A study of the relationships between perception and judgment, locus of control, motivation to enroll, and academic achievement of nontraditional university students
by Barbara Ann Storm

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
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Abstract:
This study focused on selected characteristics of a growing student population, nontraditional students. The sample for this study consisted of 132 undergraduate students, age 25 years and older, who were newly enrolled at Montana State University. The purpose of this study was to survey a group of newly enrolled nontraditional students and obtain a profile of selected demographic and personality variables and reasons for enrolling in college. This study also explored the relationships among those variables. A third objective was to determine the extent to which those variables related to academic achievement.

The three instruments used in this study were the Educational Participation Scale (EPS), the Myers-Briggs Type Indicator (MBTI), and the Internal-External Locus of Control Scale (I-E). Twenty-one null hypotheses were tested using analysis of variance, chi-square and multiple linear regression. The sample population indicated cognitive interest as their predominate reason to enroll in college. Data analysis resulted in the rejection of nine null hypotheses, as significant relationships did exist between reasons for enrolling and the MBTI and reasons for enrolling and the I-E Scale. Chi-square analysis revealed that significant differences did exist between the I-E groups and the MBTI groups. The multiple regression analysis concluded that the 11 variables of the EPS, MBTI, and I-E could not predict the dependent variable of academic achievement.

Implications for practice include ongoing, in-depth studies to identify and develop profiles of student populations. The EPS, MBTI, and I-E appear to be useful tools to profile affective measures. Recommendations for further research include replicating the study using cognitive measures as well as the affective measures, developing a longitudinal design using GPA and persistence after one and two year intervals, and conducting a study using different combinations of the variables, e.g., academic major with perception and judgment preferences, level of anxiety and academic achievement.

A STUDY OF THE RELATIONSHIPS BETWEEN PERCEPTION AND JUDGMENT, LOCUS OF CONTROL, MOTIVATION TO ENROLL, AND ACADEMIC ACHIEVEMENT OF NONTRADITIONAL UNIVERSITY STUDENTS

by

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Date August 1, 1990

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TABLE OF CONTENTS

TABLE OF CONTENTS--Continued

TABLE OF CONTENTS--Continued

LIST OF TABLES

LIST OF TABLES--Continued

ABSTRACT

This study focused on selected characteristics of a growing student population, nontraditional students. The sample for this study consisted of 132 undergraduate students, age 25 years and older, who were newly enrolled at Montana State University. The purpose of this study was to survey a group of newly enrolled nontraditional students and obtain a profile of selected demographic and personality variables and reasons for enrolling in college. This study also explored the relationships among those variables. A third objective was to determine the extent to which those variables related to academic achievement.

The three instruments used in this study were the Educational Participation Scale (EPS), the Myers-Briggs Type Indicator (MBTI), and the Internal-External Locus of Control Scale (I-E). Twenty-one null hypotheses were tested using analysis of variance, chi-square and multiple linear regression. The sample population indicated cognitive interest as their predominate reason to enroll in college. Data analysis resulted in the rejection of nine null hypotheses, as significant relationships did exist between reasons for enrolling and the MBTI and reasons for enrolling and the I-E Scale. Chi-square analysis revealed that significant differences did exist between the I-E groups and the MBTI groups. The multiple regression analysis concluded that the 11 variables of the EPS, MBTI, and I-E could not predict the dependent variable of academic achievement.

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CHAPTER 1

INTRODUCTION

The growing number of adults 25 years and older going back to school is no longer a forecast; it is a reality. In 1985, students 25 years and older comprised 43 percent of college enrollments in the United States, and it is projected that by 1993, the same group will increase to 49 percent (Lace, 1986, pp. 10-11). These figures are corroborated by the National Center for Education Statistics who project the 25 years and over student population to comprise 49 percent of the college enrollment by 1992 (Lynton, 1986).

Despite the growing numbers, these adult students are still an enigma to their instructors and the administrators of institutions of higher education. They have brought to the campus a new set of characteristics, needs, interests, and values. The needs and motivations of nontraditional students are different from those of traditional students (Cross, 1981). In her research, Wolfgang (1979) found adult students are motivated to enroll in college for very different reasons than younger students.

Although many institutions have recognized the complexities of non-traditional students and have instituted some very notable programs and services for adult learners, characteristics of nontraditional students are still not fully recognized or understood, and therefore their needs are not being effectively met

by the institutions (Cross, 1981). If adult students are to be served, their uniqueness, including their motivation to attend college, needs to be adequately assessed (Wolfgang & Dowling, 1981). In an attempt to recognize the needs of adult students, programs and services especially designed for the nontraditional learners are now more in evidence (Kasworm, 1980). To accommodate this new student population, some changes have been initiated, such as modifying and extending class schedules, increasing child care services, and hiring or retraining special re-entry counselors. However, very few empirical studies and data are available concerning the prediction of nontraditional students' academic performance (Kuh & Cracraft, 1986). In addition, very little attention has been paid to the relationships among the reasons adult students are enrolling, their preferred ways of perceiving information and judging, their locus of control, and their academic performance.

In order to provide the educational programs and services for this new population, more information about their motivation or reasons to enroll and other affective characteristics, such as ways of perceiving and judging and locus of control, is necessary. Without the adequate and essential information on this growing student population, institutions of higher education cannot provide the appropriate environment, programs, and services that are required for nontraditional students to achieve. Fetter's 1977 study (cited in Kuh & Cracraft, 1986) concluded that nontraditional students are more likely to drop out than traditional students.

Providing an environment for higher learning and improving student academic success are two missions of higher education. One priority for institutions of higher education is to maximize the number of students who will be successful enough to persist and graduate. Subsequently, when the matriculation of persons not likely to achieve academic success is impeded, it is viewed by many higher education advocates that a humane purpose is achieved if those persons are saved from the stigma of failure and perhaps a costly expenditure of money (Kuh, 1977). It is the opinion of this investigator that rather than impede the matriculation process of this type of student, it is the role of the institution to intervene at the onset and to provide auxiliary services that will contribute to the student's academic success.

Statement of the Problem

Little is known regarding the relationship between selected personality factors of nontraditional students, their reasons for enrolling in college, and their academic achievement. A large body of research does exist, however, on the social, academic, and psychological characteristics of traditional college students. Some studies have explored the non-academic needs of nontraditional students, such as counseling and study skills (Kasworm, 1980; Thon, 1984). Numerous studies have emphasized the demographic differences between traditional and nontraditional students (Iovacchini, Hall, & Hengstler, 1985; Sewall, 1984). Several articles can be found concerning strategies for the marketing and recruitment of nontraditional students (Leach, 1984). Cross (1981) contends that

many institutions have spent considerable money and energy on the recruitment of nontraditional students, and the impression is that some of these institutions are more interested in their own economic survival by way of increasing student enrollment than they are in the actual needs of the adult learner (pp. 34-35).

There is also a vast amount of literature on the specific characteristics and needs of re-entry women stressing their special circumstances, including financial aid, child care, and search for identity (Glass & Rose, 1987; Wheaton & Robinson, 1983). Although this kind of research can be useful, other important considerations have been overlooked. In addition to the shortage of information on this student population, the need for this kind of study has also been advocated by leading adult educators who accentuate the importance of program and service development based on an understanding of the adult learner (Apps, 1981; Boshier, 1977; Cross, 1981; Darkenwald, 1977; Knox, 1977; Levine, 1980).

This investigation focuses on two personality constructs of particular interest to the investigator: ways of perception and judgment and locus of control. In addition, the investigator aspired to further differentiate these variables and examine the influences on the motivational orientation or reasons for college enrollment of nontraditional students and resulting academic performance.

Purpose of the Study

It was anticipated that in addition to contributing to the body of knowledge about the changing college student population, the findings of this study would provide information for college administrators and student service providers to

better meet the unique needs of this growing student group. By understanding the reasons nontraditional students enroll in college, and the correlation of those reasons with the functions of perception and judgment and locus of control, as well as the relationships of those variables to academic achievement, corresponding curriculum and services can be implemented.

The purpose of this study was threefold. The first was to survey a group of newly enrolled nontraditional students at Montana State University and obtain a profile of selected demographic and personality variables and reasons for enrolling in college. A second purpose was to explore the relationships among the variables; and third, to examine the extent to which those variables are related to their academic achievement.

Operational Definitions

The following terms are defined to provide clarity and understanding of their use in this study:

(1) Academic performance: The student's grade point average (GPA) after completion of courses at the end of autumn quarter 1988, based on a system of A = 4.0.

(2) Feeling: One of the two judging functions that makes decisions based on personal values (Myers & McCaulley, 1985, p. 224).

(3) Institution of higher education: Any recognized two- or four-year college or university approved for the granting of an associate or baccalaureate degree.

(4) Intuitive: One of the two perception functions that attends to meanings, relationships, symbols, and possibilities (Myers & McCaulley, 1985, p. 225).

(5) Judgment: The process that consists of the two ways in which people come to decisions and conclusions about what they have perceived, as described by Jung. The two forms of judgment are thinking and feeling.

(6) Learning style: A person's preferred and consistent way of becoming aware, acquiring and processing information, formulating judgments, and making decisions.

(7) Motivational orientation: A set of beliefs or viewpoints that tend to determine behavior or activity. An example of this would be reasons for enrollment in college.

(8) Nontraditional student: A person 25 years or older enrolled in an institution of higher education.

(9) Perception: The process that consists of two ways in which people become aware of their environment, people, events, and ideas. The two forms of perception are sensing and intuitive.

(10) Sensing: One of the two perception functions that attends to experience and the five senses, as described by Jung.

(11) Thinking: One of two functions of judging that makes decisions based on logical and impersonal analysis, as described by Jung.

(12) Traditional student: A person between the ages of 18 and 25 years enrolled in an institution of higher education.

Research Questions

(1) For newly enrolled nontraditional students at Montana State University (MSU) in the autumn quarter 1988, what were the predominant reasons to enroll in college as measured by the six subscales of the Educational Participation Scale (EPS); what were the predominant personality preferences in perception and judgment as measured by the Myers-Briggs Type Indicator (MBTI); and what was the predominant orientation in locus of control as measured by Rotter's Internal-External Scale (I-E)?

(2) Were there significant relationships among the reasons for enrolling (EPS), ways of perceiving and judging (MBTI), and locus of control (I-E) for newly enrolled nontraditional students at MSU in the autumn quarter 1988?

(3) Can a group of variables which measures reasons for enrolling, ways of perceiving and judging, and locus of control be used to predict academic performance as measured by grade point average for newly enrolled nontraditional students at MSU for the first time in the autumn quarter 1988?

Limitations and Delimitations

Limitations

The limitations of this study consisted of the following: (1) subjects were restricted to and drawn only from autumn quarter 1988, (2) GPA's from only one

quarter were used, and (3) participants represented only 44 percent of the newly enrolled nontraditional MSU population and were either participants of the Return to Learn Program or had volunteered to participate.

Although this study is portrayed as a study of a growing student population, namely nontraditional students, results from this study may have limited generalizability. This particular sample is limited to individuals classified as nontraditional who enrolled at one particular institution, namely Montana State University, and therefore is limited in scope. It would be difficult and perhaps not altogether productive to undertake a nationwide study of nontraditional students. Adult students are a multi-dimensional and diverse group; generalizations about them are difficult (Mishler & Others, 1982; Kuh & Cracraft, 1986). It appears that studies that concentrate on locality and specific regions could contribute to specific and indigenous data that could then be translated into useful programs for that particular institution. There are limited reliability and validity studies using the 1982 revision of the EPS, and Boshier maintains that reliability and validity information from the original instrument is still germane in describing this revision.

Delimitations

The decision was made to select only certain personality variables and not to include all four of the MBTI typologies. One explanation for that was to keep the number of variables to a reasonable limit based on the number of subjects

in the study. A second reason was that perception and judgment, according to Jung, best represent an individual's mental ability and are useful in understanding an individual's preferred learning style. Although aptitude, intelligence and behavior are recognized as important variables in academic achievement, this study was limited to a consideration of personality variables and motivational orientation. Research already clearly indicates the role played by aptitude variables.

Organization of This Study

This chapter has presented the statement of the problem, the purpose of the study, definition of terms, research questions, and limitations and delimitations of the study. The remainder of Chapter 1 contains a review of the related literature.

Chapter 2 describes the methodology and procedures used to complete the study. Included is a description of the population, sampling procedure, location, methods of data collection, an in-depth review of the instrumentation, the questions to be answered stated in hypothesis format, and the data analysis process.

Chapter 3 presents the results of the data analysis and findings. Several charts and graphs are used to display the data. Chapter 4 closes with a discussion of the findings, conclusions from the study, implications, and recommendations. Following the reference section are the appendices containing related materials such as copies of letters, instrumentation, and additional data tables.

Review of Literature

In this section, the researcher has grouped the variables in this study into three categories. The first category addresses educational participation and motivational orientation of adult learners. Following a brief history and philosophy, a precis is offered on the development of one particular instrument that measures the reasons adults enroll in college, supplemented by studies of that instrument with college students. The second section provides a comprehensive overview of the theory of Carl Jung, especially as it relates to perception and judgment. Included are studies and related literature that identify the correlation between personality type and learning style. The last section deals with the concept of locus of control and cites several studies that demonstrate the relationship of that personality dimension and academic achievement, including persistence.

Educational Participation

The motivational orientation of adults to participate in organized educational programs has been a question under discussion for many years. For very realistic and sound purposes, institutions of higher education have been seeking information on the specific reasons why students enroll in college programs. Now that institutions of higher education are observing changes in their student populations, their interest in participation is increasing.

Prior to 1961, participation and motivational orientation research was primarily represented by surveys and questionnaires using discrete social variables. Although the results were sometimes of interest, this kind of research neglected the postulate that educational participation is a multivariate phenomenon (Boshier, 1973, p. 255).

In 1961, Houle, after conducting 22 in-depth interviews, identified three types of adult learners: the goal oriented learner, the activity learner, and the learning oriented learner. The goal oriented learner has specific objectives sought in the educational activity. The activity oriented learner participates for the social contact and interaction, including the need to escape from boredom. The learning oriented learner engages in educational activities for the sake of learning and for the concomitant satisfaction. Although Houle's typology did not provide a complete or fully satisfactory theory on educational participation, his theorem did act as a premise and a catalyst that has generated further research on adult motivational orientation (Cross, 1981; Darkenwald, 1977).

Since 1961, in the area of motivational orientation, a trend towards the social psychological determinants of adult participation in education, rather than the traditional socioeconomic variables, has emerged (Boshier, 1977). McCloskey (cited in Boshier, 1973), in support of the social psychological determinants, asserted that educational participation was a complex, multi-dimensional phenomenon with many factors of varying weights. McCloskey sorted the variables into two groups: internal influences, such as psychological and cognitive factors, and external influences, such as the individual's environment.

Boshier's model on participation motivation includes aspects of Maslow's hierarchy of needs and Houle's three factor typology on adult education participation. He suggested that adults who participate in education are either growth motivated or deficiency motivated. Growth motivated learners participated to meet Maslow's higher order needs. Maslow (cited in Boshier, 1973, p. 258) said growth motivated people are congruent, less anxious, more integrated, and aware of their own direction. They are less dependent, more autonomous, inner directed, and able to cope with inconsistency and turmoil. Deficiency motivated learners attempt to satisfy their lower basic needs on Maslow's hierarchy. They are often anxious and fearful of the environment and are highly concerned with the possibility of failure.

Boshier used his own beliefs about adult participation in conjunction with theories of Maslow and Houle in the development of a psychometric instrument that tested motivations for educational participation. His Educational Participation Scale (EPS) was originally developed in 1969, published in 1971, and revised in 1976. The six subscales in the EPS are measures of the components Boshier believed were the important motivational factors. These are: (1) social contact, (2) social stimulation, (3) professional advancement, (4) community service, (5) external expectations, and (6) cognitive interest. Validity and reliability data are reported in Chapter 2.

Although institutions of higher education are realizing the importance of the psycho-social reasons nontraditional students enroll in college, many colleges and universities are still using the survey questionnaire approach which seldom

provides any meaningful information on those aspects. Although not in abundance, participation studies that utilize instruments that are theory based with psychometric properties, such as the EPS, are increasing (Cross, 1981).

A 1974 study by Morstain and Smart, using the EPS, compared the motivational orientations and the demographic factors of age and sex of adult students enrolled part time in credit courses at a four year university. In addition to finding corresponding factor patterns with Boshier's 1973 New Zealand study, Morstain and Smart found that certain clusters of reasons for participation were associated with various age-sex groupings. Younger adult students scored high on the social relationship scale; men had higher scores on the external expectations scale than women, and women's scores were relatively higher on the cognitive interest scale. Men had consistent scores at each age level on the social welfare scale, whereas women's scores displayed a decline on that scale as age increased. Corresponding conclusions were found in Der-Karabetian and Best's 1984 study. This study of 200 adult college women age 30 to 55 years was conducted using the EPS in conjunction with the subjects' academic majors. Results indicated that overall the adult college women were highly motivated by cognitive interest and displayed low motivation towards social relations. Another motivational orientation and demographic study was conducted by Boshier (1977) with participants in adult education in Canada. That analysis resulted in 13 factors accounting for 64 percent of the variance; however, Boshier emphasized that additional research using social and psychological factors was needed.

Research done by Governanti (1980) on demographic and motivational orientation of younger and older adult learners in a community college found little or no differences between the two age groups enrolling in credit courses. However, community services students (non-credit) indicated with higher scores that their reasons for participating were for cognitive interest. Governanti's analysis concluded that no relationship existed between the demographic variables of age, sex, family income, occupation, and educational level with the motivational orientation of 597 subjects. Nonetheless, Governanti recommended further studies using the EPS with different college populations.

In another effort to identify differences in motivation of younger (18-22 years) and older (23-45 years) undergraduates, Wolfgang and Dowling (1981) surveyed 325 Ohio State University students. In comparing the two groups, the younger students displayed high scores on social relationships and external expectations while the older students scored significantly higher on cognitive interest. Both groups scored high on professional advancement, moderate on social welfare, and low on escape. Wolfgang and Dowling stressed the need for further research on the adult learner and underscored that, in addition to motivation, other psycho-social dynamics and their relationships to adult learning could have significant implications for institutions of higher education (p. 647).

Looking at yet another type of student population, in a study using 157 Adult Basic Education (ABE) students and the EPS, Bova and Zelazek (1984) found that escape and stimulation were important to students between the ages of 18 to 45, but of little importance to students aged 45 to 55. Based on their

findings, the researchers made several recommendations for teaching strategies for ABE instructors, such as small group discussions and mentoring programs.

In another study comparing motivational orientation with educational and vocational goals, Gordon (1982) examined the relationships between students' reasons for enrolling in college and their vocational and educational preferences. She found expected relationships with the EPS motivation types and Holland's vocational orientations as measured by the Vocational Preference Inventory. She contended that additional research was needed to better understand college student motivations. She further stated that determining and understanding student motivations to matriculate was essential for the future of higher education in terms of enrollment and retention.

More often, it is the older student who displays more motivation than the younger student. This, in part, can be attributed to the process the older student follows in his or her consideration and decision to enroll in college. Educational goals and motivation have direct and indirect bearing on student persistence and success. Tilley (1978) contended that motivation to work at studies and having a specific basis or goal in mind ought to be the most important criteria for admission at an institution of higher education (p. 84).

Ways of Perceiving and Judging

Another aspect of this study was based on Carl G. Jung's theory of personality typology. Jung's major contribution to the field of psychology was in the area of adult development (Storr, 1983). His ideology stressed that it is in

adulthood that full and complete personality development takes place. It was Jung who first introduced psychological typologies. His theory correlates closely with studies that look at the characteristics of the adult student in terms of motivation and preferences in learning environments.

The genesis of Jung's theory began with his awareness of how he, Sigmund Freud, and Alfred Adler dealt so differently with similar situations and corresponding information. He observed that in the breadth of human behavior, there were common traits among some people and very different characteristics in others and that this variance in human behavior was not due to chance but was, instead, due to measurable differences that are the preferred choice of the individual. Jung then classified these differences into orientations to life and mental functions. Jung maintained that all people have the ability to utilize both orientations and all of the functions in behavior, but his contention was that people prefer one function over another and use that preference predominately. That preference has often been compared to handedness. When we are born, we are neither right or left handed, but in growing up we develop a preference for one or the other; because it is easier and more natural to use one of the choices, the preferred style is used more often and therefore becomes more developed than the other. Much of Jung's work in his *Psychological Types*, written in 1923, is directed to the two orientations to life, extraversion and introversion. These two categories describe a person's orientation or attitude toward life and how they deal and interact with the outer world. Extraversion is an orientation that attends to the outer world of people and things. Extroverts

look towards the outer world for interaction and explanations. Introversion is an orientation to the inner world of the individual. Introverts look inside themselves for ideas and answers. These orientations are important and interesting aspects of human behavior and are included in Jung's original typology. However, the essence of Jung's theory relates to the two categories of mental functions, perception and judgment. His premise was that the perception and judgment functions represented and illustrated a person's mental activity, which in turn directs their behavior (Myers, 1980). These functions are also important in describing and understanding an individual's preferred learning style.

Perception is the way in which people become aware of things, people, events, and ideas. It is the manner in which individuals acquire information, assimilate sensations, receive stimuli, and see the situation at hand (Myers & McCaulley, 1985). Jung postulated that there are two ways in which people use perception, sensing (S) and intuition (N). Both are used daily by all individuals, but one function is preferred over the other because it is easier and more natural (Roberds-Baxter, 1986, p. 8).

Individuals who prefer sensing choose to become aware of things and events through their five senses of seeing, hearing, tasting, smelling, and touching. Sensing types are concrete, detail oriented, practical, matter-of-fact, and grounded in reality. They enjoy facts and details and are more at ease in circumstances in which they have had previous experience or that follow established tradition. They are more concerned with what is probable rather than what is possible.

The function of intuition utilizes indirect discernment and unconscious associations. Intuition involves the use of impressions, hunches, inspirations, and imagination. Information and awareness obtained through intuition is abstract and intangible. Intuitive types are creative, global, and future oriented. They trust indirect perception and enjoy circumstances that require new designs and solutions. They are often visionaries and seek out potential possibilities rather than what is probable.

Once an individual has acquired information or received stimulus, either through sensing or intuition, the judgment process begins to take place. Judgment is the way in which people come to decisions and conclusions about what they have perceived. The two means of judgment are thinking (T) (i.e., using logical and objective analysis) and feeling (F) (i.e., using personal and subjective values). Both functions are reasonable, yet both use opposing standards (Roberds-Baxter, 1986).

Thinking types take the information, sensation, and/or ideas previously perceived and arrange them into a logical and objective order. Persons who prefer the thinking function are characterized by the use of their analytical ability and are concerned with principle, law, and criterion. They will most often choose fairness over kindness. They can be seen as cold, impersonal, and tough-minded because they tend to suppress their own feelings and ignore the feelings of others (Myers, 1980).

Feeling types come to decisions and conclusions about what was perceived by considering personal values. They prefer the feeling function because it is

highly concerned with understanding people and treating them in what is perceived to be a humane manner. They have a strong need for affiliation and harmony. Extenuating circumstances and alternative solutions are essential considerations to the feeling type. They are often seen as sympathetic, appreciative, and tender-hearted.

Jensen and DiTiberio (1984) also advanced the notion that Jung's work in *Psychological Types* (1923), in conjunction with Myers' *Gifts Differing* (1980), provides a conceptual framework that can be associated with learning styles. Their observations of college students in learning situations involving composition revealed that sensing types enjoy detailed and factual assignments that can be substantiated. Sensing types often recheck data and their work. They have a compelling need to understand, while the intuitive types are stimulated in learning something new because it is different. It is customary for them not to recheck their assignments because they trust their first impressions and hunches (Jensen & DiTiberio, 1984, p. 290). Thinking types are stimulated by assignments that are logical and require an analytical approach. Feeling types are encouraged by projects that involve interpersonal relations and are much more subjective than objective.

Myers (1980) purported that type makes a natural and predictable difference in learning style (p. 147). She submitted that sensing types may experience setbacks in learning to read, but asserted that this has no relationship to their competence; rather, it is an indication of their first days of schooling. Sensing children need time to take in new symbols and words, while intuitive type

children move faster with new information. When a sensing type cannot keep up, discouragement can set in and the process becomes more difficult. In taking timed tests, the sensing student may re-read the questions over and over and thus may not finish the test. In contrast, intuitive types trust their first impression of the question and may move more quickly, thereby finishing the test in time.

In accordance with Myers' as well as Jung's psychological types, Bargar and Hoover (1984) formulated several major implications in the area of teaching and learning. They maintained that type affects students' preferences for instructional alternatives. For example, sensing types (S) prefer learning activities that include direct experience, well defined goals, and practical outcomes. Intuitive types (N) prefer to deal with the larger global concepts instead of facts and prefer a more open instructional environment. Another related implication is that there is a relationship between type and academic interest. In general, thinking types (T) are often focused on science and technical areas; feeling types (F) are prone to the arts and humanities. They also contended that student as well as teacher performance is optimized when type and subject are matched.

The four possible combinations of perception and judgment are sensing plus thinking (ST), sensing plus feeling (SF), intuition plus thinking (NT), and intuition plus feeling (NF). Myers (1980) wrote about the combinations:

> Each of these combinations produces a different kind of personality, characterized by the interests, values, needs, habits of mind, and surface traits that naturally result from the combinations. Combinations with a common preference will share some qualities, but each combination has qualities all its own, arising from the interaction of the preferred way of judging what is seen. (p. 4)

Myers regarded perception and judgment to be the most important of the type combinations. She felt that they were especially important for career planning as they exemplify the preferred use of mental functioning (Myers & McCaulley, 1985).

Individuals who are ST types combine sensing with thinking, utilize their interest in facts and logic, and tend to be practical, matter-of-fact, and rely on their immediate experience. They are masters in impersonal analysis of concrete facts (Myers, 1980, p. 5). ST individuals are interested in data and statistics; they prefer order, precision, and closure. They value efficiency and productivity and appreciate sensible and distinct instruction and assignments. If their educational experiences do not exhibit such characteristics, they will find little justification to remain in such formal learning environments (Myers, 1980).

The sensing with feeling individuals (SF's) also enjoy facts but are primarily interested in facts that relate to people. Their personal warmth is evidenced in their sociability and friendliness. They are interested in the concrete and immediate situations (Jensen & DiTiberio, 1984). They are practical and down-to-earth and are more interested in the smaller, less global aspects of problem solving. They will also reconsider their formal learning participation if these factors are not included (Myers, 1980).

The NT's forte is an impersonal analysis of the possibilities. Intuitive thinkers are logical and, in addition to enjoying problem solving, they often excel at it. They are inventive and concept-oriented. Graphs, flow charts, and course outlines are well received by NT's. They are innovators of new ideas and designs

and will attempt to improve the learning environment whenever possible. Unless they are seriously stifled in their educational experience, they can be quite productive, persistent, and achieve what they want to achieve (Myers, 1980).

Aspects of the NF individual include personal warmth, enthusiasm, and imagination. Intuitive feeling individuals are often insightful and interested in people's potential. NF's are usually very good communicators, in the areas of both verbal and written communication. Although they may appear to be dreamers and idealistic, they can be very dedicated, dependable, and persistent, given that they receive some appreciation for those qualities. Impersonal interaction and bureaucracy can discourage and inhibit NF's greatly (Myers, 1980).

Jung's theory of personality types serves as the conceptual foundation for the Myers-Briggs Type Indicator (MBTI), a popular and well accepted personality inventory. The MBTI was developed by Isabel Myers in 1962. It was designed to implement Jung's theory of psychological types and to make the theory understandable and useful (Myers & McCaulley, 1985). The instrument is widely used in non-psychiatric settings and has been used extensively in student personnel and pastoral counseling. Its use in business and industry staff development programs is rapidly gaining momentum. Although a widely used instrument, many of the research studies found in the current manual deal with the MBTI and aptitude, intelligence, and behavior differences. However, this study is not concerned with those particular variables.

The MBTI has been used in studies regarding variables that have been associated with successful educational participation and learning. A study by

Johnson, Sample, and Jones (1988) used the MBTI and the Self-Directed Learning Readiness Scale (SDLRS) with 76 adult college students. The results indicated a significant relationship between intuition and self-directed learning. In another study using the MBTI and the Strong Campbell Interest Inventory, there was a positive correlation between academic comfort and the intuitive type (Campbell & Hansen, 1981). In a correlational study of the MBTI with Rotter's Internal-External Locus of Control on physician assistant students, no relationship was found (Bruhn, Bunce, & Greaser, 1978).

Locus of Control

Another behavioral influence is the internal-external (I-E) personality dimension referred to as locus of control. The theoretical background on locus of control, derived from Rotter's 1954 social learning theory, illustrates the nature and effects of reinforcement. Rotter (1966) claimed that reinforcement or reward is an essential element in the acquiring and application of skills and knowledge, but because individuals differ in their perception of cause and effect of reinforcement, the effect of reinforcement can have a variety of meanings and interpretations among individuals. Rotter (1966) defined locus of control as follows:

> When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. . . . [W]e have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own

> relatively permanent characteristics, we have termed this a belief in internal control. (p. 1)

Rotter (1966) hypothesized that this personality variable, internal-external (I-E) locus of control, was extremely important in knowing the nature of the learning process. He claimed that this variable could determine the extent to which an individual perceived his/her self, rather than someone or something else, to be responsible for his/her own successes and failures. Locus of control is concerned with people's belief about their personal control in their world, in their behavior, and in the outcomes. It is not concerned with the specific behavior involved. Although related to achievement, I-E is not related to intelligence or academic aptitude (Gold, 1968; Hersch & Scheibe, 1967; Rotter, 1966).

People vary in the degree to what they believe is the relationship between behaviors and outcomes. External individuals believe that results are based on external forces such as powerful others, luck, or chance, and that their lives are under the auspices of destiny or powerful others such as teachers, parents, or bosses. For the internal person, the control lies within the individual. Internal persons tend to believe that it is their own behavior and actions that determine the results and that they have the ultimate potential to direct and change their lives. Deci and Ryan (1985) gave the example of an external locus of control student believing he/she had failed a test because the test was too hard, asserting the outcome was controlled by the test's difficulty. Although Lefcourt's 1966 study is over 20 years old, it continues to be cited and replicated with

corresponding findings. His conclusions found internal individuals to be goal directed, striving to overcome barriers, and not easily discouraged, while external individuals were depicted as anxious, stressful, and less involved with achievement than were the internal subjects.

Although there have been numerous studies conducted using the theory of locus of control, no studies were found describing nontraditional students enrolling in college for the first time that specifically examined the I-E dimension and college enrollment. Several studies have been conducted on the relationship of locus of control and achievement, but a large number of these have been on children and adolescents with consistent results indicating a positive relationship between internal locus of control and higher grades. Studies utilizing college students as subjects have also found that internal individuals when compared with external individuals did indeed obtain higher grades, demonstrating the relationship between internal locus of control and academic achievement (Brown & Strickland, 1972; Foster & Gade, 1973; Gilmore & Reid, 1978).

Other studies have found conflicting results, such as the Brandt (1975) study which indicated that I-E dimension was not significant in reading improvement among college students. Daniels and Stevens (1976) found that internals achieved higher grades in courses that used specific contracts for grades, whereas externals performed higher in courses that were predominately teacher controlled. Santa Rita (1980), in contrast to his expectations, did not find a positive relationship between internality and achievement but nevertheless proceeded to recommend strategies for counseling and aiding the external locus of control student.

The work of McClelland, Atkinson, Clark, and Lowell in 1953 (cited by Santa Rita, 1980, p. 31) suggested that a relationship existed between a high need for achievement and internal locus of control. In Fanelli's 1972 study, findings concluded that internal individuals utilized behaviors that provided control over skill and chance outcomes, whereas external persons were more passive and displayed little concern over their performance. In consensus with that study, Platt and Eisenman (1968) found that internal persons possessed a tendency to persist longer at tasks than external individuals and that those considered as internal persons preferred skill oriented tasks to chance determined tasks, and set goals slightly higher than previously achieved objectives.

Another example of locus of control and achievement is illustrated in the study conducted by M. Taylor and Boss (1985) on the relationship between locus of control and completion of the program in Adult Basic Education (ABE). Using Rotter's scale with 62 ABE students, they found that students who completed the program were significantly more internally controlled than those who did not complete the program. In Stake's 1979 study using 236 college undergraduates, results affirmed that college students planning for graduate school had lower I-E scores ($\bar{x} = 9.5$) than did students not planning to attend graduate school ($\bar{x} = 10.8$) or those students who had not decided ($\bar{x} = 11.44$). Scores reflect the total number of external choices, thus lower scores indicate an internal locus of control.

According to Otten (1977), graduate students classified as internal were found to complete their doctoral requirements within a five-year period, whereas

students classified as external took longer to complete. In addition, he attested that the I-E measure was a better predictor of degree completion than most aptitude scales. In contrast to the many studies on the positive correlation of academic achievement and internal locus of control, Hohmuth and Ramos did not find such support in their 1973 study. However, their observations did conclude that internals displayed higher rates of improvement in their performance following failure than did externals. In their subsequent study in 1977, they concluded that internals were more inclined to withdraw from college than continue inadequate or marginal progress. Even this study supports the premise that students who possess an internal locus of control will typically take an active and responsible stance in their educational pursuit. Closely aligned with that conjecture were the conclusions of K. Taylor's 1982 study that college students who were listed as vocationally undecided were more external in their locus of control scores than those vocationally decided students.

Despite the crusade for lifelong learning and the improvement in access to higher education for the nontraditional student, adult students do not fit the stereotype of the traditional college student and thus may feel out of place in this new environment. They are likely to be unaware of their own preferred learning style, they may not have articulated their reasons for enrolling in college, and their irresolute feelings of power or control over this new venture may directly affect their attitude regarding the outcomes of their actions.

From this review of literature, it appears that the way in which students prefer to use their perception and judgment does determine their learning style

which, in turn, does have a resulting influence on their actual participation, achievement, and persistence in a formal educational setting. The literature also supports the premise that an internal orientation is more often a trait of a successful student. Examining the reasons nontraditional students are enrolling in college is not only important for the student's awareness, but also for the institution's awareness to better prepare for the increasing numbers of older students.

CHAPTER 2

METHODOLOGY

This study consisted of an investigation of selected personality characteristics of a growing student group, namely nontraditional students, their reasons for college enrollment, and the relationships of these variables to academic achievement. The objective of this study was to provide information for college administrators and student service providers to better serve this growing student population. Knowing the student composition is not a mission of higher education; it is a prerequisite to enrolling and serving them.

To espouse, as well as be cognizant of differing styles in mental functioning, i.e., learning styles, is essential in all levels of education. In addition, to understand the influence of student expectancy and reinforcement on academic performance and to be aware of the reasons adult learners matriculate to institutions of higher education will benefit not only the institution and the students, but will serve society as well.

Nontraditional students are more than merely older traditional students. This group consists of individuals who may have put off continuing their education because of marriage, children, military, and/or financial reasons. They may also

be former public or private education students who were "turned off" by their previous school experiences. They may have feelings of inadequacy and may be doubtful about their ability to succeed in school again. Nontraditional students usually have multi-dimensional roles that include family responsibilities, full time jobs, and various community involvements. Their concept of a typical college student may be predicated on the stereotypical image of the 18-year-old freshman and thus they may feel out of place and self-conscious in the classroom.

In summary, the conceptual assumptions of this study are that nontraditional students differ from traditional age students, and that significant relationships exist among the reasons nontraditional students enroll in institutions of higher education, their preferred ways of learning, and the extent they feel they have control over their lives.

Procedures and Methods of Data Collection

This study was conducted at Montana State University (MSU) located in Bozeman, Montana. MSU is a land grant institution with an enrollment of approximately 10,000 students. Nearly 35 percent of those students are 25 years and older. The admissions policy is an open-door admission for any graduate from an accredited Montana high school. Out-of-state high school graduates are admitted provided they rank in the upper 50 percent of their graduating class or that they present acceptable national test scores, such as ACT or SAT, or other evidence of achievement, maturity, and motivation.

MSU maintains a commitment to provide services and programs to assist all new and continuing students in their pursuit of college success. One particular program that has been established to meet this pledge for new students is the Return to Learn Program (RTL). This orientation program is especially designed for adults age 25 years and older who are in the process of coming to college for the first time. MSU provides a separate orientation program for traditional students (see Appendix A).

RTL is a student affairs activity that is voluntary and conducted every year approximately 10 days prior to the first class day in the autumn quarter. This four day orientation program, which runs from Monday through Thursday, from 8:00 AM to 5:00 PM, includes an introduction to the university, campus information and resources, strategies for academic pursuit, advising, and completion of the registration process. For students living out of the area, housing is available in residence halls at a nominal cost for the duration of the orientation program. The fee for RTL is $35 and the program is limited to 80 participants. Selection preference is given to students enrolling in college for the first time. RTL is coordinated by the Assistant Dean of Students and has been in operation since 1984.

In June 1988, the MSU Resource Center estimated that approximately 300 students age 25 years and older would be applying at MSU for the first time in autumn quarter 1988. There were 372 nontraditional applicants who applied, with 290 actually enrolling in the autumn quarter 1988.

Of the 372 applicants, 80 nontraditional students registered for RTL, with 75 actually participating in the September 12-15, 1988 program. The RTL was held in a large room in the Student Union Building on campus. Participants sat at large tables rather than desks, where they completed a one-page Student Information Sheet and the three instruments used in this study. The Student Information Sheet (see Appendix B) was completed by each participant at the beginning of each testing session in order to collect demographic data. In addition to name, social security number, birth year, and information on previous college, additional questions were asked in order to generate a description of the sample in terms of gender, marital status, occupation, major, and level of anxiety. The Educational Participation Scale (EPS) and Locus of Control Scale (I-E) were administered to the 75 participants attending RTL during the morning of the first day, Monday, September 12, 1988. On the second morning, September 13, 1988, the Myers-Briggs Type Indicator (MBTI) was administered. Testing was divided into two parts due to the previously scheduled activities in the RTL program. Completing the third instrument by the second day aided in controlling for any confounding effects that participating in RTL could invoke. General and brief instructions were given prior to the handing out of the three instruments. It was emphasized that the three instruments were similar to public opinion surveys and that there were absolutely no right or wrong answers. Confidentiality was assured. Participants were promised that results of the tests would be given to them by the end of the week.

From September 2-13, 1988, letters using the MSU and Kellogg Center for Adult Learning Research letterhead were mailed to all new nontraditional applicants who had not registered for RTL, requesting their participation in this study (see Appendix C). On September 14, 1988, additional requests for participation were sent to applicants who had registered to attend RTL but who had canceled their reservation or had not shown up. All letters included several testing schedules and arrangements to ensure convenience for the participants. Follow-up letters (see Appendix D) were mailed from September 23-26, 1988 to those students who had neither participated nor responded to the first letter. This was accomplished in order to encourage more participants and to increase the number of subjects.

One outcome of these mailings was that 32 replies were received from individuals who could not participate in the study primarily because they had to delay or put off enrolling at MSU in the autumn quarter 1988. At least 25 of these individuals expressed an interest in participating in this study despite their non-enrollment; however, the researcher did not include these subjects in the study. Consequently, 57 newly enrolled nontraditional students did respond to the mailing request and participated in this study. A demographic survey, along with the three instruments, was administered in small group settings held at various day and evening hours from September 19 through October 2, 1988, on the MSU campus in a large classroom with tables similar to the tables used in RTL. As in RTL, the instruments were not timed, and identical general and brief instructions were given to the participants. All participants took less than one hour to complete all three instruments.

Subjects in RTL received an interpretation of their scores on the MBTI and I-E scale on the fourth day of the program. Subjects who participated in the small group settings were also given an opportunity to gain knowledge about their scores by attending small group sessions which were held during the first week in November 1988 (see Appendix E). Twenty-five of the 57 small group participants attended those interpretation meetings. Of the 290 total new undergraduate nontraditional students enrolled at MSU the fourth week of the autumn quarter, 132 participated in this study.

Grade point averages (GPA's) for autumn quarter 1988 were obtained from student records through the cooperation of the Dean of Students Office and Computer Services on the MSU campus. Computer printouts listing GPA's for subjects by social security number were obtained by the researcher and entered into the database file in January 1989.

Test Instruments

The Educational Participation Scale (EPS)

The Educational Participation Scale (EPS) was developed by Roger Boshier in 1969 in order to investigate Houle's conceptualization of motivational orientations, and was later published in 1971. The EPS was revised in 1976 and scaled down to 40 items from 48; it also discarded the nine-point Likert type scale to a four-point format. This improved version, F-Form, was used in this study. In the written directions, students are instructed to indicate to what extent each item on the scale influenced their decision to enroll in adult education classes. Participants in this study received verbal instructions to substitute the word

"college" for "adult education." Using a Likert type measure, students circled their response: 1 = no influence, 2 = little influence, 3 = moderate influence, and 4 = much influence.

The six subscales of the EPS indicate the following motivations for participating in education:

(1) Social contact, which describes the desire to develop or improve personal relationships such as a need to make new friends. (Sample item: "To make new friends.")

(2) Social stimulation, which is characterized by a wish to escape boring or frustrating situations and a desire to obtain intellectual stimulation or awakening. (Sample item: "To get relief from boredom.")

(3) Professional advancement, which is related to career aspirations and a way to obtain mobility by improving occupational competence. (Sample item: "to increase job competence.")

(4) Community service, which reflects an altruistic concern in serving society by learning to help others. (Sample item: "To improve my ability to serve humankind.")

(5) External expectations, which signifies participation in education as a response to other persons' expectations or populace opinions. (Sample item: "To comply with the suggestions of someone else.")

(6) Cognitive interest, which demonstrates a value on learning and knowledge for its own sake. (Sample item: "To seek knowledge for its own sake.") (Darkenwald, 1977; Morstain & Smart, 1977)

The original EPS had 48 items which were chosen by Boshier after a thorough examination of Houle's *The Inquiring Mind* (1961). Although the later revised EPS was used in this study, validity and reliability information from the original instrument was still considered germane in describing the 1976 revision. The EPS has test-retest item reliabilities shown to be significant at the .001 level, ranging from .44 to 1.00 with an average of .81 (Boshier, 1976). Supporting that claim, Bova's 1979 study reported high coefficient alphas for each EPS scale from .77 to .94.

The EPS has been replicated extensively and in subsequent factor analysis has been found to be a valid instrument in measuring the motivational orientations of adult learners (Boshier & Collins, 1985; Pritchard, 1979). In addition, evidence was found in Morstain and Smart's 1977 study which yielded internal consistency coefficients ranging from .72 to .86. In Boshier and Collins' 1983 factor structure study, EPS data for over 12,000 subjects were analyzed and, with only a few exceptions, EPS items were interpreted as true, with high loadings, and each factor was found internally consistent. Alpha coefficients ranged from .80 to .88 for all six subscales (pp. 168, 171-172). However, notable criticism came from MacLean (1987), who concluded that until construct and predictive studies can validate this instrument, it should not be used for counseling or policy making purposes. Nevertheless, he did concede to use of the instrument for research purposes.

Overall, the EPS is viewed as an acceptable instrument for use with adults in educational settings as well as an efficient tool in obtaining data on adult

learners' motivations and reasons for enrolling in education (Darkenwald, 1977; Wolfgang & Dowling, 1981). It is easily administered to a single individual or to a large group. Although it is not timed, it is relatively brief, very readable, and appears to be free from biased responses due to social acceptability. The EPS has been used extensively in New Zealand, North America, Europe, and Africa, and appears in over 80 thesis or dissertation studies (Boshier & Collins, 1985).

The Myers-Briggs Type Indicator (MBTI)

The Myers-Briggs Type Indicator (MBTI) is a forced choice questionnaire developed by Isabel Briggs Myers. In corroboration with Katherine Briggs, Myers completed a thorough study of the theory of Carl Jung and his *Psychological Types* and spent over 20 years of type watching and observation. Those years were also spent in the development of the MBTI, and in 1962 the first edition, Form F, was published by Educational Testing Service (ETS). Today there are four forms of the instrument: (1) the original Form F with 166 items; (2) Form G with 126 items, including 36 research items; (3) Form AV, an abbreviated version with 50 items; and (4) a 1987 Form G with 90 items, none of which are items being researched. This study utilized the 1987 Form G.

The MBTI was designed to make the theory of psychological types described by Carl G. Jung understandable and useful in people's lives (Myers & McCaulley, 1985). The main objective of the MBTI is to identify, from self-report, four basic dichotomies. Each of the four dichotomies or indices contain two categories. The first dichotomy is extroversion (E) and introversion (I). These two categories

describe a person's preferred orientation toward life. The second dichotomy measures a person's preferred way of perception: sensing (S) and intuitive (N). The next index contains the two functions of judgment or the preferred way of making decisions: thinking (T) and feeling (F). The last dichotomy, judging (J) and perceiving (P), depicts a person's preferred way of dealing with the outer world. The MBTI classifies subjects on all four dichotomies using the eight numerical scores. A person's score indicates to which category they belong. These categories are not measures of traits or behaviors, but rather preferences of the individual. The letter, i.e., E or I, indicates the direction on the continuum and the score or number indicates the strength or development of the preference.

The MBTI can be used with high school age students and older; however, it is most appropriate with adults. Caution is advised when using the MBTI with populations under high school age. It is well suited for use in group administrations or on an individual basis. Reading level analysis using the Dale-Chall formula ranks the level from 7th to 8th grade with an overall spread from 6th to 11th grade (Myers & McCaulley, 1985). The directions are clear and easy to read and underscore the fact that there are no right or wrong answers. The instrument is not timed and presents itself as non-threatening.

This study investigated two of the four MBTI dichotomies: perception (S and N) and judgment (T and F), as these functions have been identified as representing mental functioning and are therefore more closely related to learning style (Jensen & DiTiberio, 1984).

The *MBTI Manual* (1985) contains 22 pages regarding the validity of the MBTI in which numerous correlational studies are identified with over 30 instruments, including the Strong-Campbell Interest Blank, the Adjective Check List, the Edwards Personality Preference Test, the Minnesota Multiphasic Personality Inventory, and the Omnibus Personality Inventory. These data support the premise that the MBTI exhibits significant correlations with selected personality variables. DeVito (1985), in a review of the MBTI in the *Mental Measurements Yearbook*, noted that validity data in the manual revealed that self-ratings of type and subsequent assignment by the MBTI do have a stronger correlation than would be expected by chance. Content validity has been substantiated in several writings recounting the several years Myers spent in developing reliable and reputable criteria for construction of the inventory items (Carlyn, 1977; Myers & McCaulley, 1985; Sewall, 1986). This assertion was substantiated by Cohen, Cohen, and Cross in their 1981 study that also substantiated the MBTI's construct validity, except in the J-P dichotomy or scale. Other questions have been raised regarding the conceptual definitions of the E/I and J-P scales. Since this study was not utilizing these particular scales, no further narrative was required here.

Reliability of the MBTI is demonstrated when an individual's type remains consistent upon readministration of the inventory. A considerable number of studies are cited in the manual, including split-half reliabilities, alpha coefficients, and test-retest reliabilities, which indicate significant and positive rating. One such example is from the MBTI data bank, which used Form G, with a sample

of 1,708 nontraditional age college students. The results indicated split-half reliabilities from product-moment correlations of continuous scores ranging from .83 to .92. Split-half correlations from type categories using Form G were not available.

Carskadon's 1977 study of an eight-week test-retest at Mississippi State University found reliabilities from .73 to .87, with the exception of scores for males on the T-F scale, which was .56. In Carlyn's extensive 1977 assessment of over a dozen studies of the MBTI with college students, she found reliability coefficients from a low of .69 (T-F scale) to a high of .87 for the S-N scale and asserted that the MBTI was an adequately reliable instrument. She also noted that three of the four dichotomies (E-I, S-N, and T-F) were independent of each other and that the MBTI did indeed identify personality factors that correspond to the personality dimensions submitted by Jung (p. 461). In addition, Carlyn, in her review of MBTI reliability studies, found that while college populations demonstrated scores that were stable, older subjects' scores remained even more stable.

The Internal-External Scale (I-E)

Rotter's Internal-External Scale (I-E) is an instrument that measures to what extent a person believes his/her behavior influences the outcome or results of such behavior. It also reflects a person's attitude about how much control and responsibility they hold over their own life. Internal attributions (low scores) indicate that the individual believes his/her personal effort is necessary to achieve

success, while external attributions (high scores) signify the individual believes that powerful others or luck determine his/her success or failure (Trice & Others, 1987). The scale was developed by Julian B. Rotter in 1966, with a significant contribution by Shepherd Liverant (Rotter, 1975).

In its early development and refinement, a Likert scale format was discarded in favor of the forced choice format. This procedure, in addition to the careful wording and phrasing of each question, has resulted in an instrument that is less likely to solicit socially desirable responses. To reduce the tendency of subjects to select socially acceptable responses, the I-E scale was labeled as a "public opinion survey." The directions refer to the instrument as a questionnaire and subjects are instructed to circle the statement that they believe more strongly reflects their opinion or the one they believe to be more true for them. The directions also indicate that since this is a public opinion survey, there are no right or wrong answers.

The scale uses a forced choice format with 29 items, six of which are filler items. The range of scores is from 0 to 23. Each choice reflects either an internal or external orientation. Scores are represented by the total number of external choices. Rotter, in 1966, cited mean scores for college students ranging from 7.71 to 9.05. In 1971, and again in 1975, Rotter noted that mean scores of college populations were increasing. Khanna, Molinari, and Khanna (1977) confirmed Rotter's observation and found mean scores of college populations to range from 7.7 to 11.5. In Borges and Laning's 1979 study, the mean score for a comparable population was 11.5.

As there are no specific cutoff scores for delineating the two dichotomies, cutoff scores are predetermined by the individual testing situation or study and may depend on several variables. In the Wolk and DuCette study (1973), internals were defined as subjects with scores of nine or below and externals with scores of 13 and above; Rotter was cited as claiming this to be common practice. Londoner, Linder, and Bauer (1986) maintained that most studies deem scores of 8.5 and below to reveal an internal orientation. Mean scores are of primary interest in most research studies such as this one. In order to be succinct, this study utilized continuous scores when appropriate. When dichotomous scores were mandated, the researcher predetermined that externals were defined as subjects with scores of 12 and above and internals as subjects with scores of 11 and below. This decision was based on previous data and conclusions from cited studies, and was made prior to obtaining the mean for this particular subject group.

In the early development of the I-E scale, the 60-item scale was reduced and purified by Liverant, Rotter, and Crowne using item validity from an extensive study by Seeman and Evans (Rotter, 1966, p. 10). Rotter reported test-retest reliability coefficients with college populations ranging from .55 to .83. Hersch and Scheibe (1967) reported test-retest reliability coefficients for a group of college students over a one year period to be .72.

Internal consistency using a Kuder-Richardson with 400 college elementary psychology students was .70. Using a split-half Spearman Brown with 100 college

students resulted in .73 reliability. Another college sample using the Kuder-Richardson also disclosed a .73 reliability (Rotter, 1966).

In contrast to the reported high validity and reliability of this instrument, there have been charges that the I-E scale is sex and age biased. Rotter claimed that sex differences on the I-E scale using adults have been negligible (1966). In a review of several studies, Santa Rita (1980) cited negligible findings that indicated I-E scores to predict achievement varied depending on the sex of the subject and that scores were more predictable with boys than girls. However, these studies used children as subjects and corresponding findings have not been evidenced in studies with adults as subjects. Social class is another factor that has been cited as having a significant influence on I-E scores. This needs to be considered in studies that investigate groups that are composed of heterogeneous subjects.

The I-E scale is a highly reputable instrument and receives significant support in the field of education and psychology. The I-E scale has been used extensively in research studies ranging from investigations on academic achievement, anxiety, and assertive behavior to motivation. The I-E scale has been deemed an appropriate instrument for use with college students (Gilmore & Reid, 1978; Hohmuth & Ramos, 1973; Santa Rita, 1980).

Hypotheses

This study tested the following null hypotheses. The subject group consisted of first time enrolled nontraditional students at MSU in the autumn quarter 1988.

(1) There is no significant difference between the EPS mean scores on social contact for the MBTI sensing group and for the MBTI intuitive group.

(2) There is no significant difference between the EPS mean scores on social contact for the MBTI thinking group and for the MBTI feeling group.

(3) There is no significant difference between the EPS mean scores on social stimulation for the MBTI sensing group and for the MBTI intuitive group.

(4) There is no significant difference between the EPS mean scores on social stimulation for the MBTI thinking group and for the MBTI feeling group.

(5) There is no significant difference between the EPS mean scores on professional advancement for the MBTI sensing group and for the MBTI intuitive group.

(6) There is no significant difference between the EPS mean scores on professional advancement for the MBTI thinking group and for the MBTI feeling group.

(7) There is no significant difference between the EPS mean scores on community service for the MBTI sensing group and for the MBTI intuitive group.

(8) There is no significant difference between the EPS mean scores on community service for the MBTI thinking group and for the MBTI feeling group.

(9) There is no significant difference between the EPS mean scores on external expectations for the MBTI sensing group and for the MBTI intuitive group.

(10) There is no significant difference between the EPS mean scores on external expectations for the MBTI thinking group and for the MBTI feeling group.

(11) There is no significant difference between the EPS mean scores on cognitive interest for the MBTI sensing group and for the MBTI intuitive group.

(12) There is no significant difference between the EPS mean scores on cognitive interest for the MBTI thinking group and for the MBTI feeling group.

(13) There is no significant difference between the EPS mean scores on social contact for the internal and for the external locus of control groups.

(14) There is no significant difference between the EPS mean scores on social stimulation for the internal and for the external locus of control groups.

(15) There is no significant difference between the EPS mean scores on professional advancement for the internal and for the external locus of control groups.

(16) There is no significant difference between the EPS mean scores on community service for the internal and for the external locus of control groups.

(17) There is no significant difference between the EPS mean scores on external expectations for the internal and for the external locus of control groups.

(18) There is no significant difference between the EPS mean scores on cognitive interest for the internal and for the external locus of control groups.

(19) There is no significant relationship between the internal and the external locus of control groups and the MBTI sensing and intuitive groups.

(20) There is no significant relationship between the internal and the external locus of control groups and the MBTI thinking and feeling groups.

(21) The combination of the independent variables of the six EPS subscale scores, MBTI sensing/intuitive and thinking/feeling, and the internal-external locus of control does not account for a statistically significant portion of the variance in the dependent variable of academic performance (GPA).

Treatment of the Data

ABstat, a statistical computer program developed by Anderson-Bell Corporation, was used in all data analysis. Initial database input and procedures were conducted at Montana State University's Kellogg Center in Bozeman, Montana, with completion of analysis conducted at the North Orange County Community College District in Fullerton, California. Demographic data were used for description purposes only and can be found displayed in frequency and descriptive charts in Chapter 3. This descriptive information gives general and comparative information on the sampled population.

Analysis of Data

This study attempted to accomplish three statistical objectives: (1) to furnish descriptive information including the frequencies, mean scores, standard deviations, and distribution rates of the independent and dependent variables as well as demographic data; (2) to identify the relationships among and between the variables; and (3) to determine if the independent variables could be used to

predict the dependent variable and to ascertain which independent variable accounted for the greatest proportion of the variance in the dependent variables. To achieve these objectives, the following research analyses were employed: descriptive statistics, analysis of variance, chi-square, and multiple regression.

All hypotheses were tested at the .10 alpha level of significance. The choice of the level of significance was determined by the investigator and made with full consideration of the consequences of Type I and Type II errors. A Type I error in this study would result if the researcher rejected a true null hypothesis. A .10 level of significance indicates that the probability of committing a Type I error could occur in only 10 percent of the cases. A Type II error in this study would result if the researcher retained a false null hypothesis. A Type II error would possibly deny administrators and service providers in institutions of higher education significant knowledge regarding their nontraditional student population and thus suppress programs and services that could further the academic achievement for this student population. The investigator felt more concern over the chance of committing a Type II error; therefore, a .10 level of significance was chosen.

Hypotheses 1 through 18 were analyzed using a series of one-way analyses of variance (ANOVA). An ANOVA tests for significant differences in the mean scores of groups of data. ANOVA tests were conducted to determine the F-value. The F-value indicates significant differences among the groups. The independent variables were the MBTI scores in the perception function and in the judgment function, and the locus of control scores. The dependent variables

were the six EPS subscales: social contact, social stimulation, professional advancement, community service, external expectations, and cognitive interest.

Hypotheses 19 and 20 were analyzed using chi-square in order to determine if a statistically significant difference existed between the observed distribution of the MBTI types and the internal-external groups and the expected distribution of both groups. The use of chi-square is customary when analyzing nominal data on characteristics and can aid the researcher in determining if the distribution is different than what the expectations or chance would lead us to believe (Cates, 1985).

Hypothesis 21 was analyzed using a stepwise multiple regression. Multiple regression was used to determine if the independent variables could be used to predict the dependent variable and to answer the third part of this research question. The nine independent variables, including the six subscales of the EPS, sensing-intuitive, thinking-feeling, and internal-external, were entered for analysis, with academic performance (GPA) as the dependent variable.

Multiple regression was selected for use in this study to analyze the collective and separate contributions of each of the independent variables to the dependent variable. This powerful statistic can provide much data and is useful when making predictions on the dependent or criterion variable. By using a stepwise regression analysis, it was possible to ascertain which independent variable accounted for the greatest proportion of the variance in the dependent variable (GPA).

CHAPTER 3

FINDINGS AND ANALYSIS

Introduction

In this study a group of newly enrolled undergraduate nontraditional students at Montana State University (MSU) were surveyed to obtain a profile of selected demographic and personality variables together with reasons for enrolling in college. The purpose was to explore relationships among these variables and to examine the extent to which those variables were related to academic performance. A total of 132 (46%) of the 290 newly enrolled nontraditional students for the autumn quarter 1988 at MSU participated in this study. This chapter will present the findings of this study using data collected from a student information sheet, the Educational Participation Scale (EPS), the Myers-Briggs Type Indicator (MBTI), Rotter's Internal-External Locus of Control Scale (I-E), and the grade point average (GPA) for all participants at the end of autumn quarter 1988.

Beginning with descriptive statistics, Table 1 presents demographic information including frequencies and percentages on age, gender, marital status, occupation, major, and anxiety level. Tables 2 through 10 provide additional descriptive information, frequencies, mean scores, standard deviations, and distribution rates on GPA, EPS, MBTI, and I-E. Tables 11 through 16 represent

distribution rates on GPA, EPS, MBTI, and I-E. Tables 11 through 16 represent the statistical analyses of hypotheses 1 through 21 and address each with a summary table indicating the statistical analysis findings. A brief interpretation is also included.

Sample Demographics

In order to collect demographic data, a student information sheet was completed by each participant at the beginning of each testing session. This self-reported information was used to generate a description of the sample in terms of age, gender, marital status, occupation, major, and level of anxiety. The operational definition for a nontraditional student for this study was a person 25 years or older enrolled in an institution of higher education. The age range for this sample was from 25 to 58 years with a mean age of 33, a median age of 32.7, and the mode age at 26. The gender composition consisted of 61 males and 71 females. Eighty of the participants indicated single status which included divorced, separated, and widowed; the other 52 participants were listed as married. The most commonly named occupation was the trade category with 27 participants. Sixteen participants chose student as their primary occupation, and laborer and homemaker tied and ranked third with 15 participants each.

Engineering was designated as first among the student majors with 29 students. The undecided group ranked second with 21 students. The student information sheet contained a request that participants assess their anxiety level at that particular time. The range for level of anxiety was from 0 (none) to 10

(high anxiety). The mean level of anxiety for this sample was 5.9. Table 1 presents this demographic information.

Table 1. Demographic information (N=132).

Demographic Categories	Frequency	Percent
Age		
Years:		
25-30	65	49.2
31-36	35	26.5
37-41	19	14.4
42-47	8	6.1
48-52	3	2.3
53-58	2	1.5
Total	132	100.0
Mean Age = 33		
Gender		
Male	61	46.2
Female	71	53.8
Total	132	100.0
Marital Status		
Single (incl. divorced, separated, widowed)	80	60.6
Married	52	39.4
Total	132	100.0

Table 1--Continued.

Demographic Categories	Frequency	Percent
Primary Occupation		
Trade	27	20.5
Student	16	12.1
Laborer	15	11.4
Homemaker	15	11.4
Clerical	14	10.6
Service	14	10.6
Manager	8	6.1
Professional	7	5.3
Unemployed	6	4.5
Self-employed	4	3.0
Sales	3	2.3
Other	3	2.3
Retired	0	0.0
Total	132	100.0
Majors		
Engineering	29	22.0
Undecided	21	15.9
Business	19	14.4
Nursing	14	10.6
Education	8	6.1
Agriculture	7	5.3
Health/Human Development	6	4.5
Social Science	6	4.5
Humanities	5	3.8
Computer Science	5	3.8
Science	5	3.8
Architecture	3	2.3
Fine Arts	3	2.3
Total	132	100.0

Table 1--Continued.

Demographic Categories	Frequency	Percent
Anxiety Level		
0 (none)	9	6.8
1	2	1.5
2	2	1.5
3	10	7.6
4	10	7.6
5	28	21.2
6	17	12.9
7	13	9.8
8	15	11.4
9	5	3.8
10	19	14.4
No response	2	1.5
Total	132	100.0
Anxiety mean = 5.9		
Anxiety std. dev. = 2.8		

Academic Performance

Academic performance was considered in this study as a dependent variable. Academic performance was measured by the grade point average (GPA) of the participants' completed courses at the end of autumn quarter 1988 at MSU. GPA is based on a 4.0 system and has a range of 0.00 to 4.00, with 4.00 as the highest possible score.

All 132 students completed the three survey instruments which included the Educational Participation Scale, the Myers-Briggs Type Indicator, and Rotter's I-E

Scale. It was later discovered that three of the 132 students had not completed an official registration. Four other students terminated their enrollments by completing official withdrawals from the autumn 1988 quarter. Those seven non-registered and officially withdrawn participants are considered in all analyses except for those using grade point average data. At the end of autumn quarter 1988, nine of the remaining 125 students received GPA's of 0.00. These 0.00 GPA's are figured in the total GPA as they represent official cumulative grades. Information on registration, withdrawals, and GPA was obtained from computer printouts and official reports from the offices of Student Affairs and Admissions at MSU. Table 2 represents the GPA range and frequencies, mean scores, and standard deviation for 125 students based on a 4.0 system for the autumn quarter 1988 at MSU.

Table 2. Frequency of GPA (N=125).

GPA	Frequency	Percent
Below 2.00	11	8.8
2.00 - 2.45	12	9.6
2.50 - 2.95	21	16.8
3.00 - 3.45	25	20.0
3.50 - 3.95	27	21.6
4.00	29	23.2
Total	125	100.0

GPA mean = 3.08
GPA std. dev. = .0923

Educational Participation Scale

The Educational Participation Scale (EPS) was developed by Roger Boshier in 1969 in order to investigate Houle's conceptualization of motivational orientations. The EPS is a collection of six subscales used to characterize student motivational orientations or reasons for college enrollment. The six subscales of the EPS indicate the following motivations for participating in education: (1) social contact, (2) social stimulation, (3) professional advancement, (4) community service, (5) external expectations, and (6) cognitive interest. The range of scores for the EPS is from 1.00 to 4.00, with the highest possible score being 4.00. This particular sample, when asked to express their reasons for enrolling in college, exhibited the highest mean score (3.03) in the cognitive interest subscale. The second highest mean score was in the professional advancement subscale (2.82), and the external expectation subscale yielded the lowest score (1.49). Mean scores and standard deviations for the six subscales of the EPS are displayed in Table 3.

Table 3. Mean scores and standard deviations for the six subscales of the EPS (N=132).

Scale	Mean	Std. Dev.
Social contact	1.95	0.617
Social stimulation	2.06	0.621
Professional advancement	2.82	0.583
Community service	2.46	0.755
External expectations	1.49	0.485
Cognitive interest	3.03	0.752

Further analysis of the EPS indicated the following distribution of the primary reason for enrolling in college and the corresponding mean GPA as seen in Table 4. All but six participants designated one primary reason to enroll in college. Cognitive interest produced the largest mean score among the subscales as well as ranking first as the principal reason to enroll in college. As a group, the participants who selected cognitive interest as their primary reason to enroll received a mean GPA of 3.14.

Table 4. Distribution of the six subscales of the EPS by ranked preference and mean GPA (N=125).

Scale	Frequency	GPA
Social contact	0	--
Social stimulation	3	3.04
Professional advancement	33	3.03
Community service	19	2.99
External expectations	2	3.31
Cognitive interest	62	3.14
Prof'l advancement/cognitive interest (tie)	5	3.41
Social stimulation/cognitive interest (tie)	1	0.00
Total	125	

Six of the participants had ties with two subscales. Five of those participants placed cognitive interest and professional development with equal importance as their primary reasons to enroll and that group received the highest mean GPA of 3.41. The one student that ranked social stimulation and cognitive interest with equal importance received a 0.00 GPA. Although social contact

obtained an overall mean score of 1.95, that subscale was not designated as a primary motivation or reason to enroll for any one participant.

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is a forced choice questionnaire developed by Isabel Briggs Myers. The MBTI was built on the theory of psychological types described by Carl G. Jung. The central objective is to identify, from self-report, four basic dichotomies. This study investigated two of the four MBTI dichotomies: perception and judgment. Perception includes the ways people become aware of things, other people, events, and ideas. It is the manner in which individuals acquire information, assimilate sensations, and receive stimuli. The two types of perception are sensing (S) and intuitive (N). Judgment includes the ways people make decisions, come to conclusions, evaluate and respond to what is perceived. The two judgment indices are thinking (T) and feeling (F). According to the theory, these preferences are developed in the early years of life. The preference score for each index consists of a letter, such as S for sensing, N for intuitive, T for thinking, and F for feeling. The greatest number of points indicates the direction of the preference and the appropriate letter is assigned. Myers considered the letter rather than the number to be the more important aspect of the preference score (Myers & McCaulley, 1985, p. 9).

In addition to looking at the individual type preferences, there are combinations of type that are examined in this study. The four possible combinations of

perception and judgment are sensing plus thinking (ST), sensing plus feeling (SF), intuition plus thinking (NT), and intuition plus feeling (NF).

MBTI descriptive statistics are shown in Tables 5 and 6. Table 5 represents the distribution and frequencies of the MBTI type for the MSU sample and the general population (Keirsey & Bates, 1978, pp. 17 & 20; McNickle & Veltman, 1988, p. 206).

Table 5. Distribution of MBTI sensing/intuitive and thinking/feeling types (N=132).

	MSU Sample		General Population	Difference: MSU - Gen. Pop.
Type	Frequency	Percent	Percent	Percent
S	78	59.1	75.0	-15.9
N	54	40.9	25.0	15.9
Total	132	100.0	100.0	
T	69	52.3	50.0	2.3
F	63	47.7	50.0	-2.3
Total	132	100.0	100.0	

As Table 5 indicates, the number of intuitive types in this study demonstrated a much larger proportion than in the general population. Conversely, the number of sensing types in this study was less than would be expected in the general population. The proportion of thinking and feeling types in this study was quite similar to the proportion of those types in the general population.

Table 6 shows the distribution and frequencies of the MBTI type combinations for the general population and for the MSU sample. The distribution of the MBTI type combinations demonstrates again the variation in the proportion of MBTI types in the general population in comparison with the MSU sample. The number of intuitive combinations (NF and NT) in the sample is greater than would be expected in the general population. Also, in examining the proportions in the type combinations, there were significantly fewer sensing-feeling types (SF) in the sample than in the general population.

Table 6. Distribution of MBTI type combinations (N=132).

Type Combination	MSU Sample		General Population	Difference: MSU - Gen. Pop.
	Frequency	Percent	Percent	Percent
ST	43	33.0	37.5	-4.5
SF	35	26.0	37.5	-11.5
NT	26	20.0	12.5	7.5
NF	28	21.0	12.5	9.0
Total	132	100.0	100.0	

Table 7 exhibits the frequency of the MBTI type combination with the mean GPA. For this particular sample, the MBTI type combination of intuitive-feeling (NF) displayed the highest mean GPA of 3.35. The combination of sensing-

thinking (ST) exhibited the lowest mean GPA of 2.96. The sensing-feeling and intuitive-thinking both had a mean GPA of 3.02.

Table 7. Distribution of MBTI type combinations with mean GPA (N=125).

Type Combination	Frequency	GPA
ST	42	2.96
SF	32	3.02
NT	25	3.02
NF	26	3.35
Total	125	

Internal-External Scale

Rotter's Internal-External Scale (I-E) is a forced-choice instrument that measures the extent to which a person believes his/her behavior influences the outcome or results of such behavior. It is also known as locus of control. Each choice reflects either an internal or external locus of control orientation. Scores are represented by the total number of external choices and can range from 0 to 23. In this particular study, scores ranged between 1 and 16, with no scores at 0 and no scores over 16. Table 8 shows the frequencies, mean score and standard deviation of the Rotter Internal-External Scale.

Table 8. Rotter's I-E Scale frequency (N=132).

Score	Frequency	Percent
1	2	1.5
2	4	3.0
3	6	4.5
4	12	9.1
5	4	3.0
6	14	10.6
7	15	11.4
8	16	12.1
9	17	12.9
10	9	6.8
11	9	6.8
12	10	7.6
13	4	3.0
14	4	3.0
15	3	2.3
16	3	2.3
Total	132	100.0
I-E mean score	= 8.152	
I-E standard deviation	= 3.456	

The operational definition that was established for this study characterized participants with scores of 12 or above on the I-E Scale as having an external locus of control. Students scoring 11 or below on the I-E Scale were characterized as having an internal locus of control. These cutoff scores have been used in numerous studies (Wolk & DuCette, 1973; Londoner et al., 1986; Rotter, 1966). Table 9 displays the distribution of internal locus of control and external locus of control based on this operational definition. As can be seen in Table 9, this particular sample group exhibited a moderately high number of participants with internal scores.

Table 9. Distribution of internal-external locus of control (N=132).

I-E Score	Frequency	Percent
Internal (1-11)	108	82
External (12-16)	24	18
Total	132	100

Table 10 represents the distribution of internal-external groups and the mean GPA. Note that the seven participants who did not have GPAs are not included. Students who were designated as internals displayed a mean GPA of 3.09 and students deemed externals produced a mean GPA of 2.99.

Table 10. Distribution of internal-external locus of control and mean GPA (N=125).

I-E Scale	Frequency	GPA
Internal	101	3.09
External	24	2.99
Total	132	

Analyses of Hypotheses

All hypotheses were tested at the alpha level of .10 level of significance. Table 11 represents the statistical analyses of hypotheses dealing with the EPS

and the MBTI sensing and intuitive groups. One-way ANOVAs were run using the MBTI groups as the independent variables and the EPS motivational orientations (subscales) as the dependent variables. The specific null hypotheses tested were as follows:

Ho 1. There is no significant difference between the EPS mean scores on social contact for the MBTI sensing group and for the MBTI intuitive group.

Ho 3. There is no significant difference between the EPS mean scores on social stimulation for the MBTI sensing group and for the MBTI intuitive group.

Ho 5. There is no significant difference between the EPS mean scores on professional advancement for the MBTI sensing group and for the MBTI intuitive group.

Ho 7. There is no significant difference between the EPS mean scores on community service for the MBTI sensing group and for the MBTI intuitive group.

Ho 9. There is no significant difference between the EPS mean scores on external expectations for the MBTI sensing group and for the MBTI intuitive group.

Ho 11. There is no significant difference between the EPS mean scores on cognitive interest for the MBTI sensing group and for the MBTI intuitive group.

Findings in Table 11 illustrate the extent to which the preferred way of perception, sensing or intuitive, is related to the dimensions of motivational orientations or reasons to enroll in college as demonstrated by the six subscales of the EPS.

Table 11. ANOVA with EPS and MBTI intuitive and sensing groups.

	Mean Score		Mean of Squares			
EPS Scale	Intuitive (N) n=54	Sensing (S) n=78	Between df=1	Within df=130	F-ratio	Probability
soc cont	1.977	1.924	.091	.382	.237	.627
soc sti	2.198	1.967	1.700	.376	4.522	.035**
pro adv	2.898	2.757	.632	.338	1.872	.174
comm sv	2.519	2.426	.275	.573	.481	.489
ext exp	1.389	1.554	.868	.230	3.769	.054*
cog int	3.245	2.872	4.453	.535	8.326	.005***

*Significant at the .10 level
**Significant at the .05 level
***Significant at the .01 level

There were no significant differences between the EPS mean scores on social contact, professional advancement, and community service for the MBTI sensing and for the MBTI intuitive groups. In other words, participants' preferred way of perception (S or N) was not associated with social contact, professional advancement or community service as motivational orientations or reasons to enroll in college. However, there were statistically significant

differences on the social stimulation ($p > .05$), external expectations ($p > .10$), and cognitive interest ($p > .001$) mean scores for the MBTI sensing and intuitive groups (see Table 11). A significant difference was found between the two subject groups on the ranking of the EPS subscale, cognitive interest. Students who preferred the intuitive way of perception averaged 3.245 on the importance of cognitive interest. On the other hand, students who preferred the sensing way of perception averaged only 2.872 on the importance of the same dimension. While both groups scored high on cognitive interest, there was a difference in their scores of .373, which was found to be statistically significant at the .01 level of probability. Another significant difference between the two groups was on the social stimulation scale. Those participants who were grouped as preferring intuitive perception scored higher on this subscale than did the sensing group. A difference of .231 was found between the two groups, which had a statistical level of probability of less than .05.

The next difference found to be important was related to the external expectations subscale. Although the rating of this item was low for both groups, the sensing group rated this reason for participation higher than did the intuitive group. This difference of .165 had a statistical level of probability of less than .10, which was considered significant in this study. The order of importance for the six EPS subscales was the same for both the MBTI intuitive and sensing groups. The difference was only in the strength of each subscale. Hypotheses 1, 5 and 7 were retained, and hypotheses 3, 9 and 11 were rejected.

Table 12 represents the statistical analyses of the hypotheses pertaining to the EPS subscales and the MBTI thinking and feeling groups. One-way ANOVAs were run using the MBTI groups of thinking (T) and feeling (F) as the independent variables and the EPS motivational orientations (six subscales) as the dependent variables. The specific null hypotheses tested were as follows:

Ho 2. There is no significant difference between the EPS mean scores on social contact for the MBTI thinking group and for the MBTI feeling group.

Ho 4. There is no significant difference between the EPS mean scores on social stimulation for the MBTI thinking group and for the MBTI feeling group.

Ho 6. There is no significant difference between the EPS mean scores on professional advancement for the MBTI thinking group and for the MBTI feeling group.

Ho 8. There is no significant difference between the EPS mean scores on community service for the MBTI thinking group and for the MBTI feeling group.

Ho 10. There is no significant difference between the EPS mean scores on external expectations for the MBTI thinking group and for the MBTI feeling group.

Ho 12. There is no significant difference between the EPS mean scores on cognitive interest for the MBTI thinking group and for the MBTI feeling group.

Table 12. ANOVA with EPS and MBTI thinking and feeling groups.

EPS Scale	Mean Score: Thinking (T) n=69	Mean Score: Feeling (F) n=63	Mean of Squares: Between df=1	Mean of Squares: Within df=130	F-ratio	Probability
soc cont	1.904	1.991	.248	.381	.651	.421
soc sti	2.039	2.087	.075	.386	.193	.661
pro adv	2.911	2.709	1.355	.332	4.083	.045*
comm sv	2.365	2.571	1.400	.564	2.482	.118
ext exp	1.510	1.460	.082	.236	.346	.558
cog int	2.996	3.056	.115	.568	.203	.653

*Significant at the .05 level

There were no significant differences between the EPS mean scores on social contact, social stimulation, community service, external expectations, and cognitive interest for the MBTI thinking and for the MBTI feeling groups. The EPS subscales order of importance for the MBTI groups of thinking and feeling were the same with the exception of one subscale. That difference was found on the professional advancement subscale. The thinking group scored higher than did the feeling group; the difference of .202 was found to have a probability level of less than. 05 and, therefore, was statistically significant. Hypotheses 2, 4, 8, 10 and 12 were retained and hypothesis 6 was rejected.

Table 13 represents the statistical analyses of hypotheses dealing with the EPS subscales and the internal-external locus of control groups. One-way

ANOVAs were run using the internal and external groups of the I-E Scale as independent variables and the EPS subscales as the dependent variables. The specific null hypotheses tested were as follows:

Ho 13. There is no significant difference between the EPS mean scores on social contact for the internal and for the external locus of control groups.

Ho 14. There is no significant difference between the EPS mean scores on social stimulation for the internal and for the external locus of control groups.

Ho 15. There is no significant difference between the EPS mean scores on professional advancement for the internal and for the external locus of control groups.

Ho 16. There is no significant difference between the EPS mean scores on community service for the internal and for the external locus of control groups.

Ho 17. There is no significant difference between the EPS mean scores on external expectations for the internal and for the external locus of control groups.

Ho 18. There is no significant difference between the EPS mean scores on cognitive interest for the internal and for the external locus of control groups.

Table 13. ANOVA with EPS and internal and external locus of control groups.

EPS Scale	Mean Score: Internal (I) n=108	Mean Score: External (E) n=24	Mean of Squares: Between df=1	Mean of Squares: Within df=130	F-ratio	Probability
soc cont	1.910	2.106	.750	.377	1.988	.161
soc sti	2.001	2.333	2.164	.372	5.809	.017*
pro adv	2.797	2.892	.176	.341	.516	.473
comm sv	2.444	2.550	.219	.573	.382	.538
ext exp	1.465	1.583	.276	.235	1.174	.281
cog int	3.019	3.052	.022	.569	.039	.844

*Significant at the .05 level

As indicated in Table 13, there were no significant differences between the EPS mean scores on social contact, professional advancement, community service, external expectations, and cognitive interest for the internal and external locus of control groups. There was a significant difference on the EPS mean score on social stimulation for the internal-external locus of control groups. Participants identified as external locus of control registered a 2.333 mean score on social stimulation, whereas participants with internal locus of control gave that reason a rating of 2.001. The difference of .332 was found to have a statistical level of probability of less than .05. Hypotheses 13, 15, 16, 17 and 18 were retained and hypothesis 14 was rejected.

The hypotheses that dealt with internal and external groups and the MBTI groups of sensing, intuitive, thinking and feeling were analyzed using chi-square in order to determine if a statistically significant difference existed between the observed distribution of the MBTI types and the internal-external groups and the expected distribution of both groups. The use of chi-square is customary when analyzing nominal data on characteristics and can aid the researcher in determining if the distribution is different than what the expectations or chance would lead us to believe (Cates, 1985). The specific null hypotheses tested were as follows:

Ho 19. There is no significant relationship between the internal and the external locus of control groups and the MBTI sensing and intuitive groups.

Ho 20. There is no significant relationship between the internal and the external locus of control groups and the MBTI thinking and feeling groups.

As cited by Keirsey and Bates (1978, pp. 17 & 20) and McNickle and Veltman (1988, p. 206), specific proportions of the general population in the United States have demonstrated preferences in the MBTI perception and judgment categories. Keirsey and Bates report that in the perception category, 75 percent of the general population prefer sensing while the other 25 percent indicate a preference towards intuitive. They also claim that in the judgment category of thinking and feeling, the distribution is equal in the general population, or 50 percent to 50 percent.

Because no specific proportions or median for the internal-external locus of control groups has been specified, those groups in the general population were assumed to be equally distributed. This was supported by several studies that cite 11.5 as the cutoff score for determining the two dichotomies (Wolk & DuCette, 1973; Londoner, Linder & Bauer, 1986; Rotter, 1966). The I-E Scale has a scoring range of 0 to 23, which also denotes 11.5 as the median point. Cates (1985, p. 177) explains the procedure for calculating the expected (E) frequency among groups for chi-square analysis with the formula:

$$\text{Expected} = \frac{\text{N subjects}}{\text{N categories}} \qquad (\text{N} = \text{number})$$

Using this formula, 66 participants were assigned to the internal locus of control group and the other 66 participants were assigned to the external locus of control group. The expectancy distributions for the MBTI groups were computed using the general population proportions as previously reported.

As presented in Table 14, the chi-square analysis of the MBTI sensing and intuitive groups with the internal and external locus of control groups was statistically significant, as the expected and observed distribution of the groups differed significantly from what chance would lead us to expect.

All four possible combinations among sensing, intuitive, external and internal showed significant differences between what was expected and what was observed. The largest difference was found in the sensing/external grouping; a frequency of 49.5 was expected, but the sample produced an observation of 13. Also statistically notable was in the intuitive/internal group with an expected

measure of 16.5, but with an observed frequency of 43. The overall chi-square for this category was 66.9 ($p < .01$).

Table 14. Chi-square analysis of MBTI sensing and intuitive groups and the internal-external locus of control (N = 132).

	Sensing		Intuitive		Totals	
Group	Freq.	Percent	Freq.	Percent	Freq.	Percent
Internal:						
Observed	65.0	49.0	43.0	33.0	108.0	82.0
Expected	49.5	37.5	16.5	12.5	(66.0)	(50.0)
External:						
Observed	13.0	10.0	11.0	8.0	24.0	18.0
Expected	49.5	37.5	16.5	12.5	(66.0)	(50.0)
Totals Observed	78.0	59.0	54.0	41.0	132.0	100.0

$df = 1$; $X^2 = 66.9$; $p < .01$

Table 15 exhibits the chi-square analysis for the MBTI thinking and feeling groups with internal and external locus of control. The expected frequency for the thinking/internal grouping was 33, with an actual observed frequency of 58 for that group. For the thinking/external, the expected frequency was also 33, but only 11 were observed in this study. The overall chi-square for this category was 54.4 ($p < .01$). Based on these results, hypotheses 19 and 20 were rejected.

Table 15. Chi-square analysis of MBTI thinking and feeling groups and the internal-external locus of control (N = 132).

	Thinking		Feeling		Totals	
Group	Freq.	Percent	Freq.	Percent	Freq.	Percent
Internal:						
Observed	58	44	50	38	108	82
Expected	33	25	33	25	(66)	(50)
External:						
Observed	11	8	13	10	24	18
Expected	33	25	33	25	(66)	(50)
Totals Observed	78	59	54	41	132	100

$df = 1; \quad X^2 = 54.4; \quad p < .01$

The last hypothesis to be tested was hypothesis 21: The combination of the independent variables of the 6 EPS subscale scores, MBTI sensing/intuitive and thinking/feeling, and the internal-external locus of control does not account for a statistically significant portion of the variance in the dependent variable of academic performance (GPA).

The analysis selected was a stepwise multiple regression. Multiple regression was selected for use in this study to analyze the collective and separate contributions of each of the independent variables to the dependent variable. This powerful statistic can provide much data and is useful when making predictions on the dependent or criterion variable. By using a stepwise regression

analysis, it was possible to ascertain which independent variable accounted for the greatest proportion of the variance in the dependent variable, GPA. Multiple regression was used to determine if the independent variables could be used to predict the dependent variable and to answer the third part of this research question. The nine independent variables, including the six subscales of the EPS, sensing-intuitive, thinking-feeling, and internal-external, were entered for analysis with academic performance (GPA) as the dependent variable.

In the multiple regression analysis, all but seven of the original 132 students were included. The seven participants excluded either had not completed registration or had officially withdrawn from the autumn quarter 1988. As seen in Table 16, the regression analysis indicated that the 11 variables did not contribute significantly to the prediction of GPA. The coefficient of determination, or R^2, was .0539, indicating that only 5 percent of the variance in GPA could be accounted for by the 11 independent variables in this study. As the multiple regression analysis was not statistically significant, a correlation matrix was run which supported the assumption that the independent variables were multicollinear (see Appendix F).

Table 16. Multiple linear regression of combined variables with GPA as dependent variable (N=125).

Source of Variance	Degrees of Freedom	Sum of Squares	Mean of Squares	F-Test	Prob.
Regression	11	5.706	0.518763	0.586048	0.8368
Residuals	113	100.026	0.885188		
Total	124	105.733			

Variable	Regression Coefficient	Standardized Coefficient	Standard Error	T	Prob.
SSCORE	0.02424530	0.21807700	0.0294793	0.8224520	0.4126
NSCORE	0.02379680	0.16969500	0.0371597	0.6403930	0.5232
TSCORE	-0.00155226	-0.01200470	0.0252911	-0.0613758	0.9512
FSCORE	0.03399550	0.15762900	0.0433862	0.7835570	0.4349
ROTTER	0.00727220	0.02738000	0.0256473	0.2835460	0.7773
AVG:CONT	-0.00808404	-0.00546509	0.1868760	-0.0432589	0.9656
AVG:STIM	-0.13759300	-0.09392390	0.1755680	-0.7837030	0.4349
AVG:PROF	0.12335200	0.07645810	0.1790800	0.6888080	0.4924
AVG:COMM	0.03674680	0.03019490	0.1198340	0.3066480	0.7597
AVG:EXPE	-0.19971000	-0.10575000	0.2074750	-0.9625740	0.3378
AVG:COGN	0.06489740	0.05374740	0.1319880	0.4916910	0.6239

Coeff of Determ (R^2):	0.053970	Estim'd Constant Term:	2.078340
Multiple Corr Coeff:	0.232314	Std Err of Estimate:	0.940845

CHAPTER 4

DISCUSSION OF FINDINGS AND RECOMMENDATIONS

Summary of the Study

This study investigated selected demographic and personality characteristics together with reasons for enrolling in college for a growing student group, namely nontraditional students. In addition, this study examined the relationships of these variables to academic achievement. Little was known regarding the relationship between selected personality factors of nontraditional students, their reasons for enrolling in college, and their academic achievement. A nontraditional student was defined for this study as a person 25 years or older enrolled in an institution of higher education.

Characteristics of nontraditional students are still not fully recognized or understood; therefore, their needs are not being effectively met by the institutions (Cross, 1981). Nontraditional students are more than just older traditional students. Nontraditional students can include persons who may have put off continuing their education because of marriage, children, military, and/or financial reasons. They may also be former public or private education students who were "turned off" by their former school experiences. They may have feelings of

inadequacy and may be doubtful about their ability to succeed in school again. Nontraditional students usually have multidimensional roles that include family responsibilities, full-time jobs, and various community involvements. Their concept of a typical college student may be predicated on the stereotypical image of the 18-year-old freshman, and thus they may feel out of place and self-conscious in the classroom.

In summary, the conceptual assumptions of this study were that nontraditional students differed from traditional age students, and that significant relationships existed between the reasons nontraditional students enroll in institutions of higher education, their preferred ways of learning, and the extent they feel they have control over their lives. It was anticipated that in addition to contributing to the body of knowledge about the changing college student population, the findings in this study would provide information for college administrators and student service providers to better meet the unique needs of their increasing student population. By understanding the reasons nontraditional students enrolled in college and the correlation of those reasons with the functions of perception and judgment, and locus of control as well as the relationships of those variables to academic achievement, corresponding curriculum and services could be implemented.

The purpose of this study was threefold. The first objective was to survey a group of newly enrolled nontraditional students at Montana State University to obtain a profile of selected demographic and personality variables and reasons for enrolling in college. A second purpose was to explore the relationships between

the variables; and third, to examine the extent to which those variables were related to the academic achievement.

Data collection for the study was conducted from September 15, 1988 through October 2, 1988 at Montana State University (MSU) located in Bozeman, Montana. Out of a total of 372 undergraduate nontraditional applicants for autumn quarter at MSU, 132 participated in this study. Participation consisted of completing a Student Information Sheet, the Educational Participation Scale, the Locus of Control Scale (I-E), and the Myers-Briggs Type Indicator (MBTI).

The research questions for this study were:

(1) For newly enrolled nontraditional students at Montana State University (MSU) in the autumn quarter 1988, what were the predominant reasons to enroll in college as measured by the six subscales of the Educational Participation Scale (EPS); what were the predominant personality preferences in perception and judgment as measured by the Myers-Briggs Type Indicator (MBTI); and what was the predominant orientation in locus of control as measured by Rotter's Internal-External Scale (I-E)?

(2) Were there significant relationships between the reasons for enrolling (EPS), ways of perceiving and judging (MBTI), and locus of control (I-E) for newly enrolled nontraditional students at MSU in the autumn quarter 1988?

(3) Can a group of variables which measure reasons for enrolling, ways of perceiving and judging, and locus of control be used to predict academic performance as measured by grade point average for newly enrolled nontraditional students at MSU for the first time in the autumn quarter 1988?

Demographic Findings

Age of the participants ranged from 25 to 58 years with a mean age of 33, a median age of 32.7, and the mode age of 26. This sample included 61 males and 71 females. This distribution is not unusual, as several studies have indicated that the number of females in nontraditional student populations exceeds the number of males and is predicted to continue to increase (Glass & Rose, 1987; Iovacchini et al., 1985; Sewall, 1984; Wheaton & Robinson, 1983). The difference between the two gender groups is not significant and did not confound any variables.

There were 80 students (61%) who indicated their marital status as single. Single included divorced, widowed or separated. Fifty-two participants (39%) indicated their marital status as married. Of the 61 males, 27 were married and 34 were single. Of the 71 females, 25 were married and 46 were single. Although divorce and marital separation are often catalysts for returning to school (Glass & Rose, 1987), many demographic studies indicate that married status is more common in the nontraditional student population (Iovacchini et al., 1985).

The most represented major in this study was engineering with 29 students, 27 males and 2 females. The next highest major was listed undecided or none with 21 participants, including 13 females and 8 males. The next major, business, had a total of 19 with a distribution of 14 females and 5 males. The fourth most popular major was nursing with 14 students, 12 females and 2 males.

The Student Information Sheet also asked participants to assess their level of anxiety at the time of completing the first questionnaire. The ranking was from 0 (none) to 10 (high anxiety). Although the mean for anxiety was only 5.9, there were 19 (14%) students who indicated high anxiety (10) and only 9 (7%) persons who indicated none (0). Thirty-three (25%) participants indicated levels of anxiety to be rather moderate at 7 to 9, and only 14 (11%) listed anxiety at the low level (1-3). On the 0 (none) level of anxiety, 2 were males and 7 were females. On the high level (10), 8 were males and 11 were females. A frequency distribution was run on these data and the mean anxiety level for males was 5.98 while the female anxiety level was at a lower level, 5.78.

Academic Achievement

Academic performance was measured by the grade point average (GPA) of the students' completed courses at the end of autumn quarter 1988. GPA was based on a 4.00 system with a range of 0.00 to 4.00, the highest possible being 4.00. Of the 132 participants, all but seven completed their first quarter at MSU. Those seven who did not complete the quarter had either not completed official registration or had obtained an official withdrawal. Of the remaining 125 students, the sample had a mean GPA score of 3.08. Twenty-nine students (23%) received a GPA of 4.00. Fifty-two students (42%) received GPA's from 2.00 to 2.95, and 11 students (9%) received GPA's lower than 2.00.

Answers to Research Questions

Predominant Reasons to Enroll in College

The EPS was used to measure, evaluate, and rank the reasons for enrolling in college. Of the six EPS subscales, cognitive interest had the highest mean score as well as the greatest number of individual choices (66). This motivational dimension reflects a basic and non-directional inquiry and pursuit of knowledge. In light of their interest and willingness to participate in this study, as well as their overall success as students demonstrated by GPA, enrolling in college for the sake of learning would fit the paradigm for this particular sample. This finding corresponds with several other research studies using nontraditional students and the EPS (Der-Karabetian & Best, 1984; Governanti, 1980; Morstain & Smart, 1974; Wolfgang & Dowling, 1981). Those students whose primary reason to enroll in college was cognitive interest had a mean GPA of 3.14.

The second highest mean score for the EPS was professional advancement with 35 students choosing to enroll in college for occupational gain and job related skills. This group of students obtained a mean GPA of 3.03. In addition to the 66 participants who chose to enroll in college to satisfy an inquiring mind (cognitive interest) and the 35 others who selected professional advancement, six additional students gave these two dimensions equal preference. These figures demonstrate that 107 of the 132 participants selected cognitive interest and professional advancement as their principal reasons for enrolling in college. The

six students who expressed equal preference for cognitive interest and professional advancement received a mean GPA of 3.41.

The third highest ranked EPS subscale was community service with 20 students rating this as their principal reason to enroll in college. Enrolling for community service indicates an altruistic concern for other people, serving the community, and for the betterment of humankind. Students who are motivated by this dimension see their college educations as preparing them to serve or help others. This group's mean GPA of 2.99 was below the mean GPA of the total group (3.09) and may indicate that students who are primarily motivated to enroll in college to prepare for community service are not as highly concerned or driven to obtain high academic achievement.

The remaining three EPS subscales, social contact, social stimulation, and external expectations, received relatively low mean scores (see Table 3) and did not reflect a significant influence for enrolling. Social contact was not selected as a primary reason to enroll; external expectations was the choice for only two students, and three students selected social stimulation for their reason to enroll.

Predominant Personality Preferences in Perception and Judgment

The purpose of this research question was to determine the predominant personality preferences in perception and judgment and whether or not nontraditional students exhibited the same distribution found in the general population in the areas of perception and judgment as measured by the MBTI. Another

aspect of this question was to investigate whether these characteristics affected participants' GPA. The number of intuitive types (54) in this study demonstrated a much larger proportion (41%) than the proportion found in the general population (25%) (Keirsey & Bates, 1978, pp. 17 & 20; McNickle & Veltman, 1988, p. 206). Conversely, the number of sensing types (78) in this study was proportionately less (59%) than what is expected in the general population (75%).

As newly enrolled nontraditional students, this sample included more intuitive types conceivably because they seek new ways and fresh and novel ventures. Intuitive types prefer looking for and discovering new possibilities rather than known facts. Sensing types prefer working with what is familiar and conventional rather than seeking new ways as intuitive types do (Myers & McCaulley, 1985). In addition, sensing types, when considering new possibilities, may see only the negative outcomes and may lean towards pessimism and thus choose not to take the unknown route and enroll in college. Intuitive types seek to find the answer and will engage in different projects to find it, such as enrolling in college. Numerous studies also indicate that students who prefer using intuition will seek out classes and programs that foster self-understanding and also are more apt to volunteer to participate in various programs when invited to do so (Myers & McCaulley, 1985). The Return to Learn Program and this particular research study are examples of such activities.

The division of thinking and feeling types in this study was in proportion to the distribution in the general population which is approximately a 50-50 split.

This finding is similar to and compatible with other studies. Because of the larger proportion of intuitive types in this sample, the number of intuitive type combinations also was greater than would be expected in the general population. Subsequently, the number of sensing-feeling types and sensing-thinking types was also less than would be expected (see Table 6).

Fifty-one of the 125 students who completed their first quarter and received GPAs were intuitive types and 74 were sensing types. Those whose perception style was intuitive received a mean GPA of 3.19, slightly above the total mean GPA (3.08), and the sensing group displayed a mean GPA of 2.99, slightly below the total mean GPA. In relation to the combination of types, intuitive-feelers received the highest mean GPA of 3.35; intuitive-thinkers and sensing-feelers both obtained mean GPAs of 3.02; while sensing-thinkers received mean GPAs of 2.96. All types can perform and achieve well in college.

Predominant Orientation in Locus of Control

Another aspect of this study was to look at the internal-external personality dimension referred to as locus of control. Rotter (1966) hypothesized that this personality variable was extremely important in knowing the nature of the learning process. He claimed that this variable measured the extent to which an individual perceived his/her self, rather than someone or something else, to be responsible for his/her personal successes and failures. Locus of control is concerned with people's beliefs about their personal control in their world, in their behavior, and in outcomes. External individuals believe that results are

based on external forces such as powerful others, luck, or chance. Internal persons tend to believe that their own behavior and actions determine results and that they have the ultimate potential to direct and change their lives.

This sample contained a substantially high number of participants with an internal locus of control orientation, 108 in total (see Table 9). Only 24 of the participants in this study were designated as having an external locus of control. One hundred and one students (101) who were identified as internals obtained a mean GPA of 3.09, while the 24 externals had a mean GPA of 2.99 (see Table 9).

Note that the seven participants who had either not completed registration or who had completed official withdrawals from the college and who were not included in any GPA analysis were confirmed to be internals. This behavior or practice corresponds with findings by Hohmuth and Ramos (1977) that internals were more inclined to withdraw from college than continue inadequate or marginal progress. Their study supports the premise that students who possess an internal locus of control will typically take an active and responsible stance in their educational pursuit. Lefcourt's conclusions from his highly reputable 1966 study established internal individuals to be goal directed, striving to overcome barriers and not easily discouraged; while externals were depicted as anxious, stressful, and less involved with achievement than were the internal individuals. In the work of McClelland, Atkinson, Clark, and Lowell in 1953 (cited by Santa Rita, 1980, p. 3), it was suggested that a relationship existed between a high need for achievement and internal locus of control.

Why was there such a large number of internals in this study and why did they achieve so highly? A plausible answer to this question lies in the fact that these older students have had more years to identify, evaluate, and take charge of their own lives and thus, having chosen a somewhat unique path of returning to the formal educational system, were also determined to perform well and to achieve. In making that choice, they have exhibited a behavior that reflects a philosophy of personal power. These findings are in no way meant to suggest that internals are more intelligent than their external counterparts. Although related to achievement, I-E is not related to intelligence or academic aptitude (Gold, 1968; Hersch & Scheive, 1967; Rotter, 1966).

Relationships Between Variables

The third research question explored whether or not significant relationships existed among reasons to enroll in college, the personality preferences of perception and judgment, and the locus of control variables. Comparing the EPS mean scores in the six subscales with the MBTI intuitive and sensing groups, there were three significant differences found (see Table 11). Students who were identified as intuitives demonstrated a higher mean score or stronger motivation to enroll in college for social stimulation than did the sensing group. Perhaps a plausible explanation for the intuitive groups to score higher on this reason to enroll may be explained by the intuitives' tendency to see ideas and events in a global fashion and therefore they view college enrollment as including more than an education, but a means of social stimulation as well.

Another significant relationship between the intuitive group and the EPS was evidenced in the cognitive interest subscale. Both intuitive and sensing groups selected this motivational dimension as their paramount reason to enroll in college; however, the intuitives ranked this subscale at a significantly higher score than did the sensing group ($p < .005$). As stated earlier in this chapter, intuitive types tend to be creative, curious, global, and future oriented. They trust indirect perception and enjoy circumstances that require new designs and solutions. They are often visionaries and seek out potential possibilities rather than what is probable. Sensing types prefer information that is concrete, detail oriented, practical, matter-of-fact, and grounded in reality. They enjoy facts and details and are more at ease in circumstances in which they have had previous experience or that follow established tradition. They are more concerned with what is probable rather than what is possible. Cognitive interest reveals an interest or desire in learning new things, new ways, new possibilities, and learning for more abstract reasons than for concrete purposes. These reasons may explain why intuitive types would score higher on cognitive interest than sensing types.

Although the EPS subscale external expectations received the lowest mean score of all six subscales, the sensing group scored significantly higher than did the intuitive. The subscale external expectations denotes participation in college as a response to other persons' expectations or opinions. Compliance with what tradition dictates, with following the rules and standards, with being responsible, and with belonging and conforming are important aspects of the sensing type and also relate to the external expectations dimension.

In regards to the EPS and the MBTI thinking and feeling groups, both groups ranked the six subscales in the same order. Thinkers and feelers rated cognitive interest as their first and primary reason to enroll in college. Only one significant difference existed between these two groups (see Table 12). Thinkers rated the professional advancement subscale significantly higher than did the feeler types. One possible explanation of this may be that the thinker types prefer to take the logical approach and think that the pursuit of a college education should include concrete and practical results such as professional advancement. Otherwise, thinkers and feelers were relatively similar in their motivational orientations to enroll in college. Feeler types did rate the community service subscale higher than did the thinker types; however, the mean scores were not significantly different.

In the next analysis, the mean scores of the six EPS subscales were examined in connection with the internal-external locus of control orientation. Only one significant difference occurred in this examination and that was concerned with the external group and the social stimulation subscale (see Table 13). In accordance with the previously discussed characteristics of the external locus of control orientation, individuals who believe that results and outcomes are based on external forces rather than their own actions would also look for stimulation from the outside, and enrolling in college for that reason would fit the example of the external individual. It is also interesting to note there that the external group exhibited higher mean scores on all six subscales of the EPS than did the internal group. These scores were not statistically significant, but nonetheless

appear to infer that "reasons" to enroll in college may be more important to externals than internals.

Ability of Variables to Predict
Academic Achievement

The third research question sought to answer whether or not reasons for enrolling in college, personality preferences in perception and judgment, and internal-external locus of control variables could be used to predict academic achievement (GPA). The result of this analysis, using multiple regression, was not affirmative and it was therefore concluded that the 11 variables of EPS, MBTI, and I-E used in this study did not contribute a statistical significance to the dependent variable, GPA. This researcher feels this result occurred in part because of the overall high GPA mean score and to the multicollinearity of the variables. The researcher also accepts the summation that cognitive as well as affective variables should be included in future similar studies related to academic achievement of nontraditional students.

Conclusions of Research Questions

Based on the findings of this study, a distinct profile emerged of the majority of nontraditional students entering Montana State University for the first time. Typically, this person is interested in entering a professional program such as engineering, nursing, or business, and is motivated primarily by cognitive interest and the desire for professional advancement. The majority of these students will do well academically (3.0 or higher GPA) in the very first semester of attendance.

Even though they do report feelings of anxiety, they definitely see themselves as in control of their lives. This positive profile belies the image sometimes presented of the nontraditional student as a poor academic achiever who is very insecure in the college environment. However, the findings do raise serious concerns regarding a small minority (15 to 20 percent) who report extreme anxiety, who are undecided about their major, who see external variables in control of their lives, and whose average GPA will be less than 2.5 on their first semester grades.

The learning styles of these nontraditional students as measured by the MBTI differed from the general population in that a much larger percentage reported a preference for perceiving through the intuitive rather than the sensing mode. When combined with the fact that the highest reported motivation for enrolling was cognitive interest, the preference for an intuitive approach to perception raises questions about traditional images of the older student. These were not students who simply wanted the facts so they could move ahead professionally.

Few interrelations among reasons for enrolling, style of perceiving and judging, and internal/external locus of control were discovered in this study. Preference for an intuitive approach to perception did correlate significantly with a sense of internal control and with motivation by cognitive interest. This indicates that while there may be some connection among personality traits such as those included in this study, variance among individuals is great.

Academic success, as measured by initial grade point average, is not predictable solely from the personality variables measured in this study. While these variables may relate to some aspects of success in higher education, they need to

be examined in relation to more specific indicators of accomplishment, such as achievement on specific tests or in varied levels of knowledge. Other variables, such as cognitive factors, need to be included in any effort to predict initial grade point average.

Recommendations

(1) Although an extensive body of literature is developing regarding nontraditional students and their successes, interests, motivations, and needs, this study supports the need for further studies. Studies should be conducted that use multiple measures to identify and develop profiles of student populations. This does not imply a need to label or categorize students, but rather to develop an understanding of the diverse and ever-changing student groups. Both cognitive and affective measures should be included.

(2) It is recommended that studies be conducted to compare nontraditional and traditional students at the same institution and across institutions. Because individual departments within institutions deal directly with students enrolled in their programs, it would also be useful to examine students' characteristics according to specific programs.

(3) A key issue advocated by adult educators is that learning environments be planned and developed with the awareness of the needs, interests, and goals of the learner. Student goals or motivational orientations are held as important issues, but are seldom researched (Boshier, 1976). The EPS is recommended as a relevant and easy to administer instrument when looking

at motivational orientation. The EPS can provide motivational profiles of student populations which then can be viewed and used to improve and plan a relevant and balanced curriculum and program of student services that pertains to that student population. The MBTI is a useful tool that can be used with students for increasing their awareness of their perception and judgment preferences, especially in learning and career decision making. Although the MBTI is recommended for research, its primary value may be for use with students rather than an overall research and policy making instrument.

(4) As the use of GPA is a gross measure of academic success, it is suggested that studies of motivation for attending and personal traits such as measured in this study be replicated using more intensive measures of academic gain and that these studies be conducted over an extended period of stay of the nontraditional student on campus.

(5) Additional studies should be conducted using the variables in this study together with cognitive measures. Such studies should compare the academic achievement of nontraditional students who attend special orientations, such as the Return to Learn Program, with nontraditional students who do not attend such orientation programs.

Concluding Remarks

As cited in Lace (1986), the Carnegie Commission and the Newman Report on Higher Education predict that by the year 2000, 60 percent of all college

students will be 25 years of age and older. Nontraditional students are not just older traditional students. They are a mixed and diverse collection of learners. They come to the college campus with a myriad of experiences, needs, and motivations. As this study sample demonstrated, nontraditional students can be highly motivated to learn and to perform well. Although it is nearly impossible and perhaps impractical to make generalizations about nontraditional students, it is at the same time essential that college educators make a concerted effort to get to know who they are, using both cognitive and affective measures. Profiles will differ from campus to campus and from year to year, and studies and research need to be ongoing activities. Such information will enable college educators to be aware of who they are educating and serving. Programs, environments, and services can be adequately and appropriately planned and revised based on student needs.

Now is the time for colleges and universities to take a serious look at their student population and provide for them a learning environment and education that meets their needs and goals. Asking students to fit into the mode of the traditional student is inequitable and needs to be changed (Apps, 1981). Not only is it unfair, it is a waste of human potential. As educators, we must remember that the fulfillment of human potential is our ultimate mission.

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APPENDICES

APPENDIX A:

RETURN TO LEARN LETTER

RESOURCE CENTER
"Home for Reentry Students"
Room 155, Strand Union
Montana State University
Bozeman, Montana 59717
Phone: (406) 994-2824

Dear Tandy:

Thank you for choosing MSU as a starting point for your college education. Let me assure you that the success rate of our reentry students (students 25 years and older) is very high. Your motivation, experience, and wisdom of a few extra years really count. I might add that one-third of MSU's population is of nontraditional age, so you will be surprised how comfortable you will feel and how many "war stories" you will share and hear.

However, it is not at all unusual at this time to feel a pinch of concern and apprehension about getting "into the books." Enclosed is a brochure which outlines a very successful program called *Return to Learn,* which provides you an opportunity to ease into university life. It is an inexpensive approach toward acclimating yourself to the enjoyment as well as the challenges of university life. Should you chose to attend *Return to Learn,* please confirm soon as the program always fills.

Read the brochure closely. Again, thank you for considering our university. I look forward to meeting you on September 12.

Sincerely,

Denny Klewin
Assistant Dean of Students

DK/br
6/88

APPENDIX B:

STUDENT INFORMATION SHEET

STUDENT INFORMATION SHEET

B. Storm 9/88

Please fill out or check the following items. This information will be used for descriptive and statistical purposes only. All individual responses will be held in strictest confidence. Only the researcher will know your name.

(1) Name:_____

(2) Social Security No.:_____

(3) Female [ ] -or- Male [ ]

(4) Marital Status:

[ ] Single (including divorced, separated, widowed)
[ ] Married

(5) Approximate number of college credits completed:

0 -12 _____
13-30 _____
31-44 _____
45-59 _____
60+ _____

Are these semester ____ or quarter ____ credits?

College or university previously attended:_____
Last year attended:_____

(6) From the following list, check the **one** that best describes your **primary** occupation:

[ ] Clerical (cashier, clerk, secretary, telephone operator, etc.)
[ ] Sales (salesperson, insurance, real estate, etc.)
[ ] Service (nurse, police officer, barber, beautician, etc.)
[ ] Owner or partner (small business, farm, etc.)
[ ] Manager or administration
[ ] Professional (CPA, dentist, engineer, RN, teacher)
[ ] Trade (electrician, mechanic, craftsperson, etc.)
[ ] Laborer (construction, stock, dishwasher, etc.)
[ ] Homemaker or housewife
[ ] Student
[ ] Unemployed
[ ] Retired
[ ] Other (please specify):_____

(7) Major in college is (complete or check one):

I am definitely majoring in _____.
I am considering _____.
I do not have a major _____.

(8) On a scale of 0-10 (0=low, 10=high), my anxiety level right now is _____.

(9) Age Group (check one): [ ] 25-30 [ ] 31-36 [ ] 37-41 [ ] 42-47
[ ] 48-52 [ ] 53-58 [ ] 59-64 [ ] 65-70 [ ] 71+

(10) Year of birth: _____

APPENDIX C:

REQUEST FOR PARTICIPATION LETTER

Montana State University
Bozeman, Montana 59717

Kellogg Center for Adult Learning Research

Telephone (406) 994-5795

September 1, 1988

Dear

I am conducting a research study relating to the characteristics and interests of newly enrolled students 25 years and older at Montana State University (MSU). It is expected that the findings of this study will empower MSU administrators, faculty and staff to better understand and serve college students over the traditional age.

You are one of 150 students selected for participation in this study. In order for this study to be meaningful, it is very important that each selected student participate by completing two questionnaires and one survey. Your results, along with an interpretation, will be available in late October 1988. This information can be **very useful to students and to their success in college.** Confidentiality of each participant is ensured. This study has been endorsed by the Student Affairs Office and has the personal support of Denny Klewin, Assistant Dean of Students.

The time required to complete these questionnaires is about one hour. I have arranged to administer these questionnaires on Monday, September 19, 1988, at 2 pm and again at 6 pm that evening in room 124 of Reid Hall, which is just one building west of the library. If this is not convenient, another administration of the questionnaires will be given on Wednesday, September 21, 1988, at 10 am and another at 7 pm that evening in the same room. You may attend any **one** of these at your convenience.

If you have any questions or concerns related to this study, you may contact me from 10 am to 2 pm at the Kellogg Center located at 1501 S. Third Street in Bozeman or you may call me at (406) 994-5920 or evenings at (406) 587-9055. I look forward to meeting you. **Your participation is vital to this study.** I am confident you will find that participating in this project will be very beneficial to you.

Sincerely,

Barbara Storm
Research Fellow

APPENDIX D:

FOLLOW-UP LETTER

Montana State University
Bozeman, Montana 59717

Kellogg Center for Adult Learning Research

Telephone (406) 994-5795

September 23, 1988

Dear MSU Student:

As part of a research project being conducted at Montana State University, I am in the process of gathering information to better serve students 25 years and older. This study has been endorsed by the Student Affairs Office and has the personal support of Denny Klewin, Assistant Dean of Students.

In a previous letter sent to you, I requested your participation in the completion of three questionnaires. According to my records you have not yet participated or contacted me. The results of your questionnaires will be available to you in late October 1988. This information could be very useful to you and to **your success** in college. Confidentiality is ensured.

The time required to complete these questionnaires is less than one hour. I have arranged for other administrations to take place on:

Tuesday, September 27 at 11 am, 12 noon, and 5 pm
Wednesday, September 28 at 1 pm and 5:30 pm
Thursday, September 29 at 11 am, 12 noon, and 6 pm
Friday, September 30 at 11 am and 12 noon

The location is in room 124 Reid Hall, which is one building west of the library. You may attend **any one** of these sessions, or I will be glad to arrange an individual time that is convenient for you.

I really need your participation and would appreciate your taking part in this project, as **without student participation, this study cannot be meaningful.** You may contact me at the Kellogg Center at 1501 S. Third Street in Bozeman or you may call me at (406) 994-5920 or evenings at (406) 587-9055. I look forward to meeting you or hearing from you soon.

Sincerely,

Barbara Storm
Research Fellow

APPENDIX E:

INTERPRETATION LETTER

Montana State University
Bozeman, Montana 59717

Kellogg Center for Adult Learning Research

Telephone (406) 994-5795

November 4, 1988

Dear

Thank you for participating in my recent research project during the month of September 1988. This study was conducted to gather information to better serve students 25 years and older at Montana State University.

As you know, the questionnaires contained no right or wrong answers. However, certain summaries and conclusions could be drawn from the surveys. I feel assured that you will find these results interesting and enlightening and the information may add to the success of your college experience.

I will provide the results along with an interpretation for you on the following dates in room 124 in Reid Hall:

Tuesday, November 15, 1988, at 11 am
Wednesday, November 16, 1988, at 12 noon

You may attend any **one** of these sessions. If you cannot attend either of these but are still interested in your results, call me at the Kellogg Center, (406) 994-5920, **by November 17, 1988**, and you and I can arrange another time that is convenient for you. An evening meeting is certainly a possibility. There will be no other surveys for you to complete except for a short evaluation, and your results will continue to be confidential. Printed material and handouts will be provided.

Again, thank you for your interest and previous participation.

Sincerely,

Barbara Storm
Research Fellow

APPENDIX F:

CORRELATION MATRIX

Table 17. Correlation matrix.

Variables					
SSCORE	1.00000				
NSCORE	-0.93308	1.00000			
Prob	0.0000***				
n	132				
TSCORE	0.16493	-0.13837	1.00000		
Prob	0.0588	0.1136			
n	132	132			
FSCORE	-0.15035	0.15498	-0.87014	1.00000	
Prob	0.0853	0.0760	0.0000***		
n	132	132	132		
ROTTER	-0.10414	0.10592	-0.13303	0.20732	1.00000
Prob	0.2347	0.2267	0.1284	0.0171*	
n	132	132	132	132	
AVG:CONT	-0.03369	0.00821	-0.12494	0.12964	0.15156
Prob	0.7013	0.9256	0.1534	0.1384	0.0828
n	132	132	132	132	132
AVG:STIM	-0.15681	0.14335	-0.03813	0.09393	0.16603
Prob	0.0726	0.1010	0.6643	0.2841	0.0571
n	132	132	132	132	132
AVG:PROF	-0.11655	0.07963	0.16844	-0.21928	0.05159
Prob	0.1832	0.3641	0.0535*	0.0115**	0.5568
n	132	132	132	132	132
AVG:COMM	-0.02007	0.02980	-0.10117	0.15913	-0.01893
Prob	0.8193	0.7344	0.2484	0.0684	0.8295
n	132	132	132	132	132
AVG:EXPE	0.19700	-0.23485	0.09145	-0.08177	0.07957
Prob	0.0236*	0.0067**	0.2970	0.3513	0.3645
n	132	132	132	132	132
AVG:COGN	-0.36712	0.37977	-0.06929	0.15459	-0.00439
Prob	0.0000***	0.0000***	0.4298	0.0767	0.9602
n	132	132	132	132	132
GPA	-0.00653	0.03629	-0.13713	0.16246	0.03384
Prob	0.9424	0.6878	0.1273	0.0703	0.7079
n	125	125	125	125	125
	SSCORE	NSCORE	TSCORE	FSCORE	ROTTER

Table 17--Continued.

Variables					
AVG:CONT	1.00000				
AVG:STIM	0.57662	1.00000			
Prob	0.0000***				
n	132				
AVG:PROF	0.35030	0.34906	1.00000		
Prob	0.0000***	0.0000***			
n	132	132			
AVG:COMM	0.25936	0.23551	0.16909	1.00000	
Prob	0.0027**	0.0066**	0.0526		
n	132	132	132		
AVG:EXPE	0.39598	0.32953	0.35342	0.00822	1.00000
Prob	0.0000*	0.0001***	0.0000***	0.9255	
n	132	132	132	132	
AVG:COGN	0.27069	0.25410	-0.02675	0.11556	-0.10222
Prob	0.0017**	0.0033**	0.7608	0.1870	0.2435
n	132	132	132	132	132
GPA	-0.02748	-0.06972	-0.04009	0.05318	-0.12307
Prob	0.7609	0.4397	0.6571	0.5559	0.1715
n	125	125	125	125	125
	AVG:CONT	AVG:STIM	AVG:PROF	AVG:COMM	AVG:EXPE
AVG:COGN	1.00000				
GPA	0.05213	1.00000			
Prob	0.5637				
n	125				
	AVG:COGN	GPA			

*Significant at the .05 level
**Significant at the .01 level
***Significant at the .001 level

APPENDIX G:

CORRESPONDENCE WITH DR. ROTTER

Montana State University
Bozeman, Montana 59717

Kellogg Center for Adult Learning Research

Telephone (406) 994-5795

August 18, 1988

Dr. Julian B. Rotter
University of Connecticut
Storrs, CT 06268

Dear Dr. Rotter:

It was a pleasure to talk with you on the telephone yesterday, August 17, 1988. As I told you, I have very much enjoyed reading and learning from your writings and work on Social Learning Theory and especially, on Expectancy and Internal-External Locus of Control.

I am a research fellow for the Kellogg Center at Montana State University (MSU) and a doctoral student in Adult and Higher Education. I am currently on sabbatical leave from Fullerton Community College in Fullerton, California, where I have been a counselor for the last nine years. I have a Master of Science Degree in Counseling. I have taught many courses in Student Development and have administered and interpreted several types of personality assessments.

For my present research project, I am looking at the relationships and effects of locus of control, reasons for college enrollment using Boshier's Educational Participation Scale, and ways of perceiving and judging using the Myers-Briggs Type Indicator. The population I will be working with will be students 25 years and older enrolling at MSU for the first time this autumn quarter 1988.

At least three members of my doctoral committee have extensive backgrounds in psychology, counseling, and testing. My research proposal has received committee approval. I am requesting your permission to use the I-E Scale in this study. Your encouragement and support would also be very much appreciated.

Thank you again for the wonderful work you have produced in the area of learning and in enhancing human potential.

Sincerely,

Barbara Storm
Research Fellow

The College of Liberal Arts and Sciences
Department of Psychology
Box U-20, Room 107
406 Cross Campus Road
Storrs, Connecticut 06268

August 31, 1988

Barbara Storm
Kellogg Center for Adult Learning Research
Montana State University
Bozeman, Montana 59717

Dear Ms. Storm:

You have my permission to reproduce the I-E Scale for your dissertation research.

Very truly yours,

Julian B. Rotter

Julian B. Rotter
Professor of Psychology

JBR/isw

An Equal Opportunity Employer

APPENDIX H:

CORRESPONDENCE WITH DR. McCAULLEY

Montana State University
Bozeman, Montana 59717

Kellogg Center for Adult Learning Research

Telephone (406) 994-5795

Dr. Mary McCaulley
Center for Applications of Psychological Type
2720 N.W. 6th Street
Gainesville, Florida 32609

Dear Dr. McCaulley:

I am a research fellow for the Kellogg Center at Montana State University (MSU) and a doctoral student in Adult and Higher Education. I am currently on sabbatical leave from Fullerton Community College in Fullerton, California, where I have been a counselor for the last nine years. I have a Master of Science Degree in Counseling. I have taught many courses in Student Development and have administered and interpreted several types of personality assessments. The Myers-Briggs Type Indicator is my choice for facilitating human understanding and potential.

My present research project with the Kellogg Center for Adult Learning is concerned with the relationships and influences of the ways of perceiving and judging using the MBTI, locus of control using Rotter's I-E Scale, and reasons for enrolling in college using Boshier's Educational Participation Scale. The population I will be working with will be students 25 years and older enrolling at MSU for the first time this autumn quarter 1988.

My proposal has been accepted by my doctoral committee and I will begin my data collection within the next two weeks. I am seeking your support in this project. I anticipate the findings in this study will advance the use of the MBTI in higher education. I have recently read a review of the book by Provost and Anchors, *Applications of the Myers-Briggs Type Indicator in Higher Education.* I hope to borrow a copy soon to read.

In closing, I would like to say how much the MBTI and the resulting advancement of Carl Jung's theory on psychological type has influenced and promoted growth in my own personal life. I am proud to be a contributor and educator of the theory.

I would appreciate hearing from you.

Sincerely,

Barbara Storm (ENTP)
Research Fellow

ST SF NF NT
I J
I P
E P
E J
C A P T

CENTER FOR APPLICATIONS OF PSYCHOLOGICAL TYPE, INC.
Concerned with the constructive use of differences
a non-profit public organization for education, research and services
2720 N.W. 6th Street • Gainesville, Florida 32609 • (904) 375-0160

November 21, 1988

Barbara Storm, Research Fellow
Kellogg Center for Adult Learning Research
Montana State University
Bozeman, Montana 59717

Dear Ms. Storm:

Thank you for telling us about your research plans with the MBTI.

It will be interesting to see your results with Rotter's I-E Scale. The studies I have seen so far don't come out as I would have predicted from theory, and I keep hoping another study will show why.

I'm not familiar with the Educational Participation Scale. From its title, it sounds relevant.

You don't mention your design. Some of the analyses will benefit from use of the Selection Ratio Type Table Program (SRTT) which you will find in the research section of our enclosed catalog (page 13). It was designed to permit comparison of type tables with one another. In the part of your design where you wish to focus on type, you could first compare your student sample with that of non-traditional college students in the Manual, to see how similar they are.

The more interesting analyses would come when you take your student sample as a reference population, and compare subsets of the sample to the total. Subsets could be students classified as Externals or Internals on Locus of Control, or students enrolling in school for Reason A, Reason B, etc. The assumption behind SRTT is that, if type does not make a difference, you should have the same proportion of every subsample in a given type as that type has in your total sample.

If you have not yet acquired the Provost and Anchors book, you will find it on page 7 of the catalog.

In your letter you requested my support for your project. I am not sure what kind of support you wish from me, but I can say that we need the kind of information you will be learning, and I very much look forward to your sending a copy of the completed dissertation for the Isabel Briggs Myers Memorial Library, and the MBTI Bibliography.

Best wishes for success in your data collection and analyses. Let us know if our scoring services or research consultation services can be helpful as you proceed.

I look forward to seeing you at the Eighth International MBTI Conference in

Boulder, Colorado next June.

Sincerely,

Mary H. McCaulley

Mary H. McCaulley, Ph.D.
President

Enclosure: Catalog

APPENDIX I:

LETTER FROM DR. BOSHIER

THE UNIVERSITY OF BRITISH COLUMBIA

Adult Education
Department of Administrative,
Adult and Higher Education
5760 Toronto Road
Vancouver, B.C. Canada V6T 1L2

Telephone (604) 228-5881

November 17, 1988

Barbara Storm
3679 Stucky Road
Bozeman, MT
59715

Dear Ms. Storm:

According to the Learning Press, publishers of the Education Participation Scale, you have been using it in your research. I am in the process of deriving broad theoretical conclusions from this work and would be pleased if you could fill in the enclosed questionnaire.

If I was in the U.S.A., I would buy postage stamps for a return envelope, but I am in Canada and there are no US stamps here. Nevertheless I hope you will inveigle this into your institutional mailing system. If you would like to give me your phone number or E-mail address, that would facilitate communications if I need to reach you. I look forward to hearing from you.

Yours,

Roger Boshier,
Professor of Adult Education.

RB/jy
E-Mail Address: USERBOSH@UBCMTSG.BITNET