2002) identifies type as where people get their energy and how they use it, their orientation to information; their approach to solving problems and making decisions; and how they structure their lives. Personality or traits are external. Pinker (2002) stated that a child's personality and intellect are largely determined by genes, peer groups, and chance. Many things influence the makeup of personality—family life, life circumstances outside the family, society's expectations and requirements, and many learned (Lawrence, 1995). Fairhurst (1995) stated a person's natural constitution remains constant throughout one's lifetime, but their individual behavior can be influenced from outside sources and are measured as more or less, or degrees of skillfulness.

This would further explain that it may not be the EDSD 352 student's temperament that has changed, but a form of their individual traits that have changed. This study examined what about the student changed, temperament or trait, and what influenced that change.

Purpose of the Study

The purpose of the study was to determine if the Myers-Briggs Type Indicator temperament styles of students enrolled in Agricultural Education at Montana State University were influenced by: 1) increased knowledge received through college classes; 2) selected demographic characteristics such as age, gender, and officers in Collegiate FFA, 4-H

or ACT; and 3) which students took first time employment as Agricultural Education instructors.

Need For The Study

There is a need to identify temperament type as related to the Myers-Briggs Type Indicator (MBTI) of freshman entering the Agricultural Education program and to determine if there is a change in the identified temperament type once the student experiences two or more years of higher education. By understanding their type preference as indicated by the MBTI, freshmen can be aware of and appreciate diversity, identify with their instructors better, manage their studies more wisely, develop sounder relationships, and plan majors and careers more realistically. Myers-Briggs does not define individuals, it simply tells generalities about that individual. Understanding individual basic functions, attitudes and unique qualities can be both empowering and critical to success in college and beyond (Appalachian State University, 2002).

In ancient Greece, Socrates argued that education was about drawing out what was already within the student. Dr. Will Keim (2002) stated that education will prove to be the way to a better self. That education, worthy of the name, is essentially the education of character; that the really important outcome of higher education is what kind of person you have become.

Do the suggestions of Dr. Keim (2002) indicate that education changes the students' temperaments core needs (natural constitution) or does the change occur in their character? When taking the Myers-Briggs Type Indicator some students may come out as a J (Judging),

wishing they would be more P (Perceiving). They will work on trying to be a P, so the next time they take the MBTI, they would score as a P. Lawrence (1995) suggested these people are mistaking temperament types as traits, something that can be worked on and changed. He goes on to suggest, if the type report is correct, and the person uses mainly a judgment process in running his or her outer life, no amount of work on traits associated with the Perceiving preference will change him or her to having a perceiving process running the outer life.

If a change does occur in the student, is it temperament or behavior? What factors were involved that influence the change? Did the curriculum requirements of Agricultural Education have an influence on their temperament change?

When determining MBTI type preferences, learning style of the student needs to be addressed. Prior research suggested that learning style is an important factor in students' achievement (Cano & Garton, 1994). Dunn, (1984) defined learning style as "the way each person absorbs and retains information and/or skills." Schools across the United States, urban and rural, big and small, report that students' lack of enthusiasm for school tasks is one of the most persistent and perplexing problems (Lawrence, 1995). According to Lawrence, teachers have the power to influence students' stimulation to accomplish school tasks by understanding type concepts identified by the MBTI and how those concepts relate to learning styles. Lawrence goes on to suggest that addressing the students' ambition to learn and learning style are overlapping categories. When the focus is on how people effectively approach learning tasks, providing the student with inspiration to learn is a part of learning style. Miller (2001) indicated that student enthusiasm and performance improves when

instruction is adapted to student learning preferences and styles. Schroeder (1993) concluded that students are coming to institutions of higher learning with more diversity in their learning styles than ever before.

Just as in the early childhood stages of development, Perry (1970) indicated that a basic progression in ways of thinking for a student during their college experience existed. White (1970) confirmed there was a pattern of intellectual change that occurred in college students.

There is a need to determine if temperament does change what influences does receiving two or more years of higher education, and student demographics such as age, gender, and officers in collegiate FFA, 4-H or ACT contribute to those changes?

Specific Objectives

To meet the purpose of this study, the following objectives are identified:

- 1) Determine Myers-Briggs Type Indicator temperament styles of students enrolled in an Agricultural Leadership Development Course and again when they are enrolled as a senior in Instructional Methods for Agriculture and Technology Education at Montana State University.
- 2) Determine if the temperament styles of those students changed as a result of participating in the Agricultural Education curriculum.
- 3) Determine if selected demographic characteristics influence the change in temperament.

These selected demographics were: age, gender, officers in Collegiate FFA, 4-H or ACT.

- 4) Determine from the Myers-Briggs Type Indicator which temperament style began teaching Agricultural Education upon graduation from MSU.

Hypothesis

The following hypotheses are placed upon this research:

- H₀₁: There is no observed change in the Myers-Briggs temperament scores as the result of completing two or more years of the Agricultural Education program at Montana State University.
- H₀₂: There is no observed difference in the Myers-Briggs temperament scores as a result of age.
- H₀₃: There is no observed change in Myers-Briggs temperament scores as a result of gender.
- H₀₄: There is no observed difference in Myers-Briggs temperament scores as a result of involvement as an officer in Collegiate FFA, 4-H or ACT.

Assumptions

The assumptions for this study are that:

- 1) The suggested change in temperament, reported by students in EDSD 352, is the results of participating in the Agricultural Education curriculum.
- 2) Two years is sufficient time for temperament to be influenced as a result of participation in Agricultural Education curriculum and the collegiate environment.

Limitations

This study will be limited to Montana State University students enrolled in Agricultural Education taking AGED 251 (Leadership Development) and EDSB 352 (Instructional Methods for Agriculture and Technology Education) between the years of 1993 and 2002.

Definition of Terms

- (1) *Temperament*: The aspect of personality concerned with emotional dispositions, reactions, and their speed and intensity; the prevailing mood or mood pattern of a person (Encyclopedia Britannica, 1999) .
- (2) *Learning Styles*: The cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. (Miller, 2001)
- (3) *MBTI*: Myers-Briggs Type Indicator is an instrument designed to determine personal temperament styles. It was designed to make the theory of psychological types described by C. G. Jung understandable and useful in people's lives (McCaulley, 1985)
- (4) *Dominant function or process*: The function or process that is assumed to be first developed, most conscious and differentiated, and which becomes the governing force dominating and unifying one's life.
- (5) *Auxiliary function or process*: The function or process that is second in importance and that provides balance (a) between perception and judgment and (b) between extraversion and introversion.

(6) *Inferior function*: The opposite of the dominant function, also called the fourth function.

The inferior function is assumed to be nearest to the unconscious, the least differentiated, and a source of both problems and potential for growth.

CHAPTER 2

REVIEW OF LITERATURE

Historical View of Temperament

The idea that people are highly formed at birth, with fundamentally different temperaments or predispositions to act in certain ways, is a very old idea. It was first proposed in an outline by Hippocrates around 370 B.C., and the Roman physician Galen fleshed it out around 190 A.D. (Keirsey, 1998). According to Keirsey (1998) our predispositions come in four styles, and from within and not without. But in the latter 19th century, in the behavioral sciences what had been the prevailing current of thought for centuries—that temperament determines character—gradually decreased to a tiny trickle (Keirsey, 1998).

It wasn't until the 20th century when a great Swiss physician-psychologist, C.G. Jung developed one of the most comprehensive of current theories to explain human personality. Jung saw patterns in people's behavior. What he called "psychological types" are patterns in the way people prefer to perceive and make judgements. In Jung's theory, all conscious mental activity can be classified into four mental processes or functions – two perception processes (sensing and intuition) and two judgment processes (thinking and feeling). Jung believed everyone has a natural preference for using one kind of perceiving and one kind of judging. He also observed that a person is drawn toward either the external or internal world (extrovert or introvert) more than the other. According to Jung, each of us has one and only

one Natural Lead Function, which is the result of a neuro-chemical-physiological fact that each person has one area of the brain which is 100 times more efficient than their remaining three areas (Benziger, 1996). The Natural Lead Function serves as our personal compass “true north.” Jung felt that a person should concentrate on developing their natural lead and would have the greatest difficulty developing and effectively using their natural weakness (Benziger, 1996).

Some people become embarrassed if they can not be or are not like someone else. It is nothing to be embarrassed about or to be apprehensive about. These attributes must be recognized and identify strengths and weakness with each (Rafoth, 2001). As each persons preferences are exercised, distinct perspectives and approaches to life and human interaction are developed. The variations in what is preferred, used, and developed lead to fundamental differences among people (Myers, 1993). Pinker (2002) attributes difference in humans to genetic uniqueness. Pinker goes on to state:

that although the minds of normal human beings work in pretty much the same way, they are not, of course, identical. Natural selection reduces genetic variability but never eliminates it. Genetic differences make a difference in mind and behavior, at least quantitatively. Regardless of IQ or physical strength or any other trait that might vary among people, all human beings can be assumed to have certain traits in common (p. 36).

Myers-Briggs Type Indicator Theory

The Myers-Briggs Type Indicator (MBTI) is more widely used by educators in the United States than any other temperament assessment model (Appalachian State University, 2002). The four dimensions of type classified by Jung have become the lifelong work of Isabel Briggs and her mother Katherine Myers. Together they have developed the Myers-

Briggs Type Indicator (MBTI) indicating 16 different people "types." The Indicator was developed to understand the differences and similarities in human personalities. The Myers-Briggs Type Indicator does not define individuals, it simply tells us general things about ourselves. Each person is different and unique even though many preferences may be shared. The eight preferences developed by MBTI are arranged in four scales: 1) Extrovert (E), Introvert (I); 2) Sensing (S), Intuitive (N); 3) Thinking (T), Feeling (F); and 4) Perceiving (P), Judging (J). We all have bits of each but tend to favor one end of the scale over the other. The higher an individual's numerical score on the MBTI, the stronger their preference or Natural Lead. The lower their number, the more balanced the two preferences are.

The Extrovert-Introvert (E-I) scale explains how we get our energy. Extroverts tend to focus on the outer world of people and external events. They direct their energy and attention outward and receive energy from external events, experiences, and interaction with others. Introverts are energized by the inner world of reflection, thought, and contemplation. They tend to focus on their own inner world of ideas and experiences. Sensing-Intuitive (S-N) scale suggests how we take in information. It has the biggest impact on how we learn. Sensing people rely heavily on their five senses to take in information. They are observant of what is going on around them and are especially good at recognizing the practical realities of a situation. Intuitive people see the world through insight. They like to take in information by seeing the big picture, focusing on the relationship and connections between facts. The Sensing-Intuition difference is by far the most important of the preferences in the research on the MBTI in education (McCaulley, 1985). Thinking-Feeling (T-F) scale tells us how we make decisions. Thinking people decide on the basis of logic, analysis, and reason. They try

to mentally remove themselves from a situation to examine it objectively and analyze cause and effect. Feeling people follow their heart rather than their head. They mentally place themselves in a situation and identify with the people involved so that they can make decisions based on person-centered values. Lastly, the Judging-Perceiving (J-P) scale suggests the type of life style and work habits we prefer. Judging types try to order and control their world. They make decisions, come to closure, and move on. Their lifestyle is structured and organized, and they like to have things settled. Perceiving types are spontaneous and don't like to be boxed in by deadlines or plans. Plans and decisions feel confining to them; they prefer to stay open to experience and last-minute options (Appalachian State University, 2002, Myers, 1993).

Tieger (1995) suggested that for each personality type, there is one dominant function—the captain of the ship, so to speak. Anyone of the four functions (Sensing, Feeling, Thinking, or Intuition) can be dominant, but for each personality type there is only one dominant function, and it always stays the same. The second in command is called the auxiliary function. Again there is only one auxiliary function for each personality type, and it never changes (Tieger, 1995). Tieger (1995) suggested the dominant and auxiliary functions always refer to how you take in information (either Sensing or Intuition) and how you make decisions (either Thinking or Feeling). Since everyone needs to use both of these processes, the dominant and auxiliary functions never refer to the same process. If the dominant is an information-gathering function, then the auxiliary is a decision-making function, and vice-versa. Tieger (1995) also suggested there are third and fourth functions. The third function is always opposite of the auxiliary function and the fourth function is

always opposite of the dominant function. Starting at about the age of six a child's dominant function starts to pull ahead, and patterns of behavior become clearer. From about the age of twelve, the auxiliary function is strengthened. At some point after the age of twenty-five, the third function is starting to develop and the fourth function is not developed until much later in life (Tieger, 1995). Extraverts (E), use the favorite process primarily in the outer world; Introverts (I) use the favorite process in the inner world. For extraverts, the dominant function will be extraverted, and the second or auxiliary will typically be used in the inner world. For introverts, the first or dominant function will be introverted and the second or auxiliary will typically be used in the outer world. In development of the auxiliary function, a person develops skills in living in both the outer world and the inner world. In the balance between perception and judgment, if the first function is a perceptive function (S or N), the second function will be a judgment function (T or F). Or if the first function is a judgment function (T or F), the second function will be a perceptive function (S or N) (Myers, 1993).

Type development is seen as a lifelong process of gaining greater command over the functions or powers of perception and judgment. Some people dislike the idea of a dominant function and prefer to think of themselves as using all the functions equally. McCaulley (1985) indicated according to Jung such impartiality, where it actually exists, keeps all the functions undeveloped and produces a "primitive mentality." Optimum use of the four functions, therefore, is not to be obtained through a strict level of equality, but through selective development of each function in proportion both to its relative importance to the individual and to its useful relationship to the other processes. Past research suggested it is possible to develop a less dominant style and the key ingredient to that is awareness.

Become conscious of the less dominant style and practice increasing one process at a time until the less dominant and dominant style become more balanced (Appalachian State University, 2002).

Learning Preferences

Just as everyone has preferences in the way life is looked at, each person also has their own learning style preference.

Lawrence defines learning styles broadly to cover aspects of psychological makeup: 1) Cognitive style in the sense of preferred or habitual patterns of mental functioning: information processing, formation of ideas, and judgments; 2) Patterns of attitudes and interests that influence what a person will attend to in a potential learning situation; 3) A disposition to seek out learning environments compatible with one's cognitive style, attitudes and interests, and to avoid environments that are not congenial; and 4) Similarly, a disposition to use certain learning tools, to use them successfully, and to avoid other tools (Lawrence, 1995, p. 38).

Gagne (2002) differs from Lawrence and identifies five major categories of learning:

1) verbal information, 2) intellectual skills, 3) cognitive strategies, 4) motor skills; and 5) attitudes. Different internal and external conditions are necessary for each type of learning and the significance of these classifications is that each different type requires different types of instruction. Lawrence (1995) suggested all individuals change some of their learning strategies from situation to situation and from teacher to teacher. However, Lawrence (1995) stated that individuals want to keep temperament type the same in all situations if at all possible. Even when situations call on us to produce behaviors quite different from our usual ways of acting, our type preferences don't change. Learning styles that are a reflection of one's type can also be expected to persist across situations (Lawrence, 1995).

Myers-Briggs (1995) has summarized type preference and their affect on learning. The E (Extraversion) preference is associated with a cognitive style that favors learning by talking and physically engaging the environment. They enjoy discussion groups, cooperative projects and may have trouble sitting still reading books and writing. Whereas I (Introversion) preference favor quiet reflection, keeping one's thoughts inside until they are polished and letting attention flow inward. I's learn best alone in periods of concentrated study. I's may not like discussion and may not share what is known. The S (Sensing) preference is associated with a cognitive style that favors memory facts, processing data step by step and being careful and thorough. N (Intuitive) prefers being caught up in inspiration, reading between the lines and relying on insight more than careful observation. N's dislike structure and mechanical approaches to learning, they prefer open-ended assignments and opportunities for imagination. T (Thinking) prefers making impersonal judgments, aiming toward objective truth, keeping mental life ordered by logical principles. The F (Feeling) wants to know how learning will affect people, interest in process of learning, motivated by learning that touches convictions and values. J (Judging) favors having a clear structure in a learning situation from the beginning aiming toward completions and getting closure. The P (Perception) favors an open exploration without a preplanned structure, staying open to new experiences and being stimulated by something new and different.

According to Barbe and Swassing (1979), all learners have differences in ability in using sensory modalities, and these differences can be expressed as preferred styles of learning. They describe these differences as: 1) auditory learners; 2) visual learners; and 3) tactile-kinesthetic learners. Auditory learners like to use their voices and ears, learn best by

talking and listening. They like to “talk it through” and enjoy lectures and class discussion. Silence can be disturbing to them. Visual learners like to see the words written down. They like pictures, charts, diagrams, graphs, and time lines. They enjoy completing written assignments. Tactile-kinesthetic learners like to be “up and doing.” They like projects—to build, to handle materials, to act out. They don’t want to be told about the computer; they want to try it. When they do it, they learn it and remember it. They hate sitting still.

McCaulley (1985) suggested that the Sensing-Intuition (SN) index is by far the most important of the preferences in the research on the MBTI in education. Sensing mode of cognitive perception involves attending to concrete reality and focusing on things that are tangible, practical, and observable. Persons with a preference for this style exhibit a tendency to restrict their attention to matters with which they are immediately confronted and tend not to think a great deal about future circumstances and events. Intuitive thinkers, by contrast, are concerned with abstract concepts and theories. They exhibit imagination, a fondness for complexity, and a tendency to focus on the “big picture.”

Ballard (1989) and King (1996) stated that the sensing mode was prevalent in Montana Agricultural Education Instructors. According to Ballard (1989) 51 percent of Montana Agricultural Education Instructors indicated ISTJ or ESTJ as their temperament. This information coincides with King (1996) who stated that 52 percent of the Montana FFA Advisors indicated ISTJ or ESTJ as their preferred temperament style. These findings are consistent with Keirsey and Bates (1984) who predict 56 percent of the SJ’s would favor agriculture as a teaching area. King (1996) also found that advisors have a mild influence on the types of students that eventually are selected as state officers.

The prediction from type theory is that persons who prefer introversion and intuition will show greater academic aptitude than persons who prefer extraversion and sensing perception and whose best gifts lie in the practical world of action. Type theory also predicts that types with introversion and intuition (IN types) will have a relative advantage in college courses, since their interests match academic tasks (McCaulley, 1985). Other findings indicate that students who were more independent in their thinking, (ST/NT) were more successful in higher education (Porter & Cano, 1996). Research suggests that learning style is an important factor in students' achievement (Cano & Garton, 1994). Joyce and Weil (1986) proposed that students react differently to different teaching methods, and that the selection of the proper method is critical to the learning style of those being served by the instruction. Davis (1993) warns teachers not to try to match their teaching styles to all their students' learning styles, but rather to help students become more aware of their own learning strategies.

Research shows E and I and S and J are somewhat evenly divided among college students with E and S rating higher percentages. Relatively more introverts seek higher education and introverts outnumber extraverts on college and university faculties. In younger students, extraverts appear to have the edge academically. In high school and in college, introverts have a slight edge (CAPT, 2002). Research also shows that females dominate the Feeling preference by 66 percent and males dominate the Thinking preference by 60 percent. Judging and Perception are also more evenly distributed with Judging rating higher by 55 percent (Myers, 1985).

Prior research has shown that MBTI identifies individual preferences for relating to people and to the world. Understanding the temperament type determined by MBTI may assist in providing successfulness in the classroom and beyond.

The workplace contains a diversity of personalities. Individual tendency is to work with people having personalities that are familiar, that each individual can relate to. The most effective teams in the workplace are composed of people with complementary (different) personalities. Being a member of a high-performance team means learning to capitalize on temperament style differences to build a better team (Bama, 2002).

Rafoth (2001) indicated that each member brings his or her own strengths and weaknesses to the team. These attributes must be recognized to effectively communicate in a way that each member can personally relate. Rafoth goes on to suggest that understanding ourselves will almost assuredly help us understand others on the team.

Keirsey, (1998) suggested that the objective of a leader, no matter what his or her temperament, is to execute a plan of operation in the pursuit of a specified goal. Keirsey believed implementing any goal requires a certain kind and degree of intellectual development on the part of the personnel assigned to it, all types of leaders must take intelligence—their own and that of their followers—into account if they are to lead well. The kind of intelligent role enacted by a leader or follower is determined by temperament, and the degree of skill in that role is determined by practice. The best policy for a leader of any temperament is to look for intelligence and put it to work where it is most effective. The leader's first job is to match talent to task, provide timely feedback and frequent appreciation for tasks accomplished (Keirsey, 1998).

CHAPTER 3

METHODS AND PROCEDURES

This section describes the procedures used to complete this study. Included, is a description of how the population was surveyed, description of the instruments used, and the method by which data were collected and analyzed. Results are reported in Chapter 4 of this study.

Population and Sample

This is a descriptive study using a census of students enrolled in the AGED 251 (Leadership Development) and EDSD 352 (Instructional Methods for Agriculture and Technology Education) who completed the MBTI instrument in both courses. The students were identified by enrollment in AGED 251 and EDSD 352 during the years 1993 to 2002. Transfer students fulfilling the requirements for AGED 251 at a different learning institution, were not considered in this study.

Instruments and Design

The Myers-Briggs Type Indicator (MBTI), Form G, was used to determine temperament. Form G is now the standard form of the MBTI. This instrument is presently being used by the Division of Agricultural Education and Agricultural Operations

Technology at Montana State University in the leadership development and teaching methods class, and was used in two previous studies (Ballard, 1989 and King, 1996). Ballard's study focused on the temperament styles of Agricultural Education Instructors in Montana during the 1988-1989 school year and King's study focused on the influence the Agricultural Education Instructor had on the development of leadership styles of State FFA Officers. The Myers-Briggs instrument was used because of its application to various populations. It has been used extensively in research dealing with temperament and temperament styles of high school students, college students, and post-college adults (Appalachian State University 2002).

The Myers-Briggs Type Indicator is a self-administered questionnaire developed over a twenty-year period by Isabell Myers and her mother, Katherine Briggs. The questionnaire is based on Carl Jung's theory of psychological types and was designed to provide information that can be given directly to those who have responded to the Indicator. It is published by the Consulting Psychologists Press in Palo Alto, California.

The MBTI Form G, is a forced choice, 126-item instrument. The answers provide four separate bipolar indices. Each index reflects one of four basic preferences, which, under Jung's theory, direct the use of perception and judgment. The preferences affect not only what people attend to in any given situation, but also how they draw conclusions about what they perceive. MBTI is not designed as scales for measurement of traits or behaviors. The intent is to reflect a habitual choice between rival alternatives, analogous to right-handedness or left-handedness. One expects to use both the right and left hands, even though one reaches first with the hand one prefers.

According to theory, by definition, one pole of each of the four preferences is preferred over the other pole for each of the sixteen MBTI types. Every person is assumed to use both poles of each of the four preferences, but to respond first or most often with the preferred functions or attitudes. The preference on each index is independent of preferences for the other three indices, so that the four indices yield sixteen possible combinations called "types," denoted by the four letters of the preferences.

The MBTI items scored for each index offer forced choices between the poles of the preference at issue. Choices are between seemingly inconsequential everyday events, chosen by Myers as stimuli to evoke the more comprehensive type preferences. Each of the responses for a question are weighed on a point system. Persons with a higher total of points for one preference over the other are classified as that preference. The letters indicate which of each pair of alternatives the person prefers and presumably has, or can develop, to a greater degree. The characteristics associated with a preference are often less apparent when the numerical portion of the preference score is low. A low score shows almost equal votes for each pole of the preference.

While letters indicate the direction of the preference, the number indicates the strength of the preference. The numerical portion of a score shows how strongly the preference is reported, which is not necessarily the same thing as how strongly it is felt.

According to the Consulting Psychologists Press, Inc., (CPP) the MBTI is one of the most reliable and valid self-report personality inventories available. However, CPP stresses that no psychological instrument is perfect and the person is the final authority on their type. CPP (2002) reports a .87 test/retest repeatability. The MBTI has a correlation of more than +

or - .70 between two administrations on test/retest. The instrument is reported to have a "error" rate of at least .25. When a feedback session is conducted and the client confirms their type, the instrument results do not match the confirmed and/or observed type about .25 of the time. Inappropriate contexts contribute to this inaccuracy rate. Self-report instruments are more accurate when the client is in need of the information, feels safe and is "motivated" to accurately self-report. Any time a self-report instrument is used in a context where there is fear from the taker of losing their self-esteem, the error rate will go up. A good feedback session can mitigate this effect.

No follow-up was conducted with each individual student in this study. The results were handed back to the student in class and the meaning of the score and temperament styles were discussed. Students were referred to several different sources for their own self-study.

Analysis of Data

Reliability was set and no attempt was made to determine the reliability. The temperament scores for each student enrolled in AGED 251 and EDSD 352 during the years of 1993 through 2002 were entered in an Excel spreadsheet. In addition, the Excel spreadsheet contained a column for: 1) student's gender; 2) student's age, 3) whether the student was an officer in Collegiate FFA, 4-H or ACT, and; 4) if the student became an Agricultural Education Instructor following college graduation. The age of the student was determined by obtaining their birth date and subtracting that date from the date they became enrolled in EDSD 352. Excel was used to calculate the total score of the temperament style

of each student while enrolled in AGED 251 and the total score of each student's temperament style while enrolled in EDSO 352.

The following example illustrates how the various scores were determined.

Student	E	I	S	N	T	F	P	J	TOTAL	STYLE	CLASS
Student A	37			12	16		37		102	ENTP	251

A formula was entered into Excel to subtract the AGED 251 scores from the EDSO 352 scores to determine if a change occurred in the student's temperament score while enrolled in the Agricultural Education curriculum.

The following example illustrates how the various change in the student's temperament score was determined.

Student	E	I	S	N	T	F	P	J	TOTAL	STYLE	CLASS
Student B	37			12	16		37		102	ENTP	251
	45			38	46		59		188	ENTP	352
	8	0	0	26	30	0	22	0	86		

When a change in the student's temperament score was determined, the remainder of the data, such as age, gender and leadership development skills was evaluated to determine what may have caused the change in the student. The scores were examined to determine if the student had an increase in their total score or a decrease in their total score. A positive number indicated there to be an increase in the score of one or more of their individual temperament preferences, meaning their temperament preferences had become more defined from AGED 251 to EDSO 352. A negative number indicated there to be a decrease in the

score of one or more of their individual temperament preferences, meaning the student had moderated their temperament preferences from AGED 251 to EDSD 352.

Each student's temperament style for AGED 251 and EDSD 352 were determined and recorded on the Excel spreadsheet. The researcher manually compared the student's temperament style indicated in AGED 251 to the temperament style they indicated in EDSD 352 to determine if their temperament style had changed. If the census had yielded a frequency of 5 for each temperament style, with no cells having a zero, chi-square would have been appropriate to determine if a statistical significant change had occurred. Some sources and computer programs state that chi-square should not be used unless the minimum expected frequencies are five or more in each cell. Roscoe and Byars (1971, 1979), Conover (1974), and Camilli and Hopkins (1978, 1979) have shown that the chi-square statistic works well even when the average expected frequency is as low as 2 (Glass and Hopkins, 1996). Chi-square is based on the expectation that within any category, sample frequencies are normally distributed about the expected population value. Since (logically) frequencies cannot be negative, the distribution cannot be normal when expected population values are close to zero—since the sample frequencies cannot be much below the expected frequency while they can be much above it (Connor, 2002). Because of low cell frequencies and cells with zero frequencies, Chi Square was not calculated. However, (Hollister, 2002) reported the expected distribution of types by percentages. This data was used for comparison in Chapter 4.

The following example illustrates the temperament style of the student for AGED 251 and EDSD 352.

Student	E	I	S	N	T	F	P	J	TOTAL	STYLE	CLASS
Student C	37			12	17		33		99	ENTP	251
	46			37	47		60		190	ENTP	352

Of the student's whose temperament style changed, the temperament styles were then manually compared to determine if one, two or three individual temperament preferences had changed. A formula was entered in the Excel spreadsheet to subtract the AGED 251 scores from the EDSD 352 scores of the individual indices to determine if the index had strengthened or weakened. Those indices are recorded as E-I, S-N, T-F, and P-J. If a change occurred, then each index was compared to ascertain the level of change.

The researcher mathematically compared the scores for each individual temperament preference for all students' in AGED 251 and again in EDSD 352. The AGED 251 scores were subtracted from the EDSD 352 scores to determine if an increase or a decrease occurred in the individual temperament preference from AGED 251 to EDSD 352.

The following example illustrates the level of change occurring in the student's E-I index.

Student	E	I	S	N	T	F	P	J	TOTAL	STYLE	CLASS
Student D		4	1		1			7	13	ISTJ	251
	14	0	0	37	17		1	0	69	ENTP	352
	14	-4	-1	37	16	0	1	-7	56		

The following example illustrates the change in the student's preference score.

Student	E	I	S	N	T	F	P	J	TOTAL	STYLE	CLASS
Student E	32			13	17		39		101	ENTP	251
	45			40	47		59		191	ENTP	352
	7	0	0	23	30	0	20	0	90		

The dominant and auxiliary function (S/N or T/F) of each student were closely analyzed for score differences to determine if the change in scores were related to age and/or enhancement of leadership development skills of the student.

CHAPTER 4

RESULTS OF THE STUDY

Introduction

The purpose of this study was to determine if the temperament type of student's enrolled in Agricultural Education changed after two or more years at Montana State University (MSU) in Bozeman. To seek answers to the questions growing out of this purpose, data were collected from students enrolled in AGED 251 (Leadership Development) and again when the same students were enrolled in EDSD 352 (Instructional Methods for Agriculture and Technology Education). The data collected are presented under the following headings: 1) population, 2) score, 3) style, 4) age, 5) gender, 6) officer, 7) individual indices; and 8) first time Agricultural Education Instructors following college graduation.

Population

A total of 409 students took the Myers-Briggs Type Indicator Form G while enrolled in AGED 251 (Leadership Development). Of those 409 students, data is available for 53 students' who took the Myers-Briggs Type Indicator Form G again when they became enrolled in EDSD 352 (Instructional Methods for Agriculture and Technology Education). In the following tables, N is always 53.

Style

Each student's temperament style was compared to determine if a change had occurred from AGED 251 to EDSO 352. Of the 53 students compared, 30 (57 percent) changed their temperament style from AGED 251 to EDSO 352. No change in temperament style occurred in 23 (43 percent) of the 53 students compared. Table 1 data shows the number of students in each temperament style indicated and whether that temperament style increased or decreased from AGED 251 to EDSO 352. The data show ESTJ to be the preferred temperament style of the students compared, with 8 students (15 percent) indicating ESTJ temperament type in AGED 251 and 11 (22 percent) indicating ESTJ temperament type in EDSO 352. Those figures were followed closely by temperament style preference ESFJ with 7 students (13 percent) in both AGED 251 and EDSO 352. The 15 percent indicating ESTJ in AGED 251 compares to the normal population of 13 percent as reported by Hollister (2002), however, the 22 percent indicating ESTJ in EDSO 352 is higher than would be expected in a normal population. The 13 percent indicating ESFJ is what is expected in a normal population. The largest increase occurred in the ENFJ temperament style with 0 indicating that temperament type in AGED 251 to 4 (8 percent) indicating that temperament style in EDSO 352. The 8 percent indicating ENFJ in EDSO 352 is slightly higher than the normal population. The largest decrease occurred in the temperament style ENFP with 6 (11 percent) indicating that temperament style in AGED 251 and 2 (4 percent) indicating that temperament style in EDSO 352. According to Hollister (2002) the 11 percent indicating ENFP in AGED 251 would be higher than the normal population of 5 percent, however, the EDSO 352 percentage of 4 percent is comparable to the normal population.

Three of those students indicated their temperament style as ENFJ in EDSD 352. The lowest number of temperament styles indicated in AGED 251 were ENTP and ISFJ with only 1 student indicating each of the temperament styles. Those 2 temperament styles increased to 2 students in EDSD 352. The lowest number of temperament styles indicated in EDSD 352 were ENTJ and INFP with only 1 student indicating those temperament styles. Those 2 temperament styles decreased from AGED 251 with 2 students indicating those temperament styles. The 2 temperament styles that did not occur in this population were INTJ and INFJ.

Table 1. A comparison of temperament style preference from AGED 251 to EDSD 352.

Type	Normal Population	251		352		Number		
		n	%	n	%	Increase	Decrease	Same
ENTP	5%	1	2	2	4	1		
ESFJ	13%	7	13	7	13			0
ISTP	7%	4	8	3	5		1	
ISTJ	1%	7	13	6	11		1	
ESTP	13%	6	11	6	11			0
ESTJ	13%	8	15	11	22	3		
ENFP	5%	6	11	2	4		4	
ESFP	13%	3	5	3	5			0
INTP	1%	2	4	2	4			0
ENTJ	5%	2	4	1	2		1	
ISFP	5%	4	8	3	5		1	
INFP	1%	2	4	1	2		1	
ISFJ	6%	1	2	2	4	1		
ENFJ	5%	0	0	4	8	4		

Score

Data in Table 2 show the combined scores for AGED 251 and EDSD 352. A formula was entered into the Excel spreadsheet to determine a difference between the AGED 251 scores and the EDSD 352 scores. The formula was written to subtract the AGED 251 score from the EDSD 352 score. A positive number indicates an increase in the students' total temperament score from AGED 251 to EDSD 352. A negative number indicates a decrease in the students total temperament score from AGED 251 to EDSD 352. Of the 53 students compared, 37 (70 percent) show an increase in their temperament score from AGED 251 to EDSD 352 and 15 (28 percent) show a decrease in their temperament score from AGED 251 to EDSD 352. One students score remained the same, however the scores of the individual preferences fluctuated.

Table 2. Students showing an increase/decrease in total temperament score between testing.

N	I (increase)	%	D (decrease)	%	Remained the same	%
53	37	70	15	28	1	2

Data in Table 3 show the change in MBTI scores between testing by the number of points. Of the 37 students whose scores increased, the largest percentage of the scores increased by less than 10 points. The data show 8 (22 percent) of the students' scores increased in the 0-10 point category. The next categories showing the largest number of increase in score occurred in the 31-40 and 51-60 point category, with 6 (16 percent) in each category.

Of the 15 students whose scores decreased, the largest percentage of the scores decreased by less than 20 points. The data show 9 (61 percent) of the students' scores

decreased in the 11-20 point category. Only 1 (6.5 percent) of the students fell in each of the 0-10, 21-30, 31-40, 51-60, 71-80, and 101-110 point categories. Five (1+3+1, 9 percent) of the 53 students had a change, either an increase or decrease, in their score of over 101 points. The 4 students, whose scores increased more than 101 points, indicated low scores in their temperament preferences in AGED 251. Low scores are often associated with a sense of tension between the poles of the low preference (McCaulley, 1996). In EDSD 352, these same students reported very clear preference scores, meaning they definitely hold that preference and may have a hard time using the less-preferred choice if the situation arises (McCaulley, 1996). The student whose score decreased by more than 101 points scored just the opposite, indicating very high temperament preference scores in AGED 251 and moderating those scores in EDSD 352. Of those students, 3 were males and 2 were females.

Age

The data in Table 4 show the number and percent of students in each age category and an increase or a decrease in their temperament score from AGED 251 to EDSD 352. The largest number of students, 42 (79 percent) were between the age of 20-24. Of those 42 students, 28 (67 percent) had an increase in their temperament score from AGED 251 to EDSD 352 and 13 (31 percent) had a decrease in their temperament score. One student's score remained the same. The large percentage in increase of scores may be attributed to the student becoming more defined in their individual temperament preferences. Eight (15 percent) were between the ages of 25-30. Six (75 percent) of those students had an increase in their temperament score, while 2 (25 percent) had a decrease in their temperament score.

