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The Relationship Between Personality Type and Career Pathway Choices Among Ninth and Tenth Grade Students

Margaret McIlroy Goodin

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An Abstract Presented to the Faculty of the Graduate School of Lindenwood University in Partial Fulfillment of the Requirements of the Degree of

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Abstract

Two hundred three ninth and tenth grade students from a small, rural, public high school were tested using the Myers-Briggs Type Indicator (MBTI) Form G. Students were divided into six groups on the basis of their previously chosen career pathway, as prescribed by the Missouri Model Guidance Program, using the Career Pathways Interest Inventory (CPII). The purpose of this study was to determine whether there was a significant relationship between personality type and career pathway choice among adolescent students. The two variables were compared using a chi-square statistical analysis. Results indicated that a significant relationship between personality type and career pathway choice does exist.

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Dedication

To my husband, Mark, and my daughter, Madison, whose strength, support, patience, and understanding helped me achieve my goals. Also, to my parents, John and Ruth McIlroy, whose belief in me has given me the ability to succeed. To my great friends Kim, Anne, Janet, Brenda, Julie, Joe, Krista, Cindy, Brenda, and Liz who always believed in me and encouraged me to pursue my dreams. Finally, to all my students, past and present, who have inspired me to be the best teacher and counselor I could possibly be.

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I would like to acknowledge the efforts of two people who assisted me. Krista, who helped score MBTIs all the way to Savannah and back, and Shelley, who provided the computer software and "know-how" for my statistical analysis. You are both treasured colleagues and friends.

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Chapter One

Introduction

School counselors are being encouraged to focus more on career education and career decision-making with their students than ever before. This is generating a great deal of discussion about what exactly is effective in helping students decide on a career pathway, a career decision-making model adopted by Missouri Model Guidance. Students, meanwhile, are given a variety of inventories, surveys, and tests to determine their personal strengths, interests, and aptitudes.

Research has proven that adults with certain personality types tend to gravitate toward specific occupations (Myers, 1993). Many studies involving the Myers-Briggs Type Indicator (MBTI), Holland's Self-Directed Search (SDS), and the Strong Interest Inventory have shown that individuals allow their personalities to guide them toward career decisions (Humes, 1992). However, to what extent adolescents follow this pattern is not yet clear.

When counselors utilize assessment instruments, there is a belief that students will make more appropriate career choices. Students who learn about themselves and involve their own preferences in making a decision for their future should make better decisions (Tieger & Barron-Tieger, 1995). They may consider their own needs and desires rather than depending upon what their parents, their teachers, or some other significant person in their environment would wish for them. By using assessment instruments, it is assumed that counselors may also ensure that students do not simply choose a career by chance.

The MBTI is one of the most popular personality type assessment instruments (Myers & Myers, 1995). It is known that the MBTI is a reliable instrument to use with adults when correlating personality type with occupational choice (Myers, 1993). The MBTI was formulated based on Jung's theory of psychological type which conceives that one's type is an examination of the way in which "we attend to, bring order to, and make decisions about our awareness" (Pearman & Albritton, 1997, p.1).

Jung hypothesized that there were inner processes behind all human behavior. The three dichotomous scales he examined included (i) Extraversion or Introversion (ii) Sensing or Intuition, and (iii) Thinking or Feeling (Jung, 1923). Later, when developing the MBTI, Katherine Briggs and Isabel Briggs-Myers added a fourth dimension, Judging or Perceiving (Myers, 1993). Because individuals are attracted to, and are most satisfied with, careers that allow them to express their preferences, determining what those preferences are may be a beneficial tool for students to use when making investigative and preliminary career pathway choices (Myers, 1993).

One way for students to begin to investigate careers is through career pathways. Career pathways were recognized by the National Center for Research in Vocational Education in their report, 1995 Exemplary Career Guidance Programs: Opening Career Paths For All Students, as occupations which are similar and have been grouped together based on those similarities (Cunanan & Maddy-Bernstein, 1996). There are six career pathways which have been recognized by the state of Missouri and implemented through the Missouri Model Guidance Program. They include: (i) *Arts and Communications*, which includes careers that involve art, performance, and/or

communication in any form, (ii) *Business, Management, and Technology*, which consists of careers involving business and/or management skills, as well as any technological careers particularly involving computers, (iii) *Health Services*, which includes careers that exist within the medical community or any type of health or wellness field, (iv) *Human Services*, which consists of careers that provide services to other people with the exception of health services, (v) *Industrial and Engineering Technology*, which involves careers in skilled areas, and (vi) *Natural Resources Agriculture*, which consists of careers in the environmental, farming, and/or science fields.

Pathways can provide a map, or framework, which students can use to begin exploring the world of work. By choosing a pathway a student can research all of the possibilities that a particular group of careers offers, including specific career options, educational requirements, interning or apprenticing opportunities, and many others. Knowing more about themselves initially allows students to be better prepared to make those choices (Tieger & Barron-Tieger, 1995). When students enter high school with a career pathway already chosen they can begin selecting courses which are meaningful to them and their future. Counselors, teachers, and parents hear much less of "Why do I have to study this?" than in the past because students are aware of the necessity of taking a specific course to prepare them for their future career ambitions. Teachers are able to inform students, when they know their pathway, why they need to learn a specific skill, formula, or fact.

There is a tremendous push from the Missouri Department of Elementary and Secondary Education and the public to begin career counseling in schools at an earlier age. Middle school and secondary counselors are focusing more and more of their time on assisting students in obtaining information about careers and themselves and making preliminary career choices. In many schools students are expected to choose a career pathway at the end of their eighth grade year and to continue probing for information and investigating their pathway through ninth and tenth grades. By eleventh and twelfth grades students are expected to know what they want to study in an institution of higher education or what job field they intend to enter directly into after graduation.

Knowing more about the relationship between personality type and career pathway choices would give counselors the ability to do their jobs better and more efficiently. Currently, most counselors take a measure of a student's interest and aptitude. The missing component is their personality preference. By having more information about whether a student's career pathway choice was reflective of their personality or not, the student would benefit when the counselor was advising them on course selection, aptitude inventories, entrance examinations, application to postsecondary institutions, and scholarship information. Early decisions regarding their broad career pathway allows students to enroll in courses in high school that will allow them to be well informed when they eventually make more specific career choices.

Statement of the Problem

The purpose of this study is to determine whether a significant relationship exists between ninth and tenth grade high school students' personality types, as indicated by the Myers-Briggs Type Indicator, and their initial career pathway choice, as indicated by the Career Pathway Interest Inventory.

Hypotheses

Null hypothesis: There is no statistically significant relationship between the personality type and the initial career pathway choice of ninth and tenth grade students.

Alternate hypothesis: There is a statistically significant relationship between the personality type and the initial career pathway choice of ninth and tenth grade students.

Operational definitions

For the purposes of this study, students' four personality types were assessed and determined through the administration and scoring of the Myers-Briggs Type Indicator Form G. Students' initial, or first, career pathway choices were determined by their previously recorded highest score on the Career Pathways Interest Inventory.

Chapter Two

Literature Review

Personality Type Theory

Carl Jung first developed the theory of personality type in order to explain the pattern he noticed in the behaviors some of his clients displayed. Seemingly random behaviors began to take focus as being patterned. The ways in which individuals contacted with the world began to develop similarities based on Jung's observations. Some have referred to these as psychological types (Jung, 1923).

Jung first described two processes that affect a person's orientation to the world and their way of mentally synthesizing information. The first, extraversion, is a focus on the outer world of people and things. The second, introversion, is a focus on the internal world of concepts and ideas (Myers, 1993).

Those who direct their energy to the outer world are extraverts. They become energized by interaction with others. They prefer the sharing of ideas and thoughts, often not knowing how they actually feel about a certain topic until they have verbalized it to others. Extraverts meet new people easily and find that others generally like them and find them open. They find themselves comfortable and may even thrive on being in the spotlight (Tieger & Barron-Tieger, 1995).

Those who direct their energy to the world inside themselves are introverts. They feel the need for spending time alone in order to recharge, or balance, themselves. They tend to try to mentally prepare themselves for their dealings with the world through private processing and contemplation.

Introverts are often quieter, more reserved, people who stay away from the spotlight. They prefer social settings that are one-on-one or small group (Tieger & Barron-Tieger, 1995).

Jung hypothesized that everyone had a definite preference between two mental processes, perceiving and judging. He described perceiving as the way in which a person takes in information. He further hypothesized that there existed two preferences within the perceiving inner process. Sensing, a focus on the real world of details and information, and intuition, a way of using one's unconscious perceptions, were opposite ways of perceiving . The judging inner process, Jung believed, also included two opposite functions. Thinking, looking at impersonal facts and information, and feeling, using subjective values (Van Rooij, 1996).

As he continued to observe others, Jung found that there existed a variety of different patterns of behavior and that, based on the person's preferences, these behaviors were predictable. He determined that there existed eight different personality types which consisted of pairings of one of two attitudes and one of four functions. He continued to observe and describe the eight personality types. They included: extraverted sensors, extraverted intuitives, introverted sensors, introverted intuitives, extraverted thinkers, extraverted feelers, introverted thinkers, and introverted feelers (Jung, 1923; Barbuto, 1997).

Myers-Briggs Type Indicator

Katherine Cook Briggs and Isabel Briggs Myers, her daughter, began studying Jung's theory of personality type sometime in the mid 1930s. They soon became aware that there was no assessment designed to determine a

person's preferences. They decided to create their own inventory and the first set of self-report questions was published in 1943 (Myers & Myers, 1995; McCaulley, 1990; Hammer, 1994). Katherine Briggs and Isabel Briggs Myers sought to operationalize Jung's theory (Murray, 1996) by making the inventory available to average people entering the workforce (Myers & Myers, 1995). They added eight additional personality types by including a fourth polar dimension, judging or perceiving (Pearman & Albritton, 1997). Now there were 16 different personality types.

The Myers-Briggs Type Indicator (MBTI) is a forced-choice self-report inventory that seeks to indicate which of two choices, in four polar dimensions, a person prefers to use (Murray, 1996). Each dimension is treated as dichotomous, for instance a person will be labeled either thinking or feeling based on their report. It is not possible to be both thinking and feeling on this inventory. However, Jung (1923), and later Myers (1995) and Briggs, explained that these preferences were simply that. Most people have the ability to use either thinking or feeling, but each person has a preference; the way they prefer to operate under normal circumstances (Barbuto, 1997).

The MBTI has been used with a large number of subjects of the global population (Pearman & Albritton, 1997). In 1994, alone, over two and one-half million people took the inventory (Myers & Myers, 1995). Hammer (1994) states in MBTI Applications: A Decade of Research on the Myers-Briggs Type Indicator, that the reliability and validity tests on the MBTI are mixed. The continuous score, the number associated with the letter of preference, demonstrates the highest reliability. There is plentiful empirical data that suggests that the MBTI demonstrates good convergent, discriminant,

and predictive validity. However, there is also evidence that the MBTI does not prove to have good reliability or validity. Due to the subjective nature of the inventory total accuracy is nearly impossible to obtain (Hammer. 1994).

The MBTI has been widely accepted by professionals, as well as the public at large, as an accurate measure of a person's personality preferences. It has been used in counseling, education, team building, business management, career counseling, decision making, training, and organizational development (Barbuto, 1997; Myers & Myers, 1995). Many businesses, advisory and directing boards, and institutions of learning now use the MBTI to assess a person's personality preferences and, thus, their style of operation in the world.

Personality Theory in Career and Vocational Choices

Personality type is often the last of three characteristics used to determine the appropriateness of a career for an individual. Falling behind interest and aptitude, personality type may be overlooked because assessments are somewhat imprecise or because careers often allow for a variety of personality types (Short, 1993). Nevertheless, over the years a link between personality type and career choice has been established (Hammer, 1994; Krieshok, 1998; Lynch, 1985; Shybut, 1993; and Tieger & Barron-Tieger, 1995).

One theory, developed by Anne Roe, suggests that "the appropriateness of an occupation for a specific individual depends on the individual's personality, which in turn is primarily the product of early experience" (as cited by Short, 1993, p. 24). She bases much of her theory on the earlier hierarchy of psychological needs theory of Mazlow. Believing that

genetic inheritance limited and controlled the development of personality, Roe explained that individual experiences, cultural background, and the socioeconomic status of the family were contributing factors. She further added that psychic energies were the major factor in the development of interests. She viewed psychic energies as an individual's ability to direct their attention (as cited by Short, 1993).

John Holland developed a theory that goes even further than Roe's in making the connection between personality type and career choice. His theory of vocational choice suggests that individuals express their personality types through their choice of a vocation. He believes that many typical interest inventories are actually measures of personality. Holland's theory asserts that a stereotypical view of vocations is held by each individual. Because members of specific vocations have similar personality types, they respond to problems, situations, and people in similar ways. The satisfaction and stability an individual achieves with the vocation depends, to a great extent, on how closely their personality and their work are compatible (Holland, 1973).

Holland described his six vocational personality types as: (i) *realistic*, people who deal with their environment in a concrete way; (ii) *investigative*, people who deal with their environment using intellect and curiosity; (iii) *artistic*, people who deal with their environment by using creativity and imagination; (iv) *social*, people who deal with their environment through the use of their social skills and interaction with others; (v) *enterprising*, people who deal with their environment by using impulse, enthusiasm, persuasion, and dominance; and (vi) *conventional*, people who deal with their

environment by making choices that are correct and socially approved, though unoriginal. Holland's theory explains that each person seeks compatibility of their environment, or vocation, and their personality type. If a person achieves that compatibility, he suggests that they will be happy (Holland, 1973).

Holland believes that persons may discover their vocational personality type, or a three type combination, through the use of any one of several instruments. These include the Strong-Campbell Interest Inventory, the Kuder Preference Record, and the Self-Directed Search which Holland developed. Results from one of these instruments gives a person a three-letter code with each letter representing one of the six vocational personality types. Further research proved to Holland that the interrelationship among the three types was significant. Arranging the six vocational personality types in a specific hexagonal pattern, he found that there existed a higher correlation between types that were closer together and less correlation between types that were farther away from one another (Holland, 1973).

Persons are not all one way or another and neither are vocations. Holland has placed occupations into categories titled by their three-letter code. For example, placing a career that required mostly social skills, but some artistic and enterprising skills into the three-letter category of SAE. These types have a high correlation and are placed next to one another on the hexagonal pattern (Nordvik, 1996; Holland, 1973).

Career Pathways

In 1995 the National Center for Research in Vocational Education published the Exemplary Career Guidance Programs: Opening Career Paths

For All Students (Cunanan & Maddy-Bernstein, 1996). The state of Missouri, consequently, used information from this report to determine the six career pathways to be used in its education system. These career pathways include: (i) *Arts and Communication*, consisting of careers that involve art, performance, and / or communication in any way; (ii) *Business, Management, and Technology*, consisting of careers that involve business and / or management skills, as well as any technological careers particularly involving computers; (iii) *Health Services*, consisting of careers that exist within the medical community or any type of health or wellness field; (iv) *Human Services*, consisting of careers that provide services to other people with the exception of health services; (v) *Industrial and Engineering Technology*, consisting of careers that are in skilled areas; and (vi) *Natural Resources Agriculture*, consisting of careers in the environmental, farming and / or science fields ("Exploring Career Paths," 1997).

Career pathways are based on the idea that a variety of different occupations/jobs require similar basic skills and the belief that certain basic skills and knowledge are essential for all students, regardless of the profession to which they aspire (Walker, Walker, & Dutton, 1995). The strength of the career pathways concept lies in its flexibility. Students are assessed at each step along the way. They are encouraged to analyze themselves, their experiences, their interests, and their abilities in order to select, and sometimes to change, their career pathway or their cluster within the pathway (Chew, 1993).

A significant aspect of the career pathways concept is that all students can, and must, do significant academic work. High expectations will be the

goal for each student. Each student is the worker and the customer, not the product. Teachers are the coaches. The work they give students is the product and it must be quality work, worthy of a student's efforts (Hull, 1993).

It has been determined that students are more likely to do well in school if they have a goal toward which they are working. The self-selection of a student's pathway and cluster is extremely important (Southern Regional Education Board, 1992). Counselors, teachers, and parents may still assist students by providing information,, guidance, and direction, but it is ultimately the student's responsibility to decide which career pathway, and cluster within that pathway, is right for him/her.

Teachers find that the students in their classrooms who have selected a pathway and cluster know where they are going. This in turn provides the students with the impetus to do what is necessary to get there (Mid Rivers Tech Prep Consortium, 1997). Teachers may use this to the students' advantage in determining what curriculum to teach and how to teach it. Incorporating flexibility with focus for students allows them to be self-motivated and interested in learning what is important to their ultimate goals (Southeast Missouri Regional Tech Prep Consortium, 1994).

In order to determine a student's pathway an interest inventory was developed in 1996 by a tech prep coordinator and vocational educator ("Exploring Career Paths,"1997). The inventory was adapted from a Holland Code activity which causes the pathways to correlate with the six vocational personality types. The assessment consists of items which are divided into six blind categories which represent the six pathways. Students indicate like or dislike by either circling an item or not circling it. The category which has

the highest number of circled items is determined to be that student's pathway. Follow up counseling usually confirms that pathway as the one of interest to the student. Occasionally, there is a conflict between what the student's interests are and what their inventory results show. More counseling will follow, addressing topics such as realistic expectations, outside pressure, financial concerns, job satisfaction, as well as others. When a student feels that the pathway selection, according to his/her interest inventory, is inaccurate the inventory may be repeated and a different pathway may be selected even if the results are not different. It is, after all, a personal choice. Research has indicated, however, that the career choices made by young people in high school have a definite effect on who they are and what they do later in life (Adelman, 1994).

A direct correlation can be seen between the six pathways and the Holland Code (Nordvik, 1996). It is quite obvious that the Art and Communication pathway relates to the artistic type; the Business, Management, and Technology pathway relates to the enterprising type; the Health Services pathway relates to the investigative pathway; the Human Services pathway relates to the social type; the Industrial and Engineering Technology pathway relates to the realistic type; and the Natural Resources / Agriculture pathway relates to the conventional type.

There are, however, some of each type in most pathways. For example, though the Human Services pathway is primarily a social vocational type law enforcement officials, who fall into this pathway, tend to be heavily investigative. Therefore, it is important to note that even though there is a correlation, Holland encouraged that one should not rule out a specific career

simply because it does not fall into their perceived type. Instead he/she should consider their entire code. It may be necessary to look beyond one dimension of type into the "why" behind one's preferences (Holland, 1973).

When students take Holland's Self-Directed Search and obtain their Holland Code they can make comparisons to the results of their Career Pathways Interest Inventory. Through the use of job shadowing or internships made possible by a school-to-work program, students have the opportunity to explore their career interests and make more definite career choices (Blustein, Phillips, Jobin-Davis, Finkelberg, & Roarke,1997).

Type and Career Choice Relationship

Career choice has been tied to the MBTI from the start. Isabel Briggs Myers envisioned an assessment instrument which would help people select work that they could enjoy and in which they could make real contributions. Some of the first research involving the MBTI, conducted by McCaulley, involved careers. The MBTI has a reputation of being used in many career counseling settings. It has been associated with helping persons to choose careers, change careers, develop career potential, modify careers, and examine aspects of a career (Hammer, 1994).

The use of the MBTI in career counseling has been widely studied and discussed. Hammer (1994, p. 34) states that "occupations that require or reward particular ways of taking in information or of making decisions should attract people whose types are consistent with these characteristics". If there was no connection between personality type and career choice then the frequency of each type within an occupation would reflect the same frequency

of that type within the general population. This has not proven to be the case (Hammer, 1994).

Though each person is able to use all of the functions and processes, an ease and comfort exists when there is compatibility between personality type and career choice. When the work traits match the personality type there may be greater job satisfaction. The four types often associated with occupational satisfaction, ST, SF, NF, and NT are those inner processes associated with perception and judgment (McCaulley, 1990).

Krieshok (1998) discusses the results of a previous study he conducted in 1986 (Krieshok, Arnold, Kupperman, & Schmitz) which found that high school and college students could not express their reasons for choosing a career. They were unable to state why a particular career was appealing, or unappealing, to them. Their conclusion was that time and effort spent on self analysis of values, or needs, would be time well spent for those working with young people during their career decision making stage.

People may select a career because they believe it will provide opportunities to use their strengths and their preferences. They believe that certain occupations have certain characteristics that will "mesh" with their personality type and cause them to enjoy job satisfaction and rewards (Tieger & Barron-Tieger, 1995). The Center for Applications of Psychological Type (CAPT) has kept records of people who took the MBTI and compared that data with their occupations. When they looked at many occupations they found a significant difference between the numbers one would expect if selection were purely random. Certain careers have an exceptionally large, or

an exceptionally small, number of certain personality types as compared to the general population (Hammer, 1994).

It is important to note, though, that personality type is only one of many characteristics that may influence an individual to enter a career field. Aptitude and interest are two factors that are typically determined in career counseling situations and they also provide valuable insight to the individual. Persons whose personality types and career choices do not seem to match may still find job satisfaction. By knowing his/her type a person may focus on different aspects of a career, choose to develop their career in various ways, and network with colleagues accordingly. Pearman and Albritton (1997) propose that "type should never be the only data point used in making these determinations, but taking it into consideration can contribute greatly to illuminating our blind spots" (p. 56).

Sensing Thinkers

Those members of the adult population who share the sensing and thinking functions are able to organize tasks and complete projects (Hammer, 1993). They look at facts with impersonal analysis, preferring to deal with objects and money rather than people and ideas (Myers & Myers, 1995). They are decisive people who are good problem solvers. The careers that these people tend to choose in disproportionately high numbers are: management, law enforcement, dental, engineering, mechanical, insurance, carpentry, farming, and steelworking, to name a few (Hammer, 1993). MacKinnon and Laney's studies (as cited by Myers & Myers, 1995) showed that STs show up as accountants (64%) and bank employees (47%) and in

college programs for finance and commerce (51%) with an unusually high frequency.

Filbeck and Smith (1996) completed a study involving 94 college students enrolled in each of three sections of the Corporation Finance II course in a large, urban midwest university. This course is the second of two required finance courses for persons majoring in business. The MBTI was administered to the subjects along with a learning styles survey. Fifteen of the potential 16 personality types appeared in the results. Sensing was the preferred function for 75.7% of the subjects and thinking was the preferred function for 72.3% of the subjects. In both cases this is an overrepresentation of the preference in comparison to the general population. When one considers the curriculum of study and the characteristics needed in business it is not surprising that sensing thinkers would dominate this field.

Sensing Feelers

People who are sensing feelers have good people skills. They can assist fellow employees or clients to reach a consensus in an organized, systematic way (Hammer, 1993). They focus on facts, but with a measure of personal warmth (Myers & Myers, 1995). These people tend to favor jobs that allow them to provide service to other people in an organized way. Some of the significantly favored occupations of this type include: nursing, food services, education, religion, transportation, and family medicine (Hammer, 1993).

In MacKinnon and Laney's studies (as cited by Myers and Myers,1995) it was noted that SFs appeared in very high numbers in the sales and customer relations fields (81%). They also appeared in significant numbers among

those in college programs for nursing (44%) and education (42%). Numbers were particularly high for elementary education. It was found that SFs do well in medical specialties that require primary patient care.

The National Research Council (1991) found fault with the MBTI. They stated that normative data was lacking with regard to type congruence for elementary teachers. However, when examining the data by using the procedures from the MBTI Manual, it would appear that there is a significant number of male and female college graduates who are sensing feelers that enter the elementary teaching field (Hammer, 1994). Consequently, the MBTI Career Report Manual (Hammer & Macdaid, 1992a) used the CAPT norm data to show that college students, testing as sensing feelers, ranked elementary teacher 37 out of a possible 207 careers. Sensing feelers appeared with more frequency than would be expected in two different studies, one based on frequency and one based on self-report, and using two different normative samples.

iNtuitive Feelers

Those who prefer intuition and feeling may be imaginative and creative. They will have good people skills and be adaptable. Many will be energetic and enthusiastic, convincing others to look at new ideas impartially (Hammer, 1993). NFs enjoy possibilities and handle them with warmth and humor (Myers & Myers, 1995). Careers that intuitive feelers gravitate toward in high numbers include: counseling, writing, public relations, entertainment, and consulting (Hammer, 1993). NFs do well in teaching, research, literature, and art (Myers & Myers, 1995).

Sandra Shybut (1993) conducted a study of clubhouse staff members using the MBTI and a job performance questionnaire on which employers rated the staff members' job performance. There were six participating Fountain House clubhouses in Nebraska which submitted 32 subjects, nine male and 24 female. Although rare in the general population, the study showed that intuitive feelers were over represented in the clubhouse staff. Forty-four percent of the subjects preferred intuition and 59% preferred feeling. These results are significant at $p < .01$.

MacKinnon and Laney's studies (as cited by Myers & Myers,1995) found that 65% of creative writers were NFs. Within the graduate studies realm 57% of theology students were NFs. Students in the college programs of counseling (76%), health-related professions (44%), and journalism (42%) were significantly NF types.

iNtuitive Thinkers

Adults who are intuitive thinkers have a global view of their world. They are good at problem-solving at a systems level. They tend to be analytical and often possess technical knowledge (Hammer, 1993). NTs choose to look at possibilities, but with impersonal analysis. They are ingenious people who function very logically (Myers & Myers , 1995). People in this type may choose some of the following careers in disproportionately high numbers: architecture, computer technology, marketing, administration, and law (Hammer, 1993).

The studies of MacKinnon and Laney (as cited by Myers & Myers, 1995) found that 77% of their subjects who chose to become research scientists were NTs. In graduate school 42% were studying law. Among

college students science (57%) was preferred. It was also found that NTs do well as securities analysts, inventors, and forecasters.

Testimony from some NT types who appear to be well suited for their jobs, after some searching and transferring, indicate that there is a definite preference for NTs in certain career fields where they may obviously use their preferences as talents. An accountant found much greater satisfaction after being made an assistant comptroller for his company. A bank employee, gained through a merger, was transferred into a position as a securities analyst and thrived. Myers & Myers (1995) describe an assistant transportation manager of a large oil company who speaks eloquently of his love of his job and its "constant adaptations to shifts in variables" (p. 138). He describes the work he does as a jigsaw puzzle and his satisfaction is understood.

Conclusion

Bearing in mind that personality type is only one of many factors that may influence career pathway choice, research demonstrates that a relationship may exist and that the potential for middle school and secondary school counselors to help their students to make informed decisions could be tremendous. With further research, particularly with adolescents, the comparisons of career choice with personality type may be analyzed more closely with definitive results obtained. In studying this problem the most important effect is the realization that measures of interest and aptitude are not enough. Without the third dimension, personality type, a complete picture may never be observed.

Chapter Three

Methodology

Participants

The population from which the sample was drawn consisted of ninth and tenth grade students from a small (less than 500 students), rural, public high school in the state of Missouri. Their ages ranged from 14 to 17 years old and there was a relatively equal ratio of male to female subjects. Because the target population was all ninth grade and tenth grade students who attend this particular high school now, as well as those who will attend in future years, all ninth and tenth grade students who were enrolled in the designated testing classes and who were present on the testing days were selected.

The total number of testing subjects was 203. There were 100 females and 103 males. One hundred six were ninth graders and 97 were tenth graders. Thirty-eight subjects were 14 years old, 77 were 15 years old, 85 were 16 years old, and two were 17 years old. The racial composition consisted of one Hispanic, nine African Americans, and 193 Caucasians. The socioeconomic status of the sample ranged from extremely low to upper middle class, with the majority falling in the low socioeconomic group.

Instruments

Career Pathway Interest Inventory (CPII)

The CPII consists of a total of 156 items which are divided equally into six categories containing 26 items each. Each category is designated by a letter, A-F, on the inventory. The letters correlate to one of six career pathways: A - Human Services, B - Industrial & Engineering Technology, C - Natural Resources / Agriculture, D - Arts and Communication, E - Business,

Management, and Technology, and F - Health Services. This inventory may be given to any individual who is seeking to know more about themselves in order to pursue a career which will "fit" them. It could be used with children as young as 10 or adults. It was extremely easy to use and score. The subjects needed approximately 15 minutes to read and circle, or not circle, each item. Scoring pages were distributed so that subjects could self-score by counting the circled items in each category, transfer the scores, and graph the results for a visual display. This instrument is very user friendly, easy to administer and score, and can be completed in a brief time, an advantage when administering in a school setting.

There has been no reliability or validity data, being a very new instrument. This instrument has been in use for four years in many middle and high schools in Missouri and across the country. Counselors, parents, and students report they believe the inventory to be accurate and beneficial for those who are beginning the search for a future career. Currently, the CPII may be found published in the booklet "Exploring Career Paths: A Guide for Students and Their Families" (1997). This inventory is based on activities connected with the Holland Code and may be cross referenced to the types included in that instrument.

Myers-Briggs Type Indicator Form G (MBTI)

This is a 126 item forced-choice, self-report inventory which seeks to classify an individual's personality type based on four dichotomous scales: E - Extroversion or I - Introversion, S - Sensing or N - Intuition, T - Thinking or F - Feeling, and J - Judging or P - Perceiving. The MBTI is appropriate for use with many populations in many settings, including educational, vocational,

marriage, personal counseling, business and industry selection and placement, training, research, and advancement of knowledge. It may be used with individuals as young as 14 and has an unlimited upper age range. There are no general adult norms available, but there are high school and college norms use for comparison groups (Willis, 1994).

Administration of this instrument is fairly easy. Directions were read to all subjects. The administration time varied due to each subject's reading speed, but it took approximately 45 minutes to complete. The template scoring version of Form G was used, as opposed to self-scoring, in order to maintain accuracy of results. There are separate templates for each of the preferences within each of the four scales and two templates, male and female, for the Feeling preference (Myers Briggs Type Indicator, 1977). Scoring was somewhat time consuming, approximately eight to ten minutes for each subject. Two types of scores were available when the scoring was completed, (i) preference, which is characterized by a four-letter code, and (ii) continuous, which is characterized by a number that relates the strength of the preference.

Reliability information on the MBTI is readily available. In the MBTI Manual Myers, McCaulley, Quenk, and Hammer (1998) reported that the internal consistency of the four scales, estimated by split-half and coefficient alpha, indicated correlation results that were high. Although it was discovered that there was an improved reliability with Form M, Form G produced correlations that were significant. In examining continuous scores from the CAPT databank, based on split-half correlations and using the Spearman-Brown formula for correction, the following results were obtained:

E-I (.82); S-N (.84); T-F (.83); and J-P (.86). When continuous scores from a national sample were analyzed using coefficient alpha the results were as follows: E-I (.91); S-N (.92); T-F (.91); and J-P (.92). There appears to be no, or little, difference in the correlations whether they are determined by split-half or coefficient alpha.

Internal consistency reliability based on group characteristics seems positive. When comparing genders the lowest coefficient alpha obtained was .88 (females - T-F). Age appears to have little effect on correlations with the lowest reported score being .89 (18-21 years, > 70 years). In the area of ethnicity the correlations were positive with, possibly, the exception of African Americans on the T-F scale (.84). Other correlations were not less than .89 (Myers et al., 1998).

Test-retest data shows that, with the exception of male T-F scores, reliability was consistant. The following correlations were obtained: E-I (male - .78, female - .81, total - .79); S-N (male - .85, female - .80, total - .83); T-F (male - .57, female - .70, total - .62); J-P (male - .83, female - .81, total - .82). When changes in type preference do occur it is likely a change will appear in only one scale. As these results came from a study conducted after a 30 month interval, the results are quite promising (Myers et al., 1998).

There is strong support for the construct validity of the MBTI. Several exploratory factor analyses, as well as several confirmatory factor analyses, have been conducted. These studies indicate that the MBTI items correlate strongly with their intended scales. Results indicate a fit to the hypothesized four-factor model (Myers et al., 1998).

Correlation with other instruments provide evidence of concurrent validity. The MBTI was compared to the 16 Personality Factors (16PF) Questionnaire, Fifth Edition (Russell & Karol, 1994) and the California Psychological Inventory (CPI), Form 434 (Gough & Bradley, 1996).

Relating the MBTI scales to the 16 PF global factors produced several significant results. The E-I scale was most positively and negatively correlated to Extraversion (.68, -.61). The S-N scale and the T-F scale correlated most in opposing ways to Toughmindedness (.56, -.56; .24, -.26). Finally, the J-P scale correlated most with the Self-Control factor (.54, -.57).

Myers et al. (1998) report that when comparing the MBTI scales to the CPI categories positive and negative correlations were found in several areas. The E-I scale correlated strongly with Sociability and Internality (-.63 - male, -.70 - female; .51 - male, .54 - female). The S-N scale correlated with Norm-Favoring and Creativity (-.30 - male, -.29 - female; .53 - male, .53 - female). The T-F scales correlated to some degree with Independence and Femininity/Masculinity (-.23 - male, -.17 - female; .33 - male, .17 - female). The difference between males and females on this scale has continued to be a source of disturbance in the otherwise positive reliability and validity data on the MBTI. A separate scoring model is used for separate genders on this scale. The final scale, J-P, showed correlation with Norm-Favoring and Flexibility (-.54 - male, -.45 - female; .55 - male, .51 - female).

Research indicates that there is evidence of validity for each of the four preference scales and for type as a whole. Each of the 16 personality types has unique attributes that cannot be predicted by a single preference

scale. There exists evidence in support of the biological basis of the dichotomies and the theoretical definitions of the scales (Myers et al., 1998).

Procedures

This study used a causal comparative research design. This design appeared to be best suited for the purpose of this study. It was not possible to manipulate the independent variable (personality type) which had been previously formed and was, therefore, ex post facto. An effort was made in this study to identify relationships between the dependent and independent variables in order to provide direction for possible experimental studies in the future.

Each student had a recorded chosen career pathway determined by a career inventory they had previously taken. Permission was obtained from the superintendent of schools to test all ninth students enrolled in Physical Science and all tenth grade students enrolled in Language Arts 2. The students were given the Myers-Briggs Type Indicator Form G in a classroom setting containing 15 to 30 students per class. This was done during a two day period of time due to block scheduling. Tenth graders were administered the inventory during the second week in February and the ninth grade students were administered the inventory during the third week of February.

Based on objective information from the results of the instrument used in the study, subjects fell into one of four groups: ST, SF, NT, or NF. The decision to use four types, as opposed to eight or 16 types, was based on the sample size. Pretest information, Career Pathways Interest Inventory results, was collected through counselor files that include the profile results from the inventory for each subject.

Data Analysis

A chi-square statistical analysis was used for this study. This analysis allowed group frequencies to be compared, in an effort to discern whether one group showed higher frequency of type appearance in a pathway than any other group.

Chapter 4

Results

Descriptive Statistics

The study involved a sample (N=203) of high school ninth and tenth graders at a small, rural high school approximately one hour north of St. Louis. The sample was quite evenly divided in terms of gender and grade level. Of the 203 students, 49% (100) were female and 51% (103) were male. Ninth graders comprised 52% (106) of the study, while tenth graders made up the remaining 48% (97). The racial distribution of the sample was much less diverse. Caucasian students made up 95% (193) of the sample, African-American students 4.5% (9) and Hispanic students only 0.5% (1). This racial distribution, however, closely mirrors the racial distributions of the entire community. Table 1 shows the description of the subjects.

Table 1 Description of Subjects N=203

Characteristic	Group	Number	Percentage
Gender	Male	103	57%
	Female	100	49%
Age	14 years	38	19%
	15 years	77	38%
	16 years	85	42%
	17 years	2	0%
Grade	ninth	106	52%
	tenth	97	48%
Race	Caucasian	193	95%
	African-American	9	5%
	Hispanic	1	0%

Distribution of Psychological and Personality Types

The Myers-Briggs Type Indicator (MBTI) was administered to the sample in the winter of 1998. A look at the pairs of bipolar traits showed 31% of the group were Introverts (62) while 69% were Extraverts (141). Sensors made up 58% (117) of the sample, while iNtuitives comprised the remaining 42% (86). Thinkers made up 57% (116) of the sample and Feelers 43% (87). Perceivers outranked Judgers 73% (149) to 27% (54). Table 1 shows the distribution of traits for the sample.

Table 2 Distributions of Traits N=203

Trait	Number	Percentage
Introversion	62	31%
Extraversion	141	69%
Sensing	117	58%
iNtuitive	86	42%
Thinking	116	57%
Feeling	87	43%
Judging	54	27%
Perceiving	149	73%

Looking at the distribution of personality types for this sample one notes that Sensing Thinkers comprise 40% (82) of the sample, Sensing Feelers 17% (35), Intuitive Thinkers 17% (34) and Intuitive Feelers 26% (52).

Table 3 Distribution of Personality Types N=203

Personality Type	Number	Percentage
Sensing Thinker	82	40%
Sensing Feeler	35	17%
Intuitive Thinker	34	17%
Intuitive Feeler	52	26%

Distribution of Career Pathways

In addition to taking the MBTI, the students had previously self-selected a career pathway through their indicated results of the Career Pathways Interest Inventory. The choice of pathways broke down in the following manner: Natural Resources /Agriculture 8% (17 students); Industrial and Engineering Technology 29% (58 students); Arts and Communication 23% (47 students); Business, Management and Technology 8% (16 students); Human Services 19% (38 students) and Health Services 13% (27 students).

Table 4 Distributions by Career Pathways N=203

Career Pathway	Number of Students	Percentage
Natural Resources and Agriculture	17	8%
Industrial and Engineering Technology	58	29%
Arts and Communications	47	23%
Business, Management and Technology	16	8%
Human Services	38	19%
Health Services	27	13%

Distribution of Personality Types Among Career Pathways

A cross-tabulation was then developed for the two variables personality type and career pathway. Of the 17 students who selected the Natural Resources / Agriculture Pathway, eight were categorized by the MBTI as being Sensing Thinkers. One student was a Sensing Feeler, while three students were Intuitive Thinkers and five were Intuitive Feelers.

A total of 58 students chose the Industrial and Engineering Technology Pathway. Of these 58 students, 39 were STs, SFs comprised six of this group, NTs comprised 11 and NFs two of this group. Of the 47

students choosing the Arts and Communication Pathway ten were STs, 11 were SFs, nine were NTs and 17 were NFs. Sixteen students selected the Business, Management and Technology Pathway. Eight of these students were STs, three were SFs, one was an NT and four were NFs. The Human Services Pathway had 38 students, divided among 11 STs, eight SFs, six NTs and 13 NFs. There were 27 students choosing the Health Services Pathway. Six of these students were STs, six were SFs, four were NTs and 11 were NFs. The distribution of the four personality types among the six Career Pathways are shown in Table 4.

Table 5 Distribution of Personality Types and Career Pathway Choices N=203

	Sensing Thinker	Sensing Feeler	Intuitive Feeler	Intuitive Thinker
Nat. Res.	8	1	5	3
Indus. and Engineering	39	6	2	11
Arts and Communication	10	11	17	9
Business	8	3	4	1
Human Ser.	11	8	13	6
Health Ser.	6	6	11	4

Statistical Analysis

This study uses a chi square test to investigate the link between personality type and choice of career pathways. Howell (1992) discusses the use of the chi square test as being appropriate for "the case in which we have

two variables and we want to test null hypotheses concerning their independence" (p. 122). In this case the null hypothesis was that there was no relationship between personality type as determined by the Myers-Briggs Type Indicator (MBTI) and the choice of career pathways as determined by the Career Pathways Interest Inventory. The alternative hypothesis would be that choice of a career pathway is indeed influenced by personality type. Table 5 shows the results of a chi square analysis of the data concerning personality type and choice of career pathway.

Table 6 Chi Square Analysis N=203

Observed (Expected)	Sensing Thinker	Sensing Feeler	Intuitive Feeler	Intuitive Thinker
Nat. Res./Ag	**8** (6.867)	**1** (2.931)	**5** (4.355)	**3** (2.847)
Indus. & Eng. Tech.	**39** (23.429)	**6** (10)	**2** (14.857)	**11** (9.714)
Arts & Communication	**10** (18.985)	**11** (8.103)	**17** (12.039)	**9** (7.872)
Business, Man. & Technology	**8** (6.463)	**3** (2.759)	**4** (4.099)	**1** (2.68)
Human Services	**11** (15.350)	**8** (6.552)	**13** (9.734)	**6** (6.364)
Health Services	**6** (10.906)	**6** (4.655)	**11** (6.916)	**4** (4.522)

P= .01 Degrees of Freedom: 15 Critical Value: 30.5 Calculated Chi Square Value: 41.48 Cramer's Phi: .26098

The formula for calculating the chi square value is the sum of all the differences between observed and expected frequencies squared, and divided by their respective expected values. Since the calculated chi square value of 41.481 is greater than the critical value (30.58 with p= .01 and 15 df), the null hypothesis is rejected and the alternative hypothesis accepted. Once a relationship is established between two variables, the phi coefficient can be used to measure the strength of the association (Huck & Cormier, 1996). Using the formula for phi, which is the square root of Chi Squared over N, the phi coefficient can be calculated as being .26098.

However, the chi square value is inflated and distorted if more than 20% of the expected values are less than five (Norusis, 1991). As 33% of the cells (8) are less than five, the results of this study must be considered suspect and unreliable. Judgments made on the basis of this study would be subjective at best, and further testing must be made before the relationship between personality type and choice of career pathway can be clearly established.

Chapter Five

Discussion

The null hypothesis, that there was no relationship between personality type and career pathway choice among ninth and tenth grade students, is rejected and the alternate hypothesis is accepted. The calculated chi square value (41.481) exceeds the critical value (30.58) at the $p < .01$ level with degrees of freedom = 15 and, therefore, shows that a significant relationship between personality type (Sensing Thinkers, Sensing Feelers, iNtuitive Feelers, iNtuitive Thinkers) and career pathway choice does exist.

These results are in line with Jung's (1923) theory that the four functions (Sensing, Intuition, Thinking, and Feeling) develop separately and their degree of preference is unique to each individual. He also pondered and hypothesized that this degree of preference would prove to be a force in the choice of careers among people. Myers and Myers (1995) confirmed this theory stating that "one aspect of life that is observably influenced by type is the choice of occupation" (p. 149). In the area of career pathway choice among adolescents it would appear that personality type may be as much a factor as it is among the adult population when choosing an occupation.

This study produced results which are similar to those of Filbeck and Smith (1996) as well as MacKinnon and Laney (as cited by Myers & Myers, 1995). Sensing thinkers are predominant in pathways such as Industrial & Engineering Technology and Business, Management, & Technology which allow them to make use of their preferences for detail and logic. There were very few sensing thinkers found in the Health Services pathway which would

expect employees to be comfortable using their feeling and intuition preferences.

The research completed by Shybut (1993) and MacKinnon and Laney (as cited by Myers & Myers, 1995) indicated that people who prefer intuition and feeling are led toward careers in the helping fields and the arts. This study found that NFs stay away from the Industrial & Engineering pathway in significant numbers. They do not choose to focus on details and logic when it can be helped. Their numbers in the Arts & Communications, Human Services, and Health Services pathways are noticeably high. Their preference for feeling cause them to be socially adept, concerned, and caring. Their intuition preference may help assist them in looking beyond the immediate circumstances and into the future which could be beneficial to persons in these pathways.

There was no clear relationship established between sensing feelers or intuitive thinkers and their chosen career pathway. It might be noted, however, that more subjects who were SFs chose the Arts & Communications pathway which might provide an opportunity to use their preferences for detail work and passion. Of those subjects who were NTs, more chose the Industrial & Engineering Technology pathway. This pathway may provide these students with the opportunity to use their preferences for global viewing, analysis, and technical knowledge.

Limitations

It is important to note that the chi square value is inflated and distorted if more than 20% of the expected values are less than five (Norusis, 1991). As 33% of the cells (8) are less than five the results must be considered

suspect. It does bear mentioning, however, that four of the cells had expected values above four and might be rounded up to five, leaving less than 20% of the cells (4) below the expected value.

Some sources of sampling bias may include convenience sampling and the use of a pre-existing group or cluster. Additionally, there may not have been a fair representation of students with special needs due to administration of the inventory to regular classes. Although there was some representation of these students (i.e. those who take the regular science or language arts classes) those students with special needs who were not able to function in the regular classroom were under represented.

Another source of possible sample bias is the low number of minority students represented. However, because the target population for this study was the current and future ninth and tenth graders of this particular school, this should not be considered a bias at this point in time. If, in the future, the population's ethnic makeup changes a new study would have to be conducted to include the new population representationally.

Recommendations for Further Research

The population of adolescents is a new one to be researched in regard to the issue of personality type and career choices. It has been well established that adults use their personality preferences when making career decisions. Additionally, college students have proven to choose college programs that require the preferences they display, but how much young adolescents use these preferences in thinking about their future careers has been debatable (Myers & Myers, 1995). Further research with a larger population would be useful. A larger sample could provide enough subjects

to ensure that each of the 24 cells' expected values would be above five, eliminating the suspicion of the results this researcher found.

A sample that represented minority students, as well as those students with special needs, in closer proximity to the general population would provide information from which others could make use. This study was conducted solely for the use of one school. Broadening the sample could cause the results to be useful to other schools.

Also of interest to researchers would be the beliefs that students hold regarding the career pathways. Obtaining information about what students perceive the necessary skills and work environments for each pathway are would prove interesting. Follow up studies could then be conducted on the type preference of the students in comparison to their perceptions of the career pathway. Do they still choose a pathway based on their personality type even when their perceptions of the career pathway is skewed?

Yet another avenue of research might be a study that looked more closely at which types choose which pathways. Is the relationship between personality type and career pathway choice equally strong among all types and pathways? If not, which types and pathways demonstrate the strongest, and weakest, relationships? This study explored those questions only peripherally.

Longitudinal studies which focused on persistence in a chosen career pathway and personality type could be enlightening. How many students whose type and pathway predictably matched stayed in that pathway into their adulthood? What of the students who did not have a match between personality type and career pathway choice? Answers to these questions

could provide secondary guidance counselors a dearth of information to use in their career counseling efforts.

Conclusion

Allowing adolescent students to possess a complete picture of themselves when they are attempting to make career pathway choices would appear to have merit. Personality type is one of many factors that a counselor should discuss with a student in this position. Until a student is able to fully recognize his/her preferences, strengths, and weaknesses he/she will have only limited ability to choose a career that will provide them with the job satisfaction they desire.

Appendix

Raw Data

Field 2	M/F	GRADE	INITIAL	AGE	TI	T2	T3	T4
1	F	10	NR/Ag	15	E	S	T	P
2	M	10	I & E	15	E	S	T	P
3	F	10	A & C	16	E	N	T	P
4	M	10	I & E	16	I	S	T	P
5	M	10	I & E	16	E	S	T	J
6	F	10	B,M, & T	16	E	S	F	P
7	F	10	HuS	15	E	S	T	J
8	M	10	NR/Ag	16	I	N	F	P
9	M	10	I & E	15	E	S	T	P
10	F	10	A & C	15	E	N	F	P
11	F	10	HuS	15	I	S	F	P
12	F	10	A & C	15	E	N	F	P
13	M	10	I & E	16	I	S	T	J
14	M	10	NR/Ag	16	E	S	T	P
15	F	10	HuS	16	I	S	T	J
16	F	10	HeS	16	E	S	F	P
17	M	10	I & E	16	E	S	T	P
18	M	10	A & C	16	E	S	F	P
19	F	10	HuS	15	E	N	T	P
20	F	10	HuS	16	I	S	T	J
21	F	10	B M. & T	16	E	S	F	J
22	M	10	HeS	15	E	N	T	P
23	F	10	HuS	15	E	N	F	P
24	M	10	HeS	15	E	N	F	J
25	F	10	HuS	15	E	S	F	J
26	M	10	HuS	16	E	N	F	P
27	M	10	A & C	16	E	N	T	P
28	F	10	HeS	15	I	N	F	P
29	M	10	I & E	16	E	S	T	P
30	M	10	HuS	16	E	N	T	P
31	F	10	HuS	15	E	S	F	P
32	M	10	A & C	16	E	S	T	P
33	M	10	NR/Ag	15	E	N	F	J
34	M	10	I & E	17	E	S	T	P
35	F	10	HuS	16	I	N	F	P
36	M	10	HeS	15	E	N	T	P
37	M	10	B, M, & T	16	I	S	T	J
38	F	10	HuS	15	E	N	F	P
39	F	10	HuS	15	E	S	T	J
40	M	10	NR/Ag	15	E	S	F	P
41	F	10	A & C	16	E	N	F	P
42	M	10	B, M, & T	16	E	S	T	P
43	F	10	A & C	15	E	N	F	P
44	M	10	I & E	15	E	S	T	P
45	M	10	I & E	16	I	S	F	J
46	F	10	A & C	16	E	N	F	P
47	F	10	A & C	16	E	N	F	P
48	F	10	A & C	15	E	N	T	P
49	F	10	HuS	15	E	S	T	P

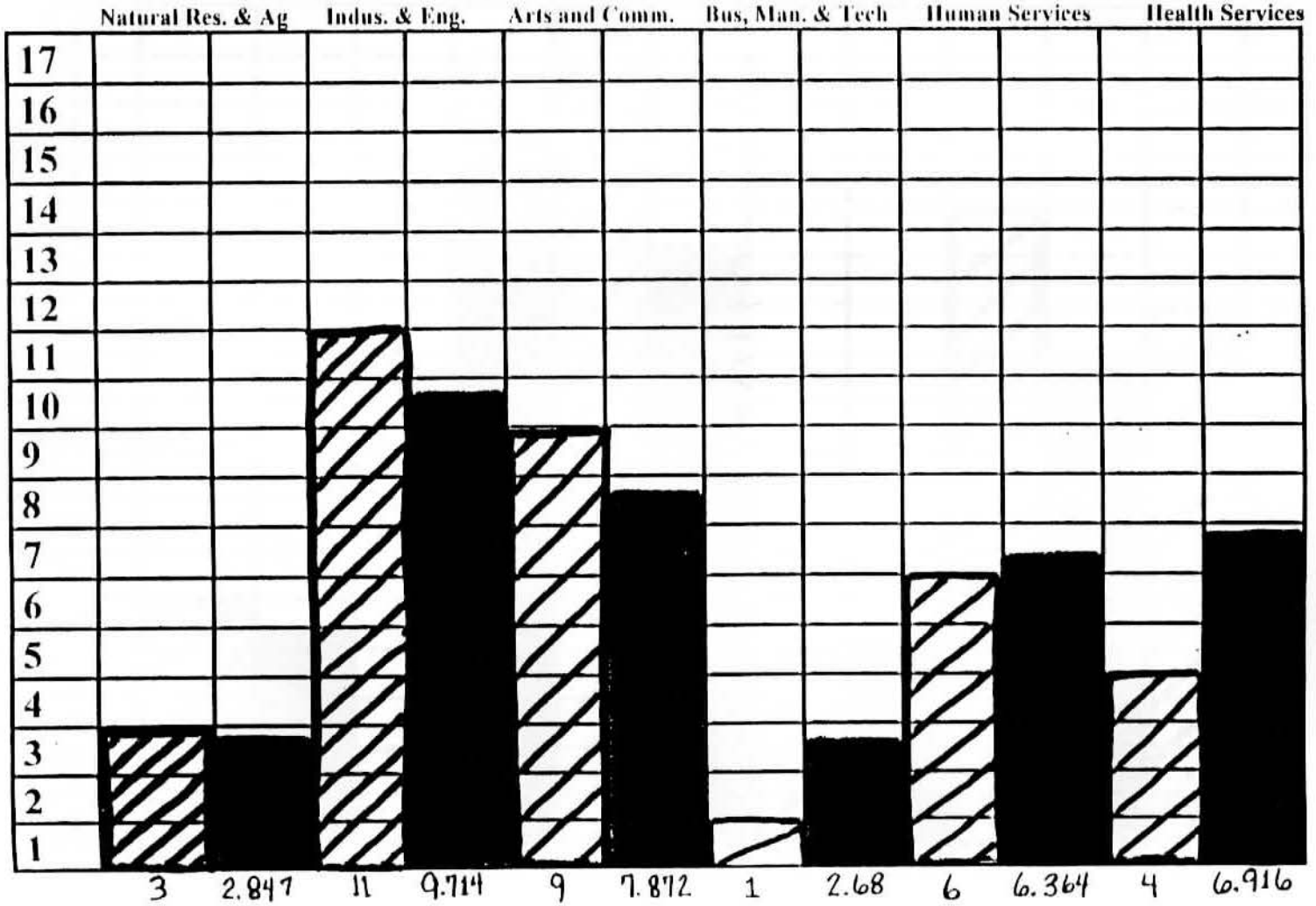
Field 2	M/F	GRADE	INITIAL	AGE	TI	T2	T3	T4
50	M	10	HuS	16	E	N	T	J
51	F	10	A & C	16	I	S	F	J
52	M	10	I & E	16	I	S	T	P
53	M	10	B, M, & T	15	E	S	T	P
54	M	10	I & E	16	I	N	T	P
55	F	10	A & C	15	I	S	T	J
56	M	10	HuS	15	I	S	T	P
57	F	10	A & C	15	I	S	F	P
58	M	10	I & E	16	E	S	T	P
59	M	10	I & E	15	E	N	T	P
60	M	10	I & E	15	E	S	F	P
61	M	10	I & E	16	E	S	T	P
62	F	10	HuS	16	E	N	F	J
63	M	10	I & E	18	E	S	F	J
64	F	10	B, M, & T	16	E	N	F	P
65	F	10	HeS	15	E	S	F	J
66	M	10	I & E	16	I	S	F	J
67	F	10	A & C	15	I	S	F	J
68	F	10	HeS	16	E	N	F	P
69	F	10	HeS	15	E	S	F	J
70	F	10	B, M, & T	16	I	S	F	J
71	M	10	I & E	15	I	N	T	P
72	F	10	A & C	16	E	N	F	P
73	M	10	B, M, & T	16	E	S	T	J
74	F	10	HeS	16	E	N	F	J
75	M	10	NR/Ag	17	E	S	T	P
76	M	10	B, M, & T	15	E	N	T	P
77	F	10	I & E	16	E	S	T	J
78	F	10	HeS	15	E	S	F	J
79	F	10	HuS	15	E	S	F	P
80	F	10	HuS	16	E	N	F	P
81	M	10	I & E	16	E	S	T	P
82	F	10	A & C	15	E	S	F	P
83	F	10	A & C	16	E	N	F	J
84	M	10	B, M, & T	17	E	S	T	J
85	F	10	A & C	15	E	N	F	P
86	M	10	I & E	15	E	S	T	P
87	F	10	HuS	15	E	N	F	P
88	F	10	HeS	17	I	N	F	P
89	M	10	I & E	15	E	S	T	J
90	F	10	A & C	16	E	N	F	P
91	M	10	B, M, & T	16	I	N	F	P
92	M	10	I & E	15	E	S	T	P
93	F	10	NR/Ag	16	E	N	T	P
94	F	10	A & C	16	I	S	T	P
95	M	10	I & E	15	E	S	T	P
96	F	10	HuS	16	I	S	F	J
97	M	10	A & C	16	I	S	F	P
98	F	9	HuS	14	I	N	T	J
99	M	9	HeS	15	E	S	T	P
100	M	9	I & E	15	I	S	T	P

Field 2	M/F	GRADE	INITIAL	AGE	TI	T2	T3	T4
101	F	9	HuS	15	I	S	T	P
102	M	9	A & C	16	I	S	T	P
103	M	9	NR/Ag	14	I	S	T	P
104	M	9	I & E	15	E	N	T	P
105	M	9	I & E	15	E	S	T	J
106	F	9	HuS	15	E	N	F	P
107	M	9	NR/Ag	14	I	N	F	P
108	M	9	I & E	15	E	S	T	P
109	F	9	NR/Ag	14	I	S	T	J
110	F	9	A & C	15	E	N	F	P
111	M	9	A & C	15	I	N	T	P
112	F	9	HeS	14	E	N	F	P
113	M	9	I & E	15	E	S	T	P
114	M	9	I & E	15	E	S	T	J
115	M	9	I & E	14	E	N	T	P
116	F	9	HeS	15	E	S	T	P
117	F	9	HeS	15	E	N	F	P
118	M	9	HuS	14	I	N	F	P
119	M	9	I & E	15	E	N	T	P
120	F	9	HeS	14	I	N	F	P
121	F	9	A & C	14	E	S	F	J
122	F	9	A & C	15	E	S	F	P
123	F	9	HeS	14	E	S	F	J
124	M	9	I & E	15	I	S	T	J
125	F	9	HuS	14	E	N	T	J
126	M	9	I & E	14	E	S	T	P
127	F	9	A & C	15	E	N	F	P
128	M	9	I & E	14	E	S	T	P
129	M	9	I & E	15	E	S	F	P
130	M	9	NR/Ag	15	I	S	T	P
131	M	9	A & C	14	E	N	T	J
132	M	9	I & E	15	I	S	T	P
133	F	9	A & C	15	E	N	F	P
134	M	9	I & E	14	I	S	T	P
135	F	9	NR/Ag	14	E	N	F	P
136	M	9	HeS	14	I	N	T	P
137	F	9	HuS	15	E	N	F	J
138	F	9	HeS	14	E	N	F	P
139	M	9	I & E	15	E	N	T	P
140	M	9	HuS	15	E	S	T	P
141	M	9	NR/Ag	14	E	S	T	P
142	M	9	I & E	14	E	S	T	P
143	F	9	A & C	14	E	S	T	P
144	M	9	HuS	14	E	S	T	P
145	F	9	HuS	14	E	S	F	P
146	F	9	HeS	15	E	N	F	J
147	M	9	B, M, & T	15	E	S	T	P
148	M	9	HeS	15	I	S	T	P
149	M	9	I & E	15	E	S	T	P
150	F	9	HuS	15	E	N	F	P
151	F	9	HeS	15	E	N	T	J

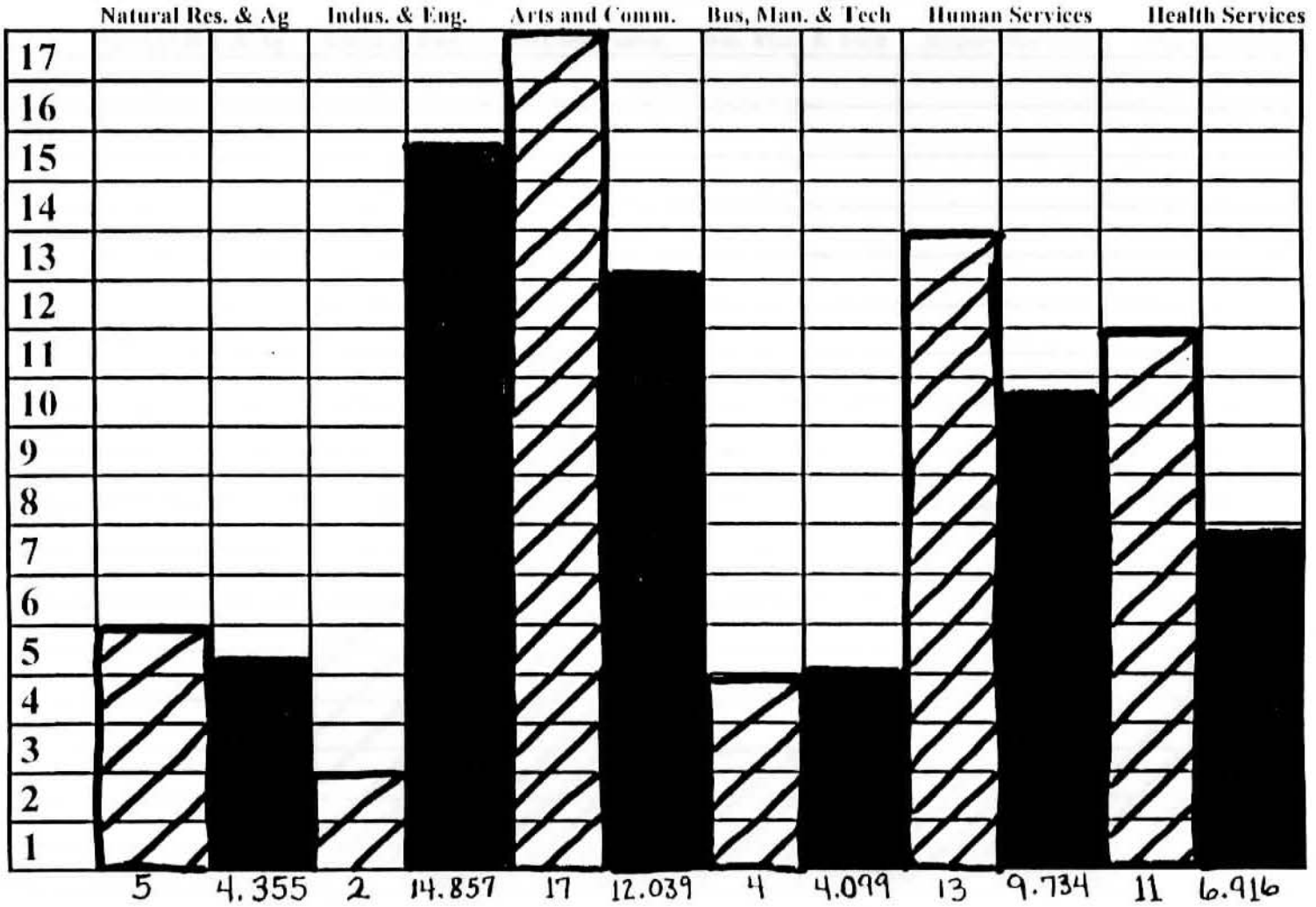
Field 2	M/F	GRADE	INITIAL	AGE	TI	T2	T3	T4
152	F	9	A & C	15	E	S	F	P
153	F	9	B,M, & T	16	E	S	T	J
154	M	9	I & E	14	I	S	T	P
155	F	9	A & C	1	E	N	F	P
156	F	9	B,M, & T	14	I	N	F	P
157	M	9	NR/Ag	15	I	N	T	P
158	M	9	I & E	15	E	S	T	J
159	M	9	I & E	15	I	N	T	P
160	M	9	I & E	15	I	S	F	P
161	F	9	A & C	14	I	S	T	J
162	F	9	HeS	15	E	N	F	P
163	F	9	B, M, & T	15	E	S	T	J
164	M	9	I & E	15	E	N	T	P
165	F	9	NR/Ag	15	E	N	F	P
166	M	9	I & E	14	I	N	T	P
167	F	9	HuS	15	E	S	T	P
168	M	9	NR/Ag	15	I	S	T	P
169	F	9		15	E	N	F	P
170	F	9	B. M. & T	15	E	N	F	P
171	M	9	A & C	16	I	N	T	P
172	F	9	A & C	14	I	N	F	J
173	F	9	A & C	15	E	S	T	J
174	F	9	HuS	15	E	N	F	P
175	F	9	HeS	15	E	S	T	P
176	M	9	I & E	15	I	S	T	J
177	M	9	HeS	15	E	S	T	J
178	M	9	I & E	15	E	S	T	P
179	M	9	NR/Ag	14	E	N	T	J
180	F	9	A & C	15	E	S	T	P
181	M	9	I & E	16	I	N	T	P
182	F	9	A & C	15	I	N	F	P
183	M	9	A & C	16	E	S	T	P
184	F	9	A & C	15	E	N	T	P
185	F	9	A & C	14	I	N	T	P
186	M	9	I & E	15	E	S	T	P
187	F	9	HuS	15	I	S	T	P
188	F	9	HuS	16	E	S	F	P
189	M	9	I & E	15	E	N	F	P
190	M	9	I & E	15	E	S	T	P
191	M	9		14	E	S	T	J
192	M	9	A & C	14	E	S	T	P
193	M	9	I & E	15	E	N	F	P
194	F	9	A & C	15	E	S	F	P
195	M	9	I & E	15	I	S	T	P
196	F	9	HeS	14	E	S	F	P
197	M	9	I & E	15	I	S	T	P
198	M	9	A & C	15	I	N	T	P
199	F	9	HeS	15	I	S	T	J
200	F	9	A & C	15	I	S	F	P
201	M	9	HuS	15	E	N	T	P
202	F	9	HuS	14	I	S	F	J

Field 2	M/F	GRADE	INITIAL	AGE	T1	T2	T3	T4
203	F	9	HuS	15	E	N	F	P

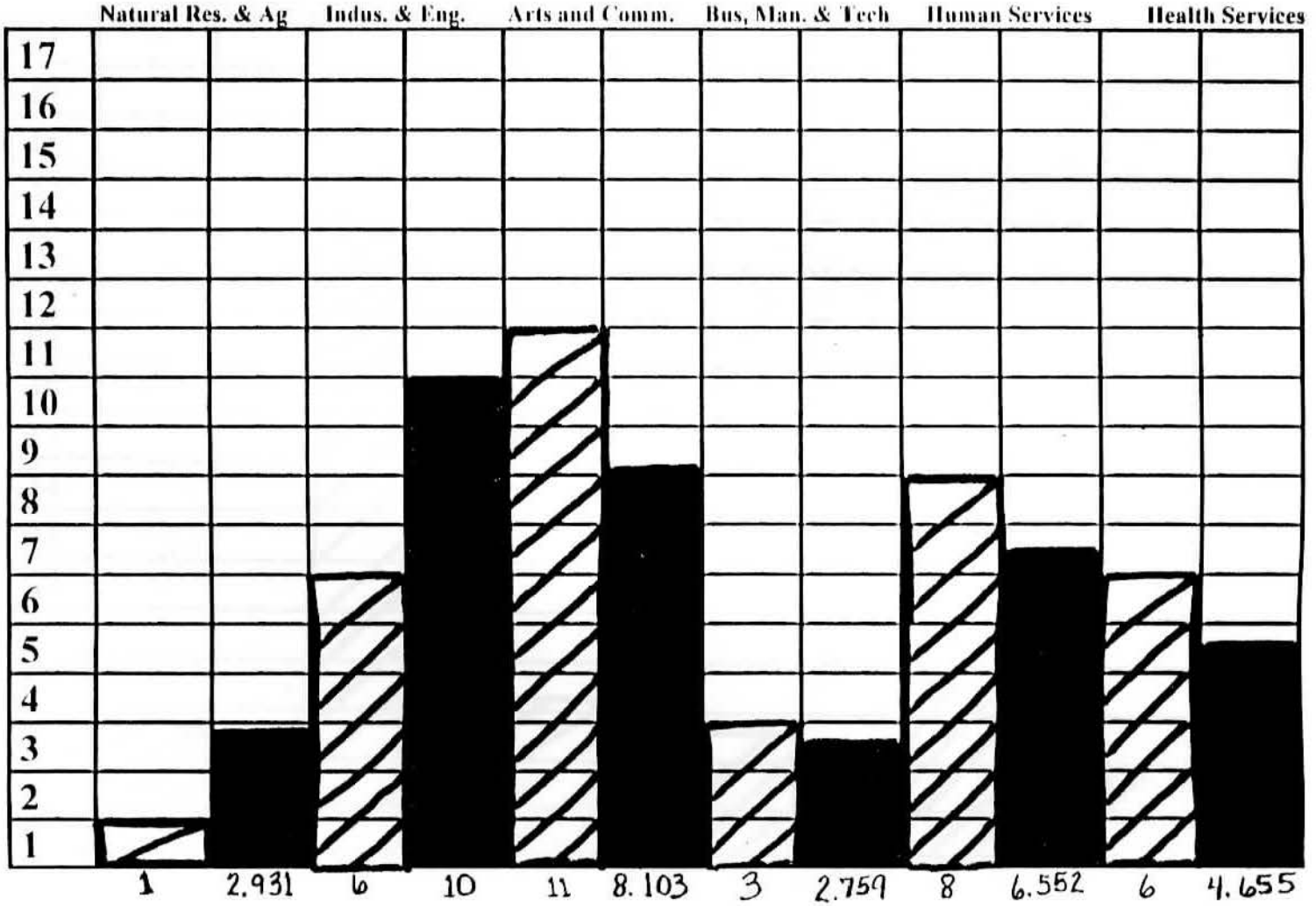
Comparison of Observed and Expected Frequencies Of Career Pathway Choices by NTs



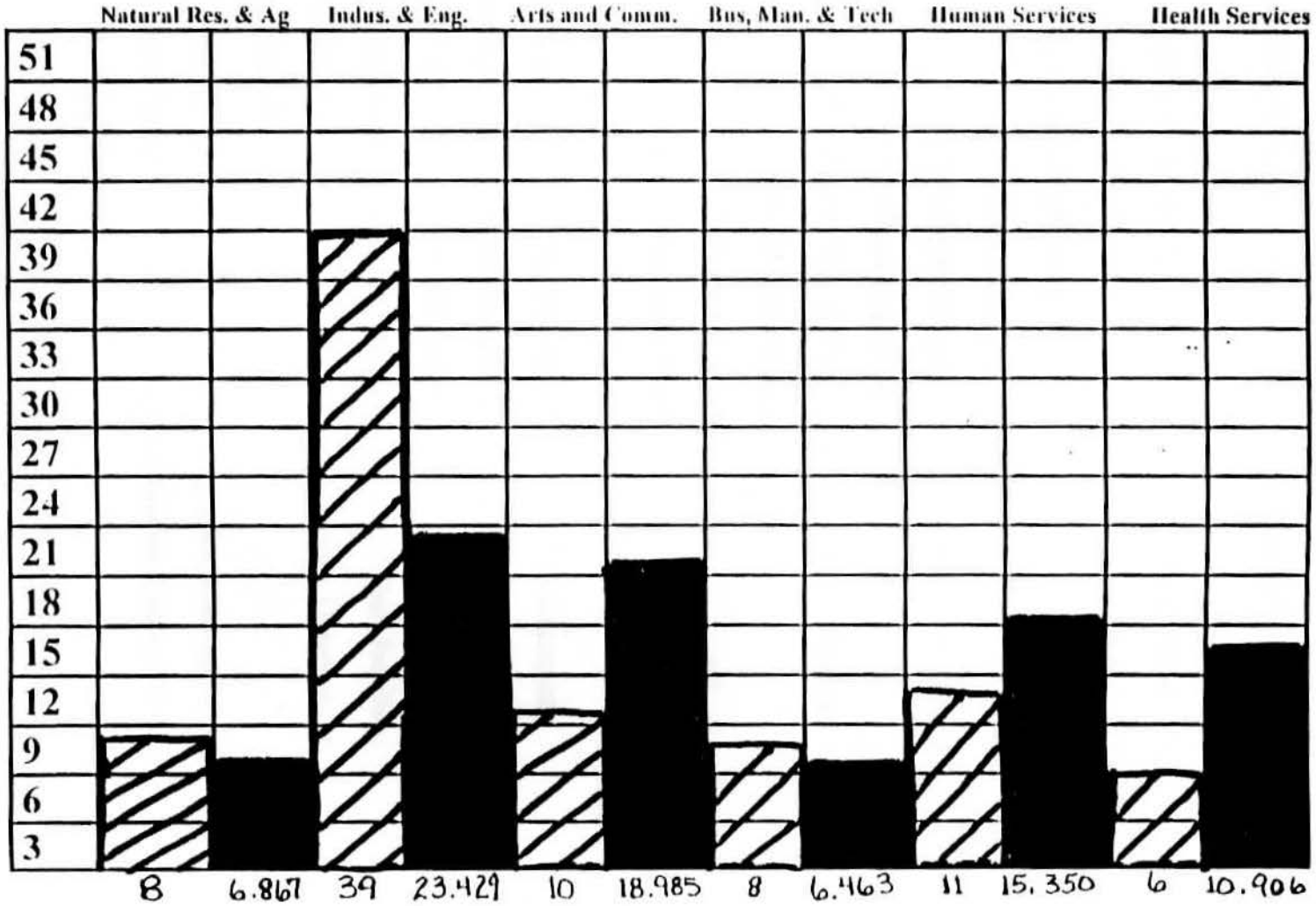
Comparison of Observed and Expected Frequencies
Of Career Pathway Choices by NFs



Comparison of Observed and Expected Frequencies Of Career Pathway Choices by SFs



Comparison of Observed and Expected Frequencies Of Career Pathway Choices by STs



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