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The relationship of psychological type to the accomplishment of student development tasks

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Iowa State University, 1988

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**The relationship of psychological type to the
accomplishment of student development tasks**

by

William Scott Anchors

**A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY**

**Department: Professional Studies in Education
Major: Education (Higher Education)**

Approved:

Members of the Committee:

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For the Graduate College**

**Iowa State University
Ames, Iowa**

1988

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CHAPTER I.

INTRODUCTION

"Students differ in significant and fundamental ways, and the impact of experience encountered in college will be substantially influenced by these differences."
Chickering (1969, pp. 306-307)

Recognizing and understanding individual differences among students is a significant concern to student services professionals in higher education (Chickering, 1969). Individual differences have been defined by differences in race, religion, psychological orientations, and demographic variables. For this study, the concept of differences will refer to varying patterns of perceiving the stimuli of the world and to the resulting ways of responding to or evaluating differentially what one perceives.

A concern among student services professionals about individual differences is seen in several key documents of the profession. The importance of individual differences was addressed in the Student personnel point of view (1937). One of the major assumptions stated was "each student is a unique person and must be treated as such" (Student personnel point of view, 1937, p. 4). This point of view is reinforced in later years in the publication Student development services in post secondary education (1972) where

individual differences among students were acknowledged and supported. These two documents serve as guideposts for the direction of professional recognition and response (Stamatakos & Rodgers, 1984). In light of the importance placed on individual differences and individual values, an examination of individual differences among entering college students and how they accomplish developmental tasks would further extend and expand the profession's understanding of what we do as professionals.

The central purpose of this study is to investigate the relationship between psychological type, as measured by the Myers-Briggs Type Indicator, and the accomplishment of developmental tasks by college students. The combination of type and task accomplishment delineates some of the complexities that are fundamental to human behavior.

Theoretical Rationale

This examination is based on the premise that students encounter post-secondary education in different ways after having attained a variety of developmental tasks in life.

Robert Havighurst (1972) used the concept of developmental task as the basis of his system of understanding individuals. The concept of

developmental tasks viewed the individual as a whole person, physically, socially, emotionally and morally. He stated (1953) that "a developmental task is a task which arises at or about a certain period in the life of an individual, successful achievement of which leads to happiness and success with later tasks, while failure leads to unhappiness in the individual, disapproval by society and difficulty with later tasks" (p. 2). He described developmental tasks for each stage in the life cycle: infancy, early adulthood, middle childhood, adolescence, early adulthood, middle age, and later maturity. To the adolescent years he assigned these tasks: achieving mature relations with peers, attaining emotional independence from authority, assurance of economic independence and socially responsible behavior, accepting of one's body, preparing for an occupation and for adult responsibilities, developing skills for civic competence, and acquiring a set of values and an ethical system as a guide to behavior. The tasks provided indices to the individual's stage of development.

What Havighurst called developmental tasks, Erikson (1963) called psychosocial stages of development. His schema, which ended in adolescence-

establishing identity, rested on the attainment of five psychological objectives. These objectives were learning a masculine or feminine social role, accepting one's body, achieving emotional independence from parents and other adults, selecting and preparing for an occupation, and developing a scale of values and an ethical system to live by. In general, Erikson and Havighurst agreed on the tasks an adolescent needs to accomplish in our society.

Acknowledging the historical importance of both Havighurst and Erikson's work, Chickering (1969) believed a new developmental period should be introduced. This new period, called young adulthood, should take into account the 46 percent of the college age population that delayed entry into the work force in pursuit of higher education and greater skills. For this stage he postulated seven major developmental vectors: achieving competence, managing emotions, becoming autonomous, establishing identity, freeing interpersonal relationships, clarifying purpose, and developing integrity.

Chickering (1981), in a book on the future of the American college, stated as a major premise that educators need to become more knowledgeable about individual differences among the growing numbers of

adults seeking higher education. Understanding these differences enhances our overall knowledge of student behavior. Not only is the knowledge useful in designing and managing the campus environment in order to increase each student's development, it also benefits program design and implementation of individual differences in student development.

Other researchers and theorists have expanded these bases of student development theory (Loevinger, 1976; Perry, 1970; Heath, 1968, 1977; and Kohlberg 1972). Like Chickering, these researchers emphasized the importance of task and issue resolution in young adulthood. Clearly, both theorists and researchers have agreed that a unique category of needs and developmental tasks exists among college age individuals.

These researchers have agreed that students differ in the timing and the ways in which they accomplish the developmental tasks of Erikson, Havighurst, and Chickering. The manner in which individuals resolve these tasks is clearly influenced by their cultural heritage, environmental influences, learning, and any predispositions they may have been born with.

Human individuality springs from a variety of influences, not just a single normative blueprint.

Attempts to understand the nature of human individuality began long before human behavior was scientifically studied. For example, gnostic philosophers of the second century A.D. conceived of human variety occurring among three dimensions: the pneumatici or thinking orientation, the psychici or feeling orientation, and the hylici or sensing orientation. Later in the eighteenth century, the poet and philosopher Frederick Schiller divided people into naive and sentimental types, a division paralleling the orientations of idealist and realist philosophers. In the nineteenth century, Nietzsche developed the famous Apollonian and Dionysian typology.

Jung's Theory of Psychological Type

In 1923 Carl Jung combined these and other perspectives on individuality into a book entitled *Psychological Types*. Jung's theory presented a structure for understanding both similarities and differences among human beings.

Jung's theory of psychological types was elaborated in the Myers-Briggs Type Indicator (MBTI) (Myers, 1962). The MBTI and the theory it tests rest on the premise that individuals tend to differ in their basic preferences for perceiving the world and making judgments based on those perceptions. These

differences are articulated by four dichotomized dimensions, extraversion/introversion, sensing/intuition, thinking/feeling, and judgment/perception.

The MBTI is designed as a forced choice, self-report psychometric instrument. The testing instrument (Form F), which consists of a 166-item inventory, calls for choices between contrasting alternatives along these four personality preferences. Perception is assessed along a continuum of sensing/intuition which indicates whether a person tends to perceive the world in a realistic, factual way or in an inherent, imaginative way. Judgment is dichotomized as thinking/feeling and considers whether an individual tends to make decisions based on logical analysis or on an appreciation of personal and interpersonal subjective values. The third dimension, extraversion/introversion, assesses whether individuals tend to direct perception and judgement to the "outer world" of people and things or to the "inner world" of concepts and ideas. The fourth dimension, judgment/perception, indicates whether an individual prefers to deal with the external world in terms of a judging attitude (thinking/feeling) or a perceptive attitude (sensing/intuition).

In scoring the MBTI each of the four preferences (extraversion/introversion, sensing/intuition, thinking/feeling, and judgment/perception) are determined by taking the weighted total answers for each pole for the four pairs. For example, if a person indicated more responses toward introversion than extraversion, the person would be considered as having a preference for introversion. The strength or magnitude of this preference does not indicate anything about development or excellence in use of the preference. These weighted responses or raw points can then be converted into continuous scores for research.

Research with the Myers-Briggs Type Indicator has been prolific, with over 1400 articles and books published in the past two decades (Bibliography, 1988). Research and application in the higher education setting have been especially productive in clarifying the use of the topology theory. Jung's concept of type has been found to be related to individual differences in learning styles, vocational preferences, academic success, roommate compatibility, and a wide range of other areas of higher education (Provost & Anchors, 1987). In recent years there has been an increasing interest in understanding Jung's theory of psychological types from a developmental perspective

(Quenk, 1984; Scanlon, 1985; Grant, Thompson & Clarke, 1983; Lynch, 1987). Researchers have queried how different types develop. Do different patterns of development exist for different types? Do all types accomplish the same developmental tasks? A review of the theoretical concepts of developmental tasks and Jungian typology leads one to the question: How do these two theories relate. Student development within the college and university environment not only provides useful information on the issues surrounding individual differences, but it also provides a fruitful context within which these questions can be answered.

Purpose

The focus of this study is on individual differences and their relationship to developmental theory. Specifically the study's purpose is to explore the relationship between Jung's theory of psychological types and the accomplishment of development tasks.

There is no paucity of models for student development (Kolhberg, 1958; Perry, 1970; Chickering, 1969; White, 1956; and Gilligan, 1982). Although these models are backed by substantial research and are revised as new findings are published, little attention has been given to how each theory accounts for individual differences.

At present, the theoretical constructs offer only general insight into these important questions. Successfully accounting for the total growth of the individual depends, to a large extent, on an ability to merge useful models with diverse theoretical perspectives which best meet individuality and the requirements for development. Without a ready means to comprehend individual differences within a student population, the ability of student service organizations to assess developmental levels and to set goals would be limited. Therefore, the identification of a meaningful framework for studying individual differences in student development is of paramount concern to student services professionals in higher education.

Delimitations

This study is restricted to one college within a medium size, rural university in the northeastern United States. The sample size is 472 freshmen, approximately 18 years of age, from the College of Arts and Science at the University of Maine in Orono. Total college enrollment for undergraduates is about 2000. Average undergraduate enrollment at the university is about 10,000.

Since this study is cross-sectional, it is critical to keep in mind that generalizations are limited to one moment in time. The two instruments used in the study, Myers-Briggs Type Indicator (MBTI) (Myers, 1962) and the Student Development Task Inventory (SDTI-2) (Winston, Miller, & Prince, 1979) are both self-reporting scales. Their accuracy depends on the honesty and accurate self-perception of the person taking it.

Definition of the Terms

Developmental tasks are defined by the SDTI-2 developed by Winston, Miller and Prince (1979). This instrument is a self-report inventory containing 140 items. Three task categories sample behaviors that students (age 17 to 23) can be expected to demonstrate when they have satisfactorily achieved three broad developmental tasks. Task I/Developing Purpose represents those students who have developed clear, realistic educational goals and understand the relationship between their educational study and other aspects of their life. Task II/Developing Autonomy is defined by self-sufficiency, a realistic confidence in one's ability to meet life's challenges and to recognize the responsibility to others and one's community. Task III/Developing Mature Interpersonal

Relationships is characterized by relationships that may be described as open, respectful, honest and trusting.

Psychological type refers to scores on the Myers-Briggs Type Indicator (MBTI) Form F (1976). The MBTI is a self-report questionnaire of 166 forced-choice items which is derived from Carl Jung's theory of psychological type. Jung's theory states there are orderly reasons to the apparently random ways in which individuals perceive and decide on things in their environment. The scores a person may receive from the MBTI are defined by the term preference. Each individual indicates a preference for Extraversion or Introversion (E or I), Sensing or Intuition (S or N), Thinking or Feeling (T or F) or Judgment or Perception (J or P). These and other dimensions of the MBTI will be explored more fully in Chapter III.

Objectives of the Study

The primary objective of this study is to determine if a relationship exists between Jung's theory of psychological type and the accomplishment of college student developmental tasks as defined by the SDTI-2. The data used were collected by the author from college freshmen in the College of Arts and Science at the University of Maine during the beginning

of the academic years 1983 and 1984. The independent variable is the four MBTI preferences, as measured by the Myers-Briggs Type Indicator. The dependent variable is the three developmental tasks measured by the Student Development Task Inventory. Gender will be used as a moderator variable. Moderator variables can be effective in understanding the behavior of certain subgroups in the sample. Both the SDTI-2 and the MBTI will be described more completely in the following chapter.

Research Question and Hypotheses

The specific research questions and hypotheses to be tested are as follows.

Question one: Is there a relationship between strength of MBTI preference score and the Developing Purpose task of the SDTI-2?

Null hypothesis:

- 1.1 There is no statistically significant relationship between the Extraversion/Introversion preference and the Developing Purpose task.
- 1.2 There is no statistically significant relationship between the Sensing/Intuition preference and the Developing Purpose task.
- 1.3 There is no statistically significant

relationship between the Feeling/Thinking preference and the Developing Purpose task.

1.4 There is no statistically significant relationship between the Judgment/Perception preference and the Developing Purpose task.

Question two: Is there a relationship between strength of MBTI preference score and the Freeing Interpersonal Relations task of the SDTI-2?

Null hypothesis:

2.1 There is no statistically significant relationship between the Extraversion/Introversion preference and the Freeing Interpersonal Relations task.

2.2 There is no statistically significant relationship between the Sensing/Intuition preference and the Freeing Interpersonal Relations task.

2.3 There is no statistically significant relationship between the Feeling/Thinking preference and the Freeing Interpersonal Relations task.

2.4 There is no statistically significant relationship between the Judgment/Perception preference and the Freeing Interpersonal Relations task.

Question three: Is there a relationship between strength of MBTI preference score and the Developing Autonomy task of the SDTI-2?

Null hypothesis:

3.1 There is no statistically significant relationship between the Extraversion/Introversion preference and the Developing Autonomy task.

3.2 There is no statistically significant relationship between the Sensing/Intuition preference and the Developing Autonomy task.

3.3 There is no statistically significant relationship between the Feeling/Thinking preference and the Developing Autonomy task.

3.4 There is no statistically significant relationship between the Judgment/Perception preference and the Developing Autonomy task.

CHAPTER II.
REVIEW OF THE LITERATURE

This chapter reviews the literature on individual differences and the development theory. With a view to understanding a student's challenge for personal growth within the setting of higher education, particular attention is focused on the theoretical work of Havighurst, Chickering and Jung and on the testing instrument developed by Myers and Briggs.

Two key documents, separated by three decades, indicate to the importance of individual differences to professionals working in student services. Student personnel point of view (1937, p.4) stated that "each student is a unique person and must be treated as such." Most recently, a statement of the profession reiterating this point of view occurred in the publication Student development services in post secondary education (1972). Together these two works served as directional guides for activities, values and identity (Stamatokas & Rodgers, 1984) within the student services profession. Chickering (1981) dedicated an entire book to the premise that American colleges need to become more knowledgeable about differences among the increasing numbers of diverse adults seeking higher education. Knepfelkemp, Widick

and Parker (1978) stressed that for a theory to be useful it must be modified to meet the particular characteristics of the individual involved.

These professional documents, while they expressed a keen awareness of individual differences, lacked an appreciation of the student development theory's applicability to the discipline. The general direction of study has been to examine human behavior from the traditional views of developmental psychology. Combining the study of developmental theory with a theory of individual differences will enhance the basic foundations on which the profession rests.

The attention on individual differences was intensified when the American College Personnel Association appointed a task force to head its Tomorrow's Higher Education Project (T.H.E. Project) (Student development services in post secondary education, 1972). This project studied the profession closely and set forth six basic foundations for what was to become the student development approach. This approach as outlined by Miller and Prince (1976, pp. 5-6) is summarized here.

1. Human development is a continuous and cumulative process of physical, psychological and social growth that can be divided into an

orderly series of life stages. Each stage is characterized by certain developmental tasks that require the human to alter their present behavior and master new learning.

2. Development is most likely to occur in an environment where change is anticipated, where individuals and groups work together actively to influence the future rather than just to react after the fact.
3. Systematic integration of cognitive, affective and psychomotor experiences produces the most effective development.
4. Several abilities and skills that facilitate growth in others have been identified. These can be learned, used and taught by student development educators.
5. The individual's development can be advanced by exposure to an organized problem-solving process that enables him or her to complete increasing complex developmental tasks.
6. Development is enhanced when students, faculty members and student affairs practitioners work collaboratively to promote the continuous development of all.

Building on the research of behavioral scientists and theorists of human development such as Havighurst, Piaget, Maslow, Erikson and others, student services professionals began addressing how to understand individual differences within human development. Consequently, understanding the relationship of individual differences to the accomplishment of developmental task becomes the natural next step for the profession.

Havighurst's Developmental Tasks

Robert Havighurst (1972) provided a mechanism by which individuals can be understood in terms of the developmental tasks in which they are involved. The concept of developmental tasks views the individual as a physical, social, emotional and moral whole. He stated (1953, p. 2) that "a developmental task is a task which arises at or about a certain period in the life of an individual, successful achievement of which leads to happiness and success with later tasks, while failure leads to unhappiness in the individual, disapproval by society and difficulty with later tasks." In this light, the accomplishment of developmental tasks are required for healthy and satisfactory growth in our society.

Havighurst described developmental tasks for each stage in the life cycle in the following manner.

Infancy and early childhood: learning to walk; learning to take solid food; learning to talk; learning to control the elimination of body waste; learning sex differences and sexual modesty; forming concepts and learning language; and, getting ready to read.

Middle childhood: learning physical skills; building wholesome attitudes; learning appropriate masculine or feminine social roles; developing fundamental skills in reading, writing and calculating; developing concepts for everyday living; developing conscience, morality and a scale of values; achieving personal independence; and, developing attitudes toward social groups and institutions.

Adolescence: achieving new and more mature relations with age-mates of both sexes; achieving a masculine or feminine social role; accepting one's physique and using the body effectively; achieving emotional independence of parents and other adults; preparing for marriage and family life; preparing for an economic career; acquiring a set of values and an ethical system as a guide

to behavior—developing an ideology; and, desiring or achieving socially responsible behavior.

Early adulthood: selecting a mate starting a family; learning to live with a marriage partner; rearing children; managing a home; getting started in a occupation; taking on civic responsibility; and, finding a congenial social group.

Middle age: assisting teenage children to become happy and responsible adults; achieving adult social and civic responsibility; reaching and maintaining satisfactory performance in one's occupational career; developing adult leisure-time activities; relating oneself to one's spouse as a person to accept and adjust to the physiological changes of middle life; and, adjusting to aging parents.

Later maturity: adjusting to decreasing physical strength and health; adjustment to retirement and reduced income; adjusting to the death of a spouse; establishing an explicit affiliation with one's age group; adopting and adapting social roles in a flexible way; and, establishing satisfactory physical living arrangements (Havighurst, 1972).

These developmental tasks are associated with physical maturation, change, social roles, social pressures, societal opportunities, and the aspirations and values of an evolving personality (Havighurst, 1953). Thus developmental tasks have a social element and they may be identified behaviorally. Tasks appear to emerge from both external and internal pressures. Consequently, given an individual's current developmental task, one should be able to identify an individual's stage of development.

Research on Havighurst's theory has been minimal, although he has served to stimulate other writers and researchers.

Erikson's Stages of Development

What Havighurst called tasks, Erikson (1963) called psychosocial stages of development. The stages proposed by Erikson (1950, 1959, 1968) are understandable within the context of his theory of the life cycle, that is, a person's entire life. In his view, each stage stood as the seed-bed for successive stages. These stages can be seen at particular times in the life sequences when physical growth, cognition, maturation and certain social demands converge. For example, developmental tasks for individuals in their teens include a re-examination and reworking of all

previously resolved stages. As will be illustrated later this reworking is especially true of the adolescence period. The principle, however, holds true of each new stage.

Erikson divided the life span into eight stages of development, each stage being associated with a particular crisis leading to a developmental task that must be mastered. These stages are seen as universal based on patterns in psychosocial experiences which dictate the form and sequence of personality development (Knefelkamp, Widick & Parker, 1978, p. 2). The eight stages of development are trust versus mistrust, autonomy versus shame and doubt, initiative versus guilt, industry versus inferiority, identity versus identity confusion, intimacy versus isolation, generativity versus stagnation, and integrity versus despair (Erikson, 1968).

Conceptualized as polar opposites, these stages have at their cores inherent crises. Each crisis involves developmental tasks similar in nature to the ones conceptualized by Havighurst. Erikson defined these tasks as the crucial, problematic issues or preoccupations that a person needs to resolve during a stage before entering the next stage. Resolution of the crisis at each stage leaves the individual with a

residual attitude or orientation toward himself and the world which leads to failure or success in later stages (1969, p. 358). Developmental tasks are resolved adequately or inadequately.

The crisis period associated with youth, or the crisis of identity versus identity confusion, has special interest for this study. The issues to be met by youth are the realities of committing oneself to a career, lifestyle and philosophy; of life-mourning over choices that are lost; of drawing on a dream of what might be; of accepting the responsibilities and discipline necessary for achievement; of assessing personal strengths and limitations in a realistic way; of knowing the kinds, the frequency and levels of intensity of those experiences which one prefers; of accepting one's physical characteristics and sexual orientation; and of feeling prepared to take on new challenges (Erikson, 1968).

Paradigms for Erikson's concept of identity have skipped over the earlier development stages to focus on the crisis of youth or identity (Marcia, 1966). Identity formation was examined by Marcia (1966) as being made up of two sub-concepts, crisis and commitment, which are themselves found in Erikson's work (1959). Crisis referred to an experience of

exploring alternative conceptions of values, career goals or ideological beliefs. Commitment referred to the subjective sense of having made a firm decision in these areas. The variables of crisis and commitment are related to the psychosocial aspect of Erikson's theory. The adolescent must make a transition to adult social roles and go through a period of exploration followed by settling on specific commitments.

Marcia (1966) described four personality dimensions with regard to the variables of crisis and commitment. These dimensions are identity diffusion, moratorium, foreclosure and identity achievement. Identity diffuse individuals make no commitment in the area of ideology or occupation. If they do make commitments these are simply for the sake of convenience and are dropped when sacrifice or compromise is required to maintain a commitment. Individuals going through moratorium are in the midst of exploring occupational and ideological alternatives. They may appear confused because they are trying to synthesize disparate elements within themselves, but they are actively seeking commitments. Individuals going through foreclosures make commitments by accepting definitions which are derived from other persons as their own self-definition. They tend make

commitments to occupational and ideological values which are similar to their parents. In short, diffusion entails a lack of either crisis or commitment; moratorium involves crisis without commitment; and foreclosure involves commitment without crisis.

Other studies supported Erikson's assertion that successful resolution of earlier stages is a major factor in the resolution of later stages such as identity and intimacy. For example, in testing a self-report of the first six Eriksonian stage resolutions, Constantinople (1969) found that scores for resolution of the trust/mistrust crisis and the initiative/guilt crisis were related to scores for the resolution of identity crisis. Rosenthal, Gurney and Moore (1981) reported moderate to significant correlations between each stage resolution and its predecessors in a psychometric study of Erikson's first six stages. Bauer and Snyder (1972) reported that college students who scored highly on a Q-sort identity measure also scored highly for achievement imagery, suggesting a link between positive resolution of the industry/inferiority crisis and identity formation. Rothman (1978), in a multivariate analysis of the relationship between other psychological crisis

variables and identity status, concluded that the autonomy and industry stages were the most important precursors of identity formation.

Summarizing the results of studies on the relationship of Erikson's earlier stage resolutions to identity formation, Waterman (1982) pointed out that more longitudinal research is needed to determine whether the relationships observed are indeed the result of developmental trends consistent with the Eriksonian stage model. This qualification of the relationships observed between earlier stages and the identity/diffusion stage would also hold true for the relationship of earlier stages to resolution of the intimacy versus isolation crisis.

In general, Erikson and Havighurst agreed on what adolescents need to do in our society. Both agreed that behavior must be understood within the overall theory of the life cycle. Each stage of development assisted in preparing the foundation for the preceding stages. Each viewed that the developmental process as cumulative; by the time individuals reach their teens their current developmental tasks include the re-examining and reworking of all previous tasks.

Though Erikson's general theory is complex, his writings have been extremely influential in the field

of psychology and education. His works have stimulated much research which in turn has expanded and clarified the developmental stages and tasks of life.

Chickering's Vectors of Development

Arthur Chickering refined key concepts within Erikson's stages of identity and intimacy.

Acknowledging both Havighurst and Erikson, Chickering (1969) believed a new developmental period was needed. He has proposed a specific developmental period called young adulthood to accommodate the 46 percent of the college age population enrolled in school because of the increasing demand for a skilled and educated work force and because higher education is becoming universal.

Chickering's (1969) theory of college student development was an elaboration of Erikson's stages of identity and intimacy. He derived his model from a longitudinal study of students between 17 to 25 years of age attending 13 small colleges. In addition to Erikson he drew on the theoretical constructs of R. W. White (1956) and Nevitt Sanford (1962). Chickering argued that the central task of college students is the "establishment of identity," although he also said (1969, p. x) that "identity is so abstract as to provide only a hazy guide for education decisions--I

have attempted to move identity one step toward greater specificity and concreteness."

To Havighurst's developmental tasks and Erikson's developmental stages and crises, Chickering introduced the term vector. He pointed out that a vector in science connotes both direction and magnitude. A vector's direction is not necessarily linear but may be more appropriately expressed as a spiral. Although vectors represent issues that have existed all along in a person's life, they come into prominence in a person's life at a certain time. Similar to developmental task, vectors represent life challenges in which the resolution can be positive or negative, and either way it can effect the resolution of future vectors.

Between the ages of 17 and 25, Chickering identified 7 vectors of development that are present in the lives of colleges students. These vectors in Chickering's theory are listed and summarized next.

Vector 1: Competence. According to Chickering competence has three components. Part one is intellectual competence which most educational institutions are devoted to developing. Part two is physical and manual skills which receive a limited focus in college, yet are of major concern to many non-

college persons. Part three is concerned with social and interpersonal competence. This area of competence is of critical concern to college students because it reflects abilities to listen as well as talk, to follow as well as lead, and to understand the concerns and motives of others as well as the ability to modify one's role in life. Finally, he discussed "a sense of competence" which he defined as "the confidence one has in his ability to cope with what comes and to achieve successfully what he sets out to do" (Chickering, 1969, p. 9).

Vector 2: Managing Emotions. In experiencing this vector students are challenged to become aware of their emotions and to perceive these emotions for what they are. After recognition they may begin to manage and control them as well as integrate them into decisions and behavior. Emotions around sex and aggression are two common areas of concern.

Vector 3: Developing Autonomy. This vector concerns itself with young adults learning to take the initiative, to be responsible for solving their own problems and to do so without excessive reassurance from friends and parents.

Vector 4: Identity. Chickering used the term identity to cover what he saw as the "major task for

young adults." He defined it as the reflective and integrative process of using data from the first three vectors to come to terms with a variety of issues such as acceptance of one's body, sexual orientation and knowing what kinds and levels of experience one prefers.

The first three vectors combine together detailing progress on identity development; the fourth vector provides the framework for the last three vectors, that of establishing a firm identity. Without resolution of the first three, there can be no progress on the next vectors.

Vector 5: Freeing Interpersonal Relationships. Emphasis here is on developing tolerance for a wider range of individual and ideological differences. The first task is to recognize, tolerate and finally to appreciate the differences. Relationships begin to shift toward greater trust, independence and individuality.

Vector 6: Developing Purpose. Development plans and priorities for the future is the focal point in this vector. A life plan incorporates vocational goals and avocational interests. Integration of these interests gives life both direction and meaning.

Vector 7: Developing Integrity. Integrity involves three overlapping stages: the humanizing of values, the personalizing of values and the development of congruence between values and behavior.

Chickering's vectors which college students face are more specific than Erikson stages. As a result, they provide a framework for mapping student programs designed for traditional aged students. Like Havighurst and Erikson, Chickering suggested a cumulative order, that is, the resolution of some vectors depends on those addressed previously. Chickering also carried forward the concept of developmental task and crisis.

Despite their specificity, Chickering's vectors remain generalizations. Individual differences within a selected population may lag behind or overrun his categories (Chickering, 1969). While Chickering discounted the absoluteness of vectors, he focused and developed some vectors more than others. For example, the developing purpose task is more detailed and concrete than integrity.

Another imbalance is apparent in Chickering's discussion of vectors (Knefelkamp, Widick, Parker, 1978). He emphasized the positive or favorable resolution of the vectors and rarely addressed

unfavorable or inadequate resolution. Also, he discussed each of the vectors with differing amounts of specificity and scope.

Operationalizing Chickering's Theory

Until 1974, the Omnibus Personality Inventory was the only readily available instrument for measuring some of Chickering's vectors. At that time, Prince, Miller and Winston (1974) published the Student Development Task Inventory (SDTI) which measured the dimensions of Developing Autonomy, Developing Mature Interpersonal Relationships and Developing Purpose. The SDTI employed Chickering's (1969) vectors and Havighurst's (1953) developmental task concept as the basis for assessing developmental status. The instrument consisted of items representative of behaviors indicative of certain developmental tasks. For example, students completing the SDTI were asked to answer true or false to items such as "I am satisfied with my ability to behave as a self-developed person" or "I have formulated a clear plan for getting a job." The items were presented in an objective and standardized format.

Revised in 1972, the SDTI-2 has 140 items that sample behaviors measured by sub-tasks which students (ages 17 to 23) can be expected to demonstrate when

they have successfully accomplished three broad developmental tasks. The tasks are Developing Autonomy, Developing Purpose and Developing Mature Interpersonal Relationships. Each task as described by the test authors (Winston & Miller, 1984) is outlined in the following section.

Task I/Developing Purpose: Students who develop purpose develop clear, realistic educational goals and understand the relationship between their educational study and other aspects of their life. Developing Purpose is divided into three categories subtasks: Educational Plan, Career Plans, and Life Plans.

Task II/Developing Autonomy: Students accomplishing this task are self-sufficient, realistically confident in their abilities to meet life's challenges and recognize the responsibilities to others and their community. Autonomy is composed of three subtasks: instrumental autonomy, interdependence, and independence.

Task III/Developing Mature Interpersonal Relationships: This task is characterized by relationships that may be described as open, respectful, honest and trusting (Prince, Miller & Winston, 1974). This task has subtasks of mature interpersonal relationships with peers, intimate

relationships with opposite sex, and tolerance.

The primary goal of the SDTI-2 is to stimulate college students to consider their progress in the three task areas of Developing Autonomy, Developing Purpose and Mature Interpersonal Relations. Although is primarily designed for this reason, its use as a research tool has been documented (Winston, Miller & Prince, 1979) and its reliability and validity was duly reported (Winston, Hackney, Hodges, Plokosnik, Robinson & Tusso, 1981). A review of SDTI-2 reliability, validity and other test construction findings will be presented in Chapter III.

Findings Reported on the SDTI-2

The SDTI-2 is one of the most frequently used instruments to measure Chickering's theoretical constructs. A recent Educational Resources Information Center search reveals that numerous dissertations and articles have been published since the instrument was developed. Some of these works are outlined in this section. Those works of particular interest are the ones that studied the SDTI-2 subgroups within a student population or within a classification type.

**Male students compared with female students
Developing Mature Interpersonal Relationships (MIR)**

Three studies found that males scored lower than female students on this scale. Women scored higher than men on the Tolerance subtask in a study by Hinz, Benton, Pollard and Jerrolds (1983). Women also scored higher than men on the MIR task in studies by Winston (1985) and Pollard, Benton and Hinz (1983). Further analysis by Winston (1985) found differences on only two subtasks Intimate Relations with Opposite Sex (IRS) and Tolerance (TOL).

Developing Autonomy Hinz, Benton, Pollard and Jerrolds (1983) and Turk (1982) found differences between male and female students. Female students scored higher than male students on Emotional Autonomy, and males scored higher than females on Instrumental Autonomy.

Marginally Prepared versus Regularly Admitted Freshmen

Pollard, Benton and Hinz (1983) and Hinz, Benton, Pollard and Jerrolds (1983) reported mixed results from investigations into marginally prepared students versus regularly admitted freshmen. In the first study regularly admitted students scored higher than marginally admitted, academically prepared students on Appropriate Educational Plans. The later study found

no statistically significant differences.

Athletes versus Non-Athletes

Scholarship athletes scored lower than non-athletes on the Educational Plans, Career Plans and Mature Relationships with Peers. These data should be interpreted cautiously since variables such as socioeconomic status, academic achievement and ability, all related to task accomplishment, were not collected.

Undecided and Decided Students

Gershman, Anchors, Dryfus and Robbins (1986) found that the Developing Purpose subtasks of the SDTI-2 discriminated between Arts and Science students who were decided and undecided about a college major as freshmen. They determined that those students who scored highest on the Developing Purpose subscales of the SDTI-2 were most frequently among the decided students. In further research Anchors, Gershman and Robbins (1987) found that the MBTI and the SDTI-2 could be used to determine differences among first year college students who chose three academic advising programs based on whether they were decided or undecided on a college major.

Other Studies

A number of studies have reported variations among groups on the Developing Purpose task. Returning, older nursing students scored higher than traditional aged nursing students on the Developing Purpose task (Bueche, 1984). Sophomore students who moved off campus during their second year scored higher than sophomore students who lived on campus (Miller, 1982). Students involved in one or more recognized student activities scored higher on the Developing Purpose task (Williams & Winston, 1985) than did those who were not involved. Senior students planning to attend graduate school had higher scores on Developing Purpose than did seniors who planned to enter the work force after graduation (Silver & Winston, 1981).

The Developing Purpose task scale can assist in discriminating between students based upon age, choice of residence, frequency of involvement in activities and educational aspiration.

The Developing Mature Interpersonal Relationships task was found helpful in understanding differences between students based on religion, race, socioeconomic class and academic major.

In a study (Itzkowitz, 1984) comparing freshmen from lower and lower-middle socioeconomic classes with

upper-middle and upper class students, the former scored lower on the Mature Interpersonal Relations subtask than did the latter. In the same study black, lower-middle and lower class freshmen enrolled in Midwestern colleges scored lower on the MIR than did a sample of predominantly middle class freshmen from southeastern colleges.

In other studies, freshmen who were active in practicing their religion scored higher on the Mature Interpersonal Relations subtask than those who were not active (Gatica, 1982). Senior psychology majors scored higher on the MIR than those majoring in business (Silver & Winston, 1981).

Research also has found many differences worth noting on the Developing Autonomy task. Freshman students from rural backgrounds scored higher on AUT than those from urban backgrounds (Gatica, 1982). Students who were actively involved in organized student activities scored higher than those who were not involved (Williams & Winston, 1985). Graduating seniors who planned to attend graduate school immediately after graduation scored higher than those students who were planning to work after graduation.

It is important to note that the SDTI-2 was developed for use as a tool to facilitate individual

student self-exploration and goal-setting as well as to serve as a research tool with groups of traditional aged college students. The results of the reports cited above reveal that the SDTI-2 can discriminate between groups with diverse cultural, ethnic, geographic and socioeconomic backgrounds.

Jung's Theory of Psychological Types

Carl Jung's theory of psychological types provided a means to integrate the concepts of individual differences and developmental tasks. Because it is a theory of individual differences, any application or modification can be easily adjusted to a student population.

Jung (1923) postulated, in his theory of psychological types, that what appears to be random behavior is in reality orderly and consistent. Differences between people derive from the ways in which people perceive and decide on things in their environment. Jung believed that the preference for a type was matter of individual disposition.

Jung (1923, p. xiv) said that his theory "provides a system of classification and a practical guide to a good judgment of human character." He did not intend for his method or theory of types to be used for fitting people into a system and merely giving them

advice accordingly. Believing that labeling people was like playing a parlor game, Jung maintained that his theory was "not a physiogomy and not an anthropological system, but a critical psychology dealing with the organization and delimitation of psychic processes that can be shown to be typical" (Jung, 1923, p. xv).

Two Attitudes

Jung in his theory (1923, p. 517) conceptualized two "attitude types" which he denoted by preferences for extraversion or introversion. Interest in the outer world of people and objects characterized extraverts from the introverts who focused on the inner world of ideas and concepts. The extraverted attitude is characterized by the flowing of psychic energy outward toward the world, with an interest in events, people and things. This results in a turning outward of activity, and a person who likes variety and action, preferring to do their mental work by talking to people. The introverted attitude is characterized by a flow of psychic energy inward, with subjectivity and inner responses the key to understanding the person. This results in a person who likes quiet and time to consider things and does their mental work privately before talking.

Four Basic Functions

Jung (1923, pp. 60-61) saw extraversion and introversion as two obvious peculiarities of human nature. In trying to classify the limitless variations in individual behavior, he distinguished four basic functions: sensation, intuition, feeling and thinking. He compared them to four points on a compass with intuition being opposite sensing and thinking being opposite feeling. About these functions he said, "Sensation (i.e., sense perception) tells you that something exists; thinking tells you what it is; Feeling tells you whether it is agreeable or not; and intuition tells you whence it comes and where it is going."

The functions of sensation and intuition referred to opposite ways of becoming aware of or perceiving stimuli in life. While sensing mediated the perception of physical stimuli either external or internal, intuition mediated perceptions in an unconscious way. Since perception was not something an individual rationally controlled Jung called the perceptive functions of sensing and intuition irrational functions.

The functions of thinking and feeling referred to opposite ways of deciding on what one perceived.

Thinking followed the laws of reason by arranging ideas according to concepts. Feeling involved giving a value to a something. Both of these functions were regarded as rational processes by Jung because reason governed them.

Type Development

According to Jung's theory, type knows no educational, societal or gender boundaries. Within society as a whole, types are distributed at random (Jung, 1923). Type is not static; as people develop, so do their preferences. Mary McCaulley (1977) summarized the dynamic nature of Jung's theory in the following manner.

In normal development, members of each type are motivated to use the processes they are disposed to prefer; through practice, they develop expertise in the activities for which their preferred processes are particularly useful. Skills and increased interests grow from "specializing" in preferred functions and lead to characteristic habits, attitudes and traits associated with type The theory allows for continued growth and development throughout life, as each type comes to greater appreciation of an command over functions which in early life were less interesting and less developed. (p. 14)

This 'specializing' results in a person becoming most familiar with and comfortable with one of the attitudes of extraversion or introversion, one of the perceptive functions of sensing or intuition and one of

the judging functions of thinking or feeling. Thus a person might be most comfortable and familiar with introversion as an attitude toward the world, a sensing perception and a feeling judgment. The attitudes of extraversion or introversion when combined with the four functions yield the eight types identified by Jung. They are as follows: four extraverted types, ES (extraverted/ sensing) EN (extraverted/intuiting), EF (extraverted/feeling), and ET (extraverted/thinking), and four introverted types, IS (introverted/sensing), IN (introverted/intuiting), IF (introverted/feeling) and IT (introverted/thinking).

In normal type development, after a dominant function has begun to be differentiated, a second function develops as an auxiliary or complementary function in order to provide balance. If the principle function is a perceptive one, such as sensation or intuition, then the auxiliary function is a judging one, such as thinking or feeling. If the principle function is a rational one, then the auxiliary function is an irrational one.

In further type development, a third function which is the opposite of the auxiliary begins to be differentiated. The last to develop is the opposite of the dominant function and never reaches complete

consciousness. As a consequence of the one-sided development of the dominant function, the others would develop to a lesser degree, hence the Jungian term "inferior functions." Jung continually stressed that type was dynamic and not static and that a person continued to grow and develop throughout life.

Operationalizing Jung's Theory

The Myers-Briggs Type Indicator (MBTI) is a 166 item forced choice instrument designed to measure Carl Jung's theory of psychological types. The MBTI was developed by Isabelle Briggs Myers to apply the Jungian type theory to career development. The MBTI was published in 1962 by the Educational Testing Service after years of development and testing. The growth of its use has been steady since its publication. Sales of individual answer sheets have exceeded over one and a half million per year by its current publisher, Consulting Psychologist Press.

Development of the MBTI

The MBTI went through an unusual and long period of development. The developers, a mother and daughter team of Katherine Briggs and Isabelle Briggs Myers, were students of human nature though not formally trained psychologists. Briggs devised a system with

six types which, according to Myers, "foreshadowed all the [Jungian] preferences except sensation-intuition" (Myers, 1962, p. 4). The team discovered an English translation of Jung's theory (1923), and from that time on their work was based on the theory of psychological types of Carl Jung (McCaulley, 1980).

While studying the works of Jung, Myers and Briggs concluded that Jung had alluded to a fourth dimension of preferred psychological functioning. In addition to the preferences of extraversion-introversion, sensation-intuition and thinking-feeling was an attitude scale which reflected a preference for judgment and perception.

The remaining preference is between perception and judgment as a way of life, a method of dealing with the surrounding world. Both must of course be used. But both cannot be used at the same time. So individuals alternated between the perceptive attitude and the judging attitude. And almost all people enjoy one attitude more than the other, find it more comfortable, feel more at home in it, and spend as much as their lives in it as is possible. (Myers, 1962, p. 58)

Briggs and Myers developed a paper and pencil test which could ascertain a person's type in accord with Jung's theory. They had accepted the Jungian premise that differences in human behavior were orderly and consistent resulting from individual preferences in the use of perception and judgment (Myers, 1962). Assuming

that people do differ systematically in their use of perception and judgment, they developed a self-report instrument to measure these differences.

In measuring the preferences, the MBTI divided individual differences in personality into four basic preferences, each providing two alternative choices. The result of these four preferences created 16 distinct personality types. The individual received a preference score that was based on the number of times they chose one preference over another. The type scores were then determined by one predominant mode in each of the four preferences. For example, an individual who expressed a preference for introversion, sensing, feeling and judgment would be an ISFJ type.

Considerable data exists on the construct validity of the instrument using variety of criteria as well as significant findings on validity in studies using external criteria (Ross, 1966; MacKinnon, 1965). A review of these studies is presented in chapter three.

Research and Practice in Higher Education

Literature about the MBTI in higher education is abundant. Some of the early studies were conducted by Isabelle Myers who studied medical student's MBTI type. Her research question concerned medical school students' choices of medical specialty. The students

took the MBTI as freshmen and were observed and studied throughout their careers (McCaulley, 1977 & 1978).

A comprehensive review of applications of the MBTI in higher education may also be found in an edited volume entitled Applications of the Myers-Briggs Type Indicator in higher education by Provost and Anchors (1987). The book presents both theory and application. The theories give a foundation and rationale for program models in various higher educational settings. The applications focus on individual student development, the consultation process, patterns of behaviors among a large group of students, and environmental issues. This material as well as all of the literature reviewed on individual differences and developmental theory provides the theoretical justification for this study.

CHAPTER III.
METHODOLOGY

This chapter describes the methods and procedures utilized in the selection of the sample as well as instrumentation and statistical analysis of the data.

Selection of the Sample

The University of Maine's Division of Student Affairs Research Committee reviewed the data collection process for this project. It concluded that the rights and welfare of the participants were adequately protected, that confidentiality of the data were assured and that informed consent was obtained appropriately.

Subjects in this study were students in the College of Arts and Science at the University of Maine, a land and sea grant institution with over 10,000 students. Out of approximately 1800 new freshman students each year, about one-half are Arts and Science students. The MBTI is administered routinely to the entire freshman class at the University of Maine. The results are used for assigning roommates, understanding and facilitating learning environments and a variety of other institutional projects. Students were mailed the MBTI (Form F) in the spring of 1983 and 1984 prior to

their attending the University. The SDTI-2 was administered to the freshmen in the College of Arts and Science during 1983 and 1984 for purposes of research and program evaluation. The SDTI-2 was administered at an orientation session held several days prior to school beginning.

Students were asked to take each instrument voluntarily and were told that the purpose was to assist with institutional research and for assigning roommates in the residence halls. Students were given the opportunity to learn about their results through a letter sent from their academic advisor or residence life office. All participants were approximately 18 years of age, lived on campus and were first-time university students in the College of Arts and Science. No significant numbers of either international or minority students were available for the testing. The sample consisted of a total of 472 students, or 25% of the all new Arts and Science freshmen during 1983 and 1984.

Instrumentation

The Myers-Briggs Type Indicator (MBTI) is a 166 item forced choice instrument designed to measure Carl Jung's theory of psychological types. According to Jung's theory, much of the variation in human behavior

is orderly and a result of basic differences in how people perceive the world around them and then make decisions on those perceptions. The MBTI divides these differences in personality into four basic preferences, each providing two alternative choices. These preferences are explained in the following summary.

Alternative Preference	affects individual's choice
Extraversion or Introversion E or I	whether perception and judgment are directed by external environment or internal environment
Sensing or Intuition S or N	which of two kinds of perception to rely upon: empirical-factual sensation (sensory) or situational possibilities (intuition)
Thinking or Feeling T or F	which of two kinds of judgment to rely on: logical-analytical (thinking) or affective-empathic (feeling)
Judgment or Perception J or P	whether to use the judging or perceptive attitude for dealing with the environment: a preference for structure

and closure or for
spontaneity and openness.
(adapted from Myers, 1962,
p. 63).

There are 16 personality types possible from these 4 sets of preferences. Individuals receive a preference score that is based on the number of times they choose one preference over another. The type scores are then determined by the one dominant mode in each of the four preferences. For example, an individual who expresses a preference for introversion, sensing, feeling and judgment would be an ISFJ type.

Reliability for the Myers-Briggs Type Indicator basically involves determining the chances of a person on retaking the indicator scoring the same type again and the likelihood that a person's preference will remain the same (Brown, 1970). Stated simply, the question is whether or not the MBTI will yield consistent and predictable results.

Researchers generally discuss reliability questions using two types of reliability for their testing. They are test-retest reliability and split-half reliability. Each of them will be discussed briefly.

Split-half reliability tests are designed primarily for use in questions of internal consistency. Items on the MBTI are paired for similarity to each other in terms of preference and difficulty. Consideration is given to the balancing of the halves by the expected number of responses. With the MBTI this exercise results in the development of two indicators of type being developed out of the questions commonly used for one indicator.

Reliability studies are presented in the original Myers-Briggs manual and are shown here in Table 1. They yielded split-half reliability coefficients (Pearson R's) exceeding 0.80 on all 4 preferences of more than 100 female and male college students (Myers, 1962). When data were reported on non-college populations, such as underachieving, non-prep high school students or gifted junior high school students, the split-half reliability on all preferences, except the T/F, range from .72 to .87. On the T/F preference the range for the non-college group from .44 to .87. The contrasts in groups may be due to reading level, vocabulary, motivation, and general differences in development. A relationship between achievement levels and reliability coefficients on the MBTI exists. These data suggest that when using the MBTI underachieving

Table 1. Split-Half reliability of the indices for various groups

	Sample Size	EI	SN	IE	JP
Males					
Jr. High School					
Gifted 7th-9th ¹	34	.85	.84	.81	.82
Under-achieving 8th ²	30	.80	.75	.44	.72
Sr. High School					
Mass. Non-prep 12th ³	100	.77	.70	.60	.79
Mass. Academic 12th	100	.79	.84	.76	.87
National Merit Finalists	100	.85	.86	.82	.89
College					
Brown	100	.81	.87	.86	.80
Females					
Jr. High School					
Gifted 7th-9th ¹	26	.81	.76	.84	.75
Sr. High School					
Mass. Academic 12th	100	.82	.80	.77	.88
Advanced 12th	37	.87	.85	.84	.94
College					
Brown	100	.82	.87	.83	.84

Note. The Myers-Briggs type indicator manual, 1962.

¹Gifted 7th, 8th, and 9th grades, 34 males and 25 females, with very high IQ's and rank of 95th percentile or better on all achievement tests taken, from special classes in Arlington County public schools (tested fall, 1961). From Richard G. Wiggin. Form F.

²Under-achieving 8th grade, 30 male students from Huntington School, San Marino, California, selected for outstanding mental ability but under-achieving. From Marian Price. Form D2.

³Mass. non-prep 12th grade, 100 male students, a random sample with each school in Mass. H.S. sample proportionately represented. Form F.

young people, the results should be viewed with caution. In addition, these data suggest that the T/F scale is less reliable than the other scales on the MBTI. Recent studies have yielded similar favorable correlations ranging from 0.82 to 0.86 in a large sample of more than 3000 male and female students at the University of Florida (McCaulley & Kainz, 1974).

Generally most test-retest assessments of the MBTI have examined characteristics of each of the four scales separately. Carlyn's (1977) review of the MBTI (Form F) literature through 1975 reported tetrachoric coefficients for split-half reliability ranging from 0.66 to 0.92 (1977). In this review, test-retest reliability studies indicated that type scores of college students appear to be reasonably stable over time. Carlyn did identify a problem with the test-retest reliability of the T/F scale whereas the correlation from test to test ranged from 0.45 to 0.91 on 11 studies. Since this scale measures whether a person has thinking or feeling judgment, it might be expected that this aspect of a person's type might be the most difficult or latest to develop. This scale is the least reliable of the four.

Table 10.2 from the MBTI manual gives a review of twelve studies on the internal consistency derived from

product-moment correlations of split-half continuous scores with Spearman-Brown prophecy formula correction. In reviewing the data, several patterns emerge. Reliabilities tend to be lower for individuals in their teen years, but stabilize from their 20s on. The sample on students in grade school and high school are reported in terms of postulated levels of achievement. Rural and underachieving students show much lower consistency in responses than do over-achieving or high achieving students. This is extended into other levels of education where college and university samples have higher reliabilities than the high school samples.

Table 10.5 of the MBTI manual (Myers & McCaulley, 1985) reveals test-retest reliability from 21 different studies on the MBTI. In summary, the test-retest reliabilities of the MBTI show consistency over time. If a change occurs, it is likely to occur on that preference where the original score is low.

While these studies yield important information of the predictability of the individual scales, the MBTI is primarily concerned with types. Thus the question becomes how likely is the person to come out the same type again if retested. In nine samples reported from the manual on Table 10.6 in which retest data on type categories are available on groups retested in

intervals from 5 weeks to 6 years, a range of 31 percent to 61 percent of the individuals fit into the same type on retest. From 10 to 22 percent had 2 preferences in common, and from 2 to 7 percent had only 1 preference the same on retest. Only one out of a total sample of 1444 persons changed on all 4 preferences (Myers & McCaulley, 1985). The lower a person's reported preference is the greater the chance of a change in reported preference.

The validity of the MBTI depends on whether or not it measures Jung's theory of psychological type as it claims. Construct validity studies involving predictions about specific types can be useful in determining the relevancy of the MBTI to Jung's theory.

Myers and Davis (1964) reported on a study of over 5300 medical students tested by Myers in the early 1950s and on a follow-up 12 years later after they had chosen their medical speciality. They reported that choices were significantly in the directions predicted by the theory and found in a later follow-up study that many physicians who changed their speciality had moved toward fields typical of their type (McCaulley, 1977).

In another study Carskadon (1979) requested that subjects who preferred extraversion and introversion on the MBTI give three minute talks before judges. He

found that extraverts stood closer to the judges, had less silence during their presentation, and remembered more of the judges names after the experiment.

Another source of validity information available on the MBTI is correlation with other scales of other instruments. The MBTI Manual reports 18 different studies of correlation with instruments beginning with the Adjective Checklist and ending with the Intolerance of Ambiguity Scale. The data presented in these studies show that the MBTI is related to variables such as personality measures, SAT performance, and the Edwards Personal Preference.

The MBTI is also correlated with another Jungian measure, the Jungian Type Survey which measures the same dimensions except the J/P scale. The correlations between these two instruments are moderately high and statistically significant (Myers & McCaulley, 1985).

The SDTI-2 developed by Winston, Miller and Prince (1972) was used to measure the accomplishment of developmental task. The SDTI-2 samples behaviors with 140 items that make up nine subtasks that the student (ages 17 to 23) can be expected to demonstrate when they have successfully accomplished three broad developmental tasks: Developing Autonomy, Developing Purpose and Developing Mature Interpersonal

Relationships. These scales are subdivided into three subscales: Autonomy is composed of Emotional Autonomy (EA), Instrumental Autonomy (IA), and Interdependence (ID); Purpose is subdivided into Educational Plans (EP), Career Plans (CP) and Life Plans (LP); and Mature Interpersonal Relationships is composed of Mature Relations with Peers (MRP), Intimate Relationships with Members of the Opposite Sex (IRS) and Tolerance (TOL). Except for the Tolerance subscale which contains 12 items, each of the subscales consists of 16 items. Because of the relatively low Cronbach Alpha Coefficients for some subtasks, the more reliable measures appear to be the total task scores (Winston, Miller & Prince, 1972). Consequently, this study will only concern itself with total task scores which are more reliable measures. Brief descriptions, adapted from Winston and Miller (1984), of SDTI-2 the each task follows.

Task I/Developing Purpose: Students who have developed purpose have developed clear, realistic educational goals and understand the relationship between their educational study and other aspects of their life. Developing Purpose is divided into three subtasks: Educational Plans, Career Plans and Life Plans.

Task II/Developing Autonomy: Students have accomplished this task are self-sufficient, realistically confident in their abilities to meet life's challenges and recognize the responsibilities to others and their community. Autonomy is composed of three subtasks: Instrumental Autonomy, Interdependence and Independence.

Task III/Developing Mature Interpersonal Relationships: this task is characterized by relationships that may be described as open, respectful, honest, and trusting. The subtasks include Mature Interpersonal Relationships with Peers, Intimate Relationships with Members of the Opposite Sex and Tolerance.

Reliability of the SDTI-2 according to the test-retest method range from 0.68 on MIR to 0.85 on Developing Purpose (Polkosnik, 1985). Other studies on test-retest correlations ranged from 0.64 (EA) to 0.87 (CP) on the subscales with a total test-retest correlation of 0.84 (Stonewater, Daniels, Hirschmidt, 1985). Comparisons of these independent studies suggest that the SDTI-2 has relatively consistent internal stability. It is important to note that a perfect test-retest correlation is unlikely since the questions reflect behaviors which students may be

addressing in their everyday lives. A summary of these internal consistency reliability estimates is available in Table 2.

Construct validity is the most relevant in establishing the validity of the SDTI-2. This was estimated in several ways: comparison of constructed groups such as active daters and non-daters, correlations with the Career Development Inventory and the Study Habits, Family Independence and Peer Independence scales from the College Student Questionnaire (Winston, Miller and Prince, 1979).

The SDTI-2 has contrasted groups and concurrent validity data. In one study, four contrasted groups were identified by residence hall staff members. These groups were active daters, non-daters, joiners and social isolates. The groups were used to validate the subscales of the developing mature interpersonal relationships scale. Joiners and active daters scored higher on the scale score than did the other two groups. In addition, the joiners also scored significantly higher than did the social isolates on the mature relationships with peers subscale, but not on the mature subscales. Active daters scored significantly higher than the non-daters on the

Table 2. SDTI-2 internal consistency reliability estimates

Task/Subtask	Coefficient Alpha		
	n=1153	n=234 ¹	n=344 ²
Developing Autonomy (AUT) Task	.77	.78	.68
Emotional Autonomy (EA) Subtask	.55	.51	.36
Instrumental Autonomy (IA) Subtask	.58	.63	.54
Interdependence (ID) Subtask	.71	.72	.68
Developing Purpose (PUR) Task	.84	.85	.84
Appropriate Educational Plans (EE) Subtask	.67	.65	.66
Mature Career Plans (CP) Subtask	.73	.76	.74
Mature Lifestyle Plans (LP) Subtask	.60	.48	.60
Developing Mature Interpersonal Relationship (MIR) Task	.73	.73	.74
Intimate Relationships with Opposite Sex (IRS) Subtask	.79	.78	.75
Mature Relationships with Peers (MRP) Subtask	.48	.49	.49
Tolerance (TOL) Subtask	.48	.45	.60
Total Inventory	.90	.90	.87

Note. Intercorrelations of the tasks and subtasks of the Student Development Task Inventory (second edition) (p. 22) by R. B. Winston Jr. and T. K. Miller, 1984. Unpublished raw data.

¹Winston, Miller and Prince, 1979. ²Stonewater, Daniels and Heischmidt, 1986.

intimate relationships with the opposite sex subscale but not on the other two subscales.

The concurrent validity studies used the College Student Questionnaire (CSQ) and correlated the Study Habits, Family Interdependence, and Peer Independence subscales as well as the Adult Form I of the Career Development Inventory with the SDTI-2. A significant but moderate correlation was found between the Study Habits scale and the Developing Autonomy subscale, Instrumental Autonomy subscale and the Developing Purpose scale. Family Independence correlated significantly but in the low moderate range with the Emotional Autonomy and Mature Career Plans subscales. Finally, the Peer Independence scale had a significantly low moderate correlation with the Emotional Autonomy subscale. All of these findings support the theoretically predicted direction of the SDTI-2.

The scales of the Career Development Inventory that measure Crystallization, Specification and Implementation all have significantly low moderate correlations with the Developing Purpose scale. The Implementation scale also correlated with the Developing Autonomy scale.

Table 3. Correlations of Personality Research Form and SDTI-2 tasks (n=86)

PRF Scales	SDTI-2 Tasks		
	AUT	PUR	MIR
Achievement (AC)	.52 ²	.54 ²	.28 ²
Affiliation (AF)	.22 ¹	.15	.16
Aggression (AG)	-.40 ²	-.27 ²	-.21 ¹
Autonomy (AU)	-.16	-.14	-.24 ¹
Dependence (DE)	-.32 ²	-.25 ²	-.21 ¹
Dominance (DO)	.42 ²	.37 ²	.20 ¹
Endurance (EN)	.50 ²	.43 ²	.21 ¹
Impulsivity (IM)	-.46 ²	-.37 ²	-.01
Nurturance (NU)	.41 ²	.28 ²	.57 ²
Order (OR)	.24 ¹	.17	.17
Social Recognition (SR)	-.15	-.13	-.22 ¹
Understanding	.33 ²	.29 ²	.11

Note. From A correlational study of the Student Developmental Task Inventory and the Personality Research Form by W. K. Burig, 1984. Unpublished manuscript. Reprinted in Intercorrelations of the tasks and subtasks of the Student Developmental Task Inventory (second edition) (p. 25) by R. B. Winston Jr. and T. K. Miller, 1984. Unpublished raw data.

¹p<.05. ²p<.01.

Another means of determining the validity of the SDTI-2 is to examine the internal structure of its constituent parts. Viewing scales as psychometrically independent enhances validity. This suggests that unique constructs are being measured, because the subscales do not correlate highly with the task scales.

The intercorrelation of the SDTI-2 Tasks and Subtasks are reported in Table 3. A review of this table reveals that AUT is rather highly correlated with both PUR ($r = .67$) and MIR ($r = .57$), PUR and MIR are only moderately correlated (0.36). This suggests that these measures are not independent of each other and that AUT may be related to both PUR and MIR.

Stonewater, Daniels and Heischmidt (1986) in a review of studies of reliability and validity, as well as in reporting their own findings, conclude that major difficulties with the SDTI-2 center on poor internal consistency on four of the nine subscales (EA, LP, MRP and TOL), poor correlations between the subscales within each scale, and influences of both gender and social desirability on TOL and MRP.

The concern of gender influences is echoed by Stonewater (1987) who found that a difference existed in the manner in which men and women perceived or responded to items on the SDTI-2. In summary,

Stonewater stated that the relationship of the factor study for men and women as it relates the three SDTI-2 tasks is weak at best.

Data Analysis

A wide variety of analysis is possible in this study. Methods have been chosen which will focus on the relationship between Jung's theory of Psychological Type and the accomplishment of developmental tasks. The exploratory nature of this study lends itself to testing the questions as follows.

Question 1: Is there a relationship between strength of MBTI score and the Developing Purpose task of the SDTI-2?

Hypothesis 1.1 to 1.4 Pearson correlation.

Question 2: Is there a relationship between strength of MBTI preference score and the Freeing Interpersonal Relation task of the SDTI-2?

Hypothesis 2.1 to 2.4 Pearson correlation.

Question 3: Is there a relationship between strength of MBTI preference score and Developing Autonomy task?

Hypothesis 3.1 to 3.4 Pearson correlation.

In interpreting the correlation coefficient of the MBTI with the SDTI-2 it will be necessary to convert MBTI results to continuous scores. Preference scores

were converted to continuous scores following a procedure outlined by McDaid (Provost & Anchors, 1987, pp. 257-269). I, N, F and P continuous scores were added to 100 to create preference scores greater than 100. E, S, T and J preference scores were subtracted from 100 resulting in 4 sets of continuous scores. The continuous scores have a linear progression of E to I, S to N, T to F and J to P. This procedure results in positive correlations being associated with I, N, F and P and negative correlations with E, S, T and J. A positive (+) correlation means a high score on SDTI-2 tasks goes with I, N, F and P on the MBTI while a negative (-) correlation means high task scores goes with E, S, T and J.

A significance level of 0.05 was set for all statistical tests. This is consistent with other correlational studies that have and are occurring with similar explanatory research.

Methodological Assumptions and Limitations

This study assumes that personality type and accomplishment of developmental task can be measured by the instruments selected. In addition, it is assumed that students were honest and objective in their responses to both instruments.

Data were not available on extraneous factors such as distance from home, academic major or parent's income. The study attempts to identify all the variables that might reflect the accomplishment of a developmental task.

CHAPTER IV.

RESULTS

The purpose of this study is to examine the relationship between personality preference and accomplishment of developmental task among traditional age college students.

Data were obtained from 472 students in the College of Arts and Science at the University of Maine through administration of the Myers-Briggs Type Indicator (MBTI) and the Student Development Task Inventory (SDTI-2). Students indicated their responses on NCS answer sheets which were electronically scanned and used to create the appropriate data file. The data were processed at the University of Maine Computer Center using routines from the Statistical Packages for the Social Sciences (SPSS). The data are described and analyzed in terms of the two instruments used.

Sample

Data were obtained in the fall of 1983 and 1984. The MBTI results are collected as part of a routine administrative practice described earlier. Approximately 98% of all students given the MBTI return completed answer sheets. The SDTI-2 testing was done as part of freshman orientation at the University of

Maine. During these two years all Arts and Science freshmen who were residing on campus were asked to participate in taking this instrument for the purpose of program design and evaluation. The students in this sample consisted of those who voluntarily attended the orientation session. As a result of both testing processes, complete data on both the SDTI-2 and the MBTI were gathered on 472 students, 220 of which were males and 252 females.

Permission to gather the data from students was obtained from the Student Affairs Research Committee at the University of Maine.

Description of the Subjects

Within the 472 students, 220 were male and 252 were female. All of these students were new freshmen, approximately 18 years of age, living on-campus.

The subjects are described by a review of the intercorrelations between the SDTI-2 tasks and the MBTI preferences and by a review of the means, standard deviations, and ranges on each instrument.

Intercorrelations of MBTI Preferences

Table 4 shows the intercorrelations of the MBTI preferences.

Table 4. Pearson intercorrelations for MBTI preferences ($n = 472$, male = 220, female = 252)

	E/I	S/N	I/E	J/P
E/I				
Total		-.05040	-.19620 ¹	-.07802
Male		-.07747	-.15164 ¹	-.06556
Female		-.03182	-.21727 ¹	-.08582
S/N				
Total			.2069 ¹	.4299 ¹
Male			.21905 ¹	.46142 ¹
Female			.20767 ¹	.40300 ¹
T/F				
Total				.1642 ¹
Male				.2052 ¹
Female				.12841
J/P				
Total				
Male				
Female				

¹ $p < .01$.

² $p < .05$.

Table 4 indicates that EI, SN, TF and JP tend to be independent of each other. SN and JP have a low positive correlation. Sensing types are more likely to be J, and intuitive types are more likely to be P. Myers and McCaulley (1985) believed that the positive correlations between the S/N and J/P preferences might support Jung's theory on which the MBTI rests. The theory posited that individuals with a sensing preference typically prefer to rely on past experience and do not like unexpected events. Individuals with an intuitive preference, on the other hand, are attracted to the possibilities of the future. These results are borne out by the data on 18 to 20 year olds reported in the MBTI manual.

MBTI descriptive data

The MBTI means in Table 5 show that when type continuous score means are calculated, the preferences toward extraversion, sensing, feeling and perception are the strongest. This preference pattern has the same general direction reported by Myers and McCaulley (1985) in her study of fifteen institutions of higher education across the country.

Table 5. Myers-Briggs Type Indicator continuous score means and standard deviations ($n = 472$, male = 220, female = 252)

Preference	Mean	Standard Deviation	Range
E/I	96.23	25.50	47 to 159
Male	95.48	26.33	47 to 159
Female	99.70	26.72	47 to 159
S/I	97.49	24.20	35 to 151
Male	98.47	24.65	39 to 151
Female	99.06	24.55	35 to 151
T/F	107.87	20.45	43 to 149
Male	110.05	19.28	51 to 147
Female	105.19	22.45	47 to 145
J/P	107.49	25.07	45 to 161
Male	106.99	26.78	45 to 159
Female	105.45	24.29	55 to 159

Note. I, N, F and P preference scores were added to 100 to create preference scores greater than 100. E, S, T and J preference scores were subtracted from 100, resulting in 4 sets of continuous scores. The continuous scores have a linear progression of E to I, S to N, T to F, and J to P.

Table 6 shows that student preferences in this sample are consistent with the general direction of the Arts and Science College, as well as the 1983 and 1984 freshman class at the University of Maine. Preferences for Extraversion, Feeling and Perception are reported most frequently in this sample with Sensing and Intuition equally prevalent. A chi-square analysis

comparing the sample with the total Arts and Science freshmen enrollment reveals that students reporting a preference for Introversion, Thinking and Judgment are over-represented.

Table 6. Percentages reporting MBTI preferences
(n = 472, male = 220, female = 252)

GROUP	E/I	S/N	I/E	J/P
Total Sample	54% E	51% N	67% F	60% P
Males	59% E	51% N	70% F	62% P
Females	51% E	50% N	65% F	58% P
Arts and Science Freshmen	57% E	51% N	73% F	66% P

Note: The percentages above were obtained from testing results collected in 1983 and 1984 from freshmen at the University of Maine. These students lived on campus and were administered the MBTI.

SDTI-2 means, standard deviations and ranges

Means are calculated for each task of the Student Development Task Inventory for males, females and the total group. These results are found in Table 7. These results are similar to that reported in the SDTI-2 manual on Developing Purpose and Autonomy. The reported scores for females in the manual, however, were higher than the scores for males by two points (significant at the .01 level) on the Mature Interpersonal Relations task.

Table 7. SDTI-2 means and standard deviations
($n = 472$, male = 220, female = 252)

	Mean	Standard Deviation	Range
Developing Purpose			
Male	22.57	7.57	5 to 41
Female	22.88	7.41	5 to 40
Total	22.73	7.49	5 to 44
Autonomy			
Male	25.47	6.16	9 to 42
Female	24.71	6.18	8 to 39
Total	25.07	6.18	14 to 42
Developing Mature Interpersonal Relations			
Male	29.56	5.87	11 to 40
Female	28.76	5.61	13 to 41
Total	29.13	5.74	11 to 41

Intercorrelations of SDTI-2 tasks

The intercorrelations of the SDTI-2 are shown in Table 8. The high intercorrelations among the tasks means that they cannot be seen as entirely independent measures. These intercorrelations are similar in direction and magnitude to those reported by Winston, Miller and Prince (1979).

Correlational Results

The hypotheses presented in this study are tested by the use of a Pearson's correlation coefficient. The level of significance chosen is .05 for all statistical analyses. The remainder of this chapter interprets the results of the test hypotheses.

Table 8. Intercorrelations of the SDTI-2 tasks
($n = 472$, male = 220, female = 252)

	Developing Purpose	Autonomy	Developing Mature Relations
Developing Purpose			
Male	x	.5446 ¹	.2889 ¹
Female	x	.4534 ¹	.30820 ¹
Total	x	.4940 ¹	.2910 ¹
Autonomy			
Male	x	x	.4416 ¹
Female	x	x	.1279 ²
Total	x	x	.280 ¹
Developing Mature Relations			
Male	x	x	x
Female	x	x	x
Total	x	x	x

¹ $p < .01$.

² $p < .05$.

Correlational Results

The hypotheses presented in this study are tested by the use of a Pearson's correlation coefficient. The level of significance chosen is .05 for all statistical analyses. The remainder of this chapter interprets the results of the test hypotheses.

Hypothesis 1

Hypothesis 1.1 to 1.4 states that no statistically significant relationship exists between the strength of four MBTI preferences and the SDTI-2 Developing Purpose

task. Correlations, which were run using the Statistical Packages for Social Sciences program, were obtained for both sexes and for the total sample.

In the total sample, Table 9 shows a significance in seven out of twelve of the possible correlations. As the scores for the Developing Purpose task increase, the continuous score for the MBTI preferences of Extraversion and Judgment decreases. Only to the Thinking/Feeling preference is a relationship with the Developing Purpose scale found with female students. As Developing Purpose scores increase for females, the continuous score on the MBTI scale of Thinking/Feeling decreases toward the Thinking end resulting in a negative correlation.

Table 9. Correlations of MBTI preference and SDTI-2 Developing Purpose task
($n = 472$, male = 220, female = 252)

	Total	Male	Female
E/I	-.2743 ²	-.1852 ²	-.3579 ²
S/I	.0418	.0411	.04122
T/F	-.0708	-.0078	-.1162 ¹
J/P	-.1409 ²	-.1299 ²	-.1508 ²

¹ $p < .05$.

² $p < .01$.

Thus, hypotheses 1.1, 1.3 and 1.4 can be rejected once they are qualified by the statements made above for gender as a moderating variable along the Thinking/Feeling preference.

Hypothesis 2

Hypothesis 2.1 to 2.4 states that no statistically significant relationship exists between the four MBTI preferences and the Freeing Interpersonal Relations task of the SDTI-2. Correlations, which are shown in Table 10, reveal statistically significant results between the Extraversion/Introversion scale and the Thinking/Feeling scale. As scores for the Freeing Interpersonal Relations task increase, the continuous scores decrease toward Extraversion and increase toward Feeling. This occurs for males, females and the total group.

For males, the S/N scale was found to be statistically significant. As student scores on the task increase, the S/N continuum also increase toward the Intuition preference.

Hypothesis 2.1 to 2.3 are rejected.

Table 10. Correlations between MBTI preferences and STDI-2 Freeing Interpersonal Relations task
($n = 472$, males = 220, females = 252)

	Total	Females	Males
E/I	-.3923 ¹	-.3724 ¹	-.4077 ¹
S/N	.1147	.0549	.1852 ¹
T/F	.2375 ¹	.2713 ¹	.1835 ¹
J/P	.0409	.0477	.0303

¹ $p < .01$.

Hypothesis 3

Hypothesis 3.1 to 3.4 states that statistical significance relationship exists between the four MBTI preferences and the SDTI-2 Developing Autonomy task. Again a Pearson correlation is used to indicate statistically significant results on all four preferences for the entire population. As student scores on Developing Autonomy increase, the MBTI continuous score decreases toward the extraversion end. This occurs for both males and females.

As the Developing Autonomy task increases, the Thinking/feeling continuous score decreases toward Thinking. This result occurs for females only and is found in the total group.

Table 11. Correlations of MBTI preferences
and SDTI-2 Developing Autonomy task
($n = 472$, males = 220, females = 252)

	Total	Females	Males
E/I	-.2527 ¹	-.2138 ¹	-.2905 ¹
S/I	.0586 ¹	-.0070	.1380 ¹
T/F	-.1000 ¹	-.1938 ¹	.0066
J/P	-.1194 ¹	-.1572 ¹	-.0844

¹p <.01.

On the Judgment/Perception preferences significant results are found for females and the the total sample. As the score for Developing Autonomy increases the continuous score for Judgment/Perception decreases toward the judgment end for females.

All hypotheses are rejected.

Additional Analysis

Since regression can be used for analyzing functional relationships among independent variables, a stepwise multiple regression analysis was performed for each SDTI-2 task with gender being used as an independent moderator variable.

A coefficient of multiple correlation of .3467 and coefficient of multiple determination of .1127 resulted when all the independent variables, including gender,

were used with Autonomy. Table 12 presents a summary of the findings. All independent variables, except gender, contributed significantly to the prediction of accomplishment of Autonomy. The EI preference variable, loaded first, accounted for 6% of the variance. The TF variable, loaded second, contributed 2% of additional unique variance. The JP preference, loaded third, added 1% additional variance. The SN preference, loaded last, accounted for an additional 1% of the variance.

Table 12. Summary of results of stepwise regression for predicting Autonomy tasks with MBTI preference and gender as predictors
($n = 472$, males = 220, females = 252)

Variable	Multiple R	Multiple RSQ adjusted	Increase in RSQ
E/I	.2527	.0619	.0639
T/F	.2957	.0833	.0233
J/P	.3178	.0952	.0138
S/J	.3467	.1127	.0192

On the Mature Interpersonal Relations task, a coefficient of multiple correlation of .4251 and a coefficient of multiple determination of .1772 resulted when all independent variables, including gender, were used in a stepwise regression. Table 13 provides a

summary of the two variables that contribute to the dependent variable. The EI variable, loaded first, accounted for 15% of the variance. This was followed by the TF variable, which accounted for 2% of additional unique variance.

Table 13. Summary of results of stepwise regression for predicting Mature Interpersonal Relations task with MBTI preference and gender as predictors
(n = 472, males = 220, females = 252)

Variable	Multiple R	Multiple R ² adjusted	Increase in R ²
E/I	.3923	.1521	.1539
T/F	.4251	.1772	.0268

On the Developing Purpose task, a coefficient of multiple correlation of .3579 and a coefficient of multiple determination of .1207 resulted when all independent variables, including gender, were used in a stepwise regression. Table 14 provides a summary of these findings. Again with the exception of gender, all independent variables contributed to the prediction of Purpose task. The EI variable, loaded first, accounted for 7% of the variance. This was followed by the JP variable, which accounted for .0265 of additional unique variance. Third in loading was the SN variable, adding 1%, followed by the TF variable

accounting for an additional 1% of the variance.

Table 14. Summary of results of stepwise regression for predicting Purpose task with MBTI preference and gender as predictors
(N = 472, males = 220, females = 252)

	Multiple R	Multiple RSQ adjusted	Increase in RSQ
E/I	.2743	.0733	.0752
J/P	.3190	.0979	.0265
S/N	.3367	.1077	.0117
T/F	.3579	.1207	.0147

CHAPTER V.

SUMMARY AND DISCUSSION

This research explored the relationship between individual differences and accomplishment of developmental tasks among college freshmen. Individual differences were elucidated by the four preferences of the Myers-Briggs Type Indicator, and developmental tasks were described by those contained in the Student Development Task Inventory II. The comparison of difference and development, or preference and task, was limited to MBTI scores on Extraversion/Introversion, Sensing/Intuition, Thinking/Feeling and Judgment/Perception scales and to SDTI-2 task scores on Developing Purpose, Freeing Interpersonal Relations and Developing Autonomy.

The data from these two testing instruments were collected from 472 Arts and Science freshman students at the University of Maine during 1983 and 1984 academic years. Data were then correlated for all three research research questions. The independent variables were the four MBTI preferences. The dependent measures were the three SDTI-2 developmental tasks. Gender was a moderator variable. In interpreting the correlation coefficient of the SDTI-2

and MBTI, a negative (-) correlation meant that as the continuous scores for INFP decrease, the SDTI-2 task scores decrease. A positive (+) correlation meant that as the preference for EST and J increase, the SDTI-2 scores increase.

Limitations of Study

The SDTI-2 scores and MBTI distributions compared favorably with results for freshmen at other medium-sized rural state universities. The self-report nature of each instrument, as well as any significant effect created by mood or administrative testing conditions, were not discovered. The research findings hold generally valid for other similar institutions.

This study was informed by current scholarly and practical understandings of both theories and testing instruments. Type preference as a concept was viewed as a continuum. SDTI-2 did not measure development, but accomplishment of developmental task. Any generalization must be made within the context of these limitations.

Evaluation of Hypotheses

The correlations revealed a relationship between task accomplishment and certain MBTI preferences. Consequently, the following hypotheses were rejected.

Hypothesis 1.1 No statistically significant relationship existed between the Extraversion/Introversion preference and the Developing Purpose task.

Hypothesis 1.3 No statistically significant relationship existed between the Feeling/Thinking preference and the Developing Purpose task.

Hypothesis 1.4 No statistically significant relationship existed between the Judgment/Perception preference and the Developing Purpose task.

Hypothesis 2.1 No statistically significant relationship existed between the Extraversion/Introversion preference and the Freeing Interpersonal Relations task.

Hypothesis 2.2 No statistically significant relationship existed between the Sensing/Intuition preference and the Freeing Interpersonal Relations task.

Hypothesis 2.3 No statistically significant relationship existed between the Feeling/Thinking preference and the Freeing Interpersonal Relations task.

Hypothesis 3.1 No statistically significant relationship existed between Extraversion/Introversion preference and the Developing Autonomy task.

Hypothesis 3.2 No statistically significant relationship existed between Sensing/Intuition preference and the Developing Autonomy task.

Hypothesis 3.3 No statistically significant relationship existed between the Feeling/Thinking preference and the Developing Autonomy task.

Hypothesis 3.4 No statistically significant relationship existed between Judgment/Perception preference and the Developing Autonomy task.

In summary, ten out of the twelve hypotheses were rejected when gender was used as a moderator variable. Extraversion was significantly correlated for both males and females with all three tasks, that is, Developing Autonomy, Developing Mature Interpersonal Relations and Developing Purpose tasks. For males, Intuition was correlated with Mature Interpersonal Relations and Autonomy. Thinking was correlated significantly with the Developing Autonomy and Purpose tasks for females only. A preference for Feeling was related to Developing Mature Interpersonal Relations task for both sexes. Judgment was found to be relative for Purpose for both sexes and Autonomy for females. A summary showing the direction of these correlations is presented in Table 1.

The data analyses indicate clearly that MBTI preferences and SDTI-2 tasks were statistically related at the .01 level, with the exception of Purpose for females at a .05 level. Furthermore, gender and preference were related for all three hypotheses.

These results support Chickering's statement that "students differ in significant and fundamental ways" (1969, pp. 306-7). Any quantitative exploration, such as the present study, illuminates Chickering's contention for practitioners in student services and for students of typological and developmental theories.

Table 15. Summary of direction of correlation of MBTI and SDTI-2

	Developing Purpose	Developing Autonomy	Freeing Interper- sonal Relations
Male	E - - J	E N - -	E N F -
Female	E - T J	E - T J	E - F -
Both Genders	E - - J	E N T J	E - F -

Related Literature

Hypothesis 1.1, 1.3 and 1.4

In Hypothesis 1.1 and 1.4, the correlations of MBTI preferences and the SDTI-2's Developing Purpose task were consistent with many of the findings about the theories on which the SDTI-2 and MBTI are based. It is clear that Extraversion and Judgment are related for both sexes to Developing Purpose.

A number of researchers found similar patterns. In her research on medical students, McCaulley (1981) found that students with a combination of Extraversion and Judgment were over represented among those medical professionals who knew they wanted to be a doctor as early as ages 10 to 13. Otis (1972) found that students who made early decisions about medical specialties had preferences for E, S, T and J. Anchors (Provost and Anchors, 1987) linked preferences to decision-making styles. In this paradigm, EJ preferences were described as decisive, confident, enjoying closure and making things happen, while IPs were described as having a reflective, adaptive style. In a sample of 186 females, Extraverts were described as behaving in an assertive fashion and having a rapid tempo.

In a study of 106 males and 103 females Brooks and Johnson (1979) used the Adjective Checklist (ACL) and asked students to describe themselves. Students with a Judging preference significantly selected adjectives such as realistic, efficient, stable, moderate, organized, planful and thorough. Many of these adjectives were used to describe the MBTI preference of Judging (Page, 1983).

Winston, Miller and Prince (1979) showed a statistical relationship between the Developing Purpose task and Crystallization, Specification and Implementation stages on the Career Development Inventory. Developing Purpose again was linked to a decisive stage, an orientation toward closure toward career plans.

Hypothesis 1.3 was rejected for females with a statistically significant correlation toward Thinking on the Purpose scale. No MBTI related studies were found. Only one study of this task reviewed detected differences between men and women on the Developing Purpose scale. Gatica (1982) found freshmen women scored higher than freshmen males on this scale.

Hypothesis 2.1, 2.2 and 2.3

Statistically significant results occurred between Developing Mature Interpersonal Relations task and the

Extraversion and Feeling scales for both sexes. This is consistent with much of the research which validated each instrument.

Students characterized as having Mature Interpersonal Relations form relationships with peers and authority figures that may be described as open, respectful, honest and trusting. High scores on this task have been associated with high scores on Achievement, Dominance, Endurance and Nurturance. Winston (1985) and Pollard, Benton and Hinz (1983) found female students scored higher than men on this task. In this study, females scored three-quarters of one percent higher than males scored.

In Jung's theory of types, Extraversion is viewed as an outward attitude of energy flowing to the environment. This outward flow of energy is manifested in statistical relationships between Extraversion and leadership, dominance, assertiveness, enterprising and capacity for status. The MBTI manual (Myers & McCaulley, 1985) reported significant correlations with these scales on other instruments which ranged from $-.77$ to $.40$.

The Feeling preference, which Jung associated with care or concern for people, interpersonal warmth and communication, has a trusting rather than a skeptical

approach in decision-making. This relationship was evident in the correlations ($r = .40$ to $r = .55$) with measures for concern for others, including nurturance, succorance and social service. Scales concerned with interest in people including affiliation and sociability also were statistically correlated with the Feeling preference.

For males, Hypothesis 2.2 was rejected resulting in a correlation of Intuition and the Mature Interpersonal Relation task. On review of the literature, this relationship is difficult to explain and likely would not be predicted.

Hypothesis 3.1 to 3.4

As scores on the Developing Autonomy task increased, the continuous scores decreased toward the Extraversion end of the scale for both sexes. Thinking and Judgment correlated for females and Intuition of males on this task.

High scorers on this task do not depend on peers, authority figures or parents for continual approval and reassurance. They have redefined the nature of relationships with parents by moving from child-parent to adult-adult relationships seeing parents realistically as fallible people with both strength and weaknesses.

Table 3 in chapter 3 of this study showed 10 scales on the Personality Research Form to be statistically significant with the Developing Autonomy task of the SDTI-2. The scales were Achievement ($r = .52$), Affiliation ($r = .22$), Aggression ($r = -.40$), Dependence ($r = .32$), Dominance ($r = .42$), Endurance ($r = .50$), Impulsively ($r = -.46$), Nurturance ($r = .41$), Order ($r = .24$) and Understanding ($r = .33$). This suggested that high scorers on the Autonomy task could be described as those who aspire to accomplish difficult tasks, who do not give up quickly, and who are willing to put forth effort to attain excellence.

Most studies on this task have found no statistical differences between men and women on the Developing Autonomy task. However, Gatica (1983) did discover differences in freshmen from urban and rural background, with the latter scoring higher than the former on this task.

Research on the Extraversion dimension has shown correlations with a sense of comfort in the environment. These correlations, ranging from $r = -.77$ to $r = .40$ were demonstrated by names such as self-regard, self-acceptance, self-confidence, social adjustment, well-being, stability or ability to face reality, ego-strength and personal integration.

The Thinking preference was associated with logical, skeptical approaches to problems, as well as a coolness or distance in interpersonal relationships among women only. Some personality characteristics related to Thinking were Achievement, Assertiveness, Masculine Orientation, and Autonomy on the Edwards Personal Preference Inventory (Myers & McCaulley, 1985).

Characteristics associated with the Judgment preference were decisiveness, desire for control, order dependability and conscientiousness. Correlations with other instruments, which link these characteristics with a definition of autonomy, range from $r = -.59$ to $r = -.40$.

This research showed that MBTI preference and gender affected a person's score on Autonomy. While the scores for both sexes resulted in a correlation of Extraversion and Developing Autonomy, females showed a correlation for Thinking and Judgment and males showed one for Intuition. A search of the literature revealed no explanation for these findings for males. Current (Gilligan, 1982) literature suggested that males may display more autonomous actions in everyday behavior. The MBTI preferences, except for Extraversion, differentiate on the accomplishment of Autonomy by

gender. Females with a Thinking/Judging preference tend to accomplish greater task behavior in this area. These results differ from Gilligan's findings (1982) which strongly suggest that Autonomy as a life task for females usually is not associated positively with female development. This research suggested that considerable individual differences existed among females, especially those with a preference for Thinking and Judgment.

Summary

This study's correlation of preference and task has, when viewed along side other studies, predictable results. For example, one would expect to find a relationship between Extraversion, which involves action in the outer world, and a high score on Developing Purpose, which involves formulating goals and taking action. Both instruments' scales measure different concepts but share common, associated and predictable characteristics.

Despite this common ground between the SDTI-2 and the MBTI, these instruments can be merged only with caution. The exercise is similar to comparing apples and oranges. When comparing two fruits, or two instruments, the hybrid results need always be tempered by the nature, terminology, capability, and theoretical

origin specific to each instrument. For example, the SDTI-2 is a checklist of behaviors that suggests accomplishment of a particular developmental task. The checklist, developed using a sample from a white, middle-class milieu (Archer, 1976), does not account for other class, cultural or psychological characteristics.

An underlying assumption in the SDTI-2 is that accomplishing these tasks implies a higher level of personal development. It is proposed by some Jungians (Grant, 1983) that different types might accomplish tasks at different times in their lives and in different styles. In fact it is suggested that there may be a different path of adult development for each MBTI type. This perspective flies in the face of the assumptions on which the SDTI-2 was constructed.

Undoubtedly, different patterns of task accomplishment exist for different students depending on their preferences. Although type preference may be related to overall task accomplishment level for an individual, the accomplishment of developmental task is far more complex than can be measured by one theory or instrument.

According to developmental task theorists (Havighurst, 1972; Erikson, 1963), life is divided into

periods marked with a concern and need to accomplish developmental task. The statistical results of this research show that type preferences may indicate which individuals are in or out of sequence, that is, who will accomplish task at the suggested time.

This study supports the hypothesis that individual differences exist beyond traditional models of student development. It demonstrates that gender is a primary contributing variable in understanding accomplishment of developmental task.

Findings from this study as well as others (Stonewater, 1987) suggest that those who use the SDTI-2 should exercise caution when forming generalizations for groups consisting of males and females. Although individual items can be used in generating goals, care should be used in assuming the instrument measures task accomplishment in the same way for both sexes and all MBTI preferences.

This study points to the additional need to incorporate psychological type, or other models of individual differences in understanding.

Implications

For Theory

The accomplishment of developmental task as measured by the SDTI-2 can be viewed best within a

multi-faceted perspective. Gender and MBTI preference help delineate some complexities that are fundamental to the development of theories of human behavior. Merging the SDTI-2 results along with another instrument provides a student profile that is theoretically richer and more complete. That is, understanding the MBTI preferences, their relationship with SDTI-2 scales suggest a model or theory of behavior that is more complete.

This has potential for enhancing knowledge and understanding of the theory behind the SDTI-2 and MBTI. Jung's theory as operationalized by the MBTI can be validated by parts of this study. For example, the Developing Purpose correlations with E and J are consistent with validation studies for the MBTI. Chickering's theory needs to be understood as experienced qualitatively different depending on gender and MBTI preference. His theory is limited by the context in which it was developed, and needs to be expanded to consider individual differences.

Future research on this sample and the internal consistency of the T/F scale may suggest other reasons for the correlation of T with Developing Purpose for females as well as F with Mature Interpersonal Relations for males. Scoring the word pairs and word

phrases separately for females might provide additional insight into reasons for the correlation of T with Developing Purpose and Autonomy. It is hypothesized (Myers & McCaulley, 1985) that the word phrases might reflect social situational responses and word pairs the type. Comparing results on this analysis might provide further information for theory development on gender difference and task accomplishment. The merging together of different models with diverse theoretical perspectives can best explain these individual differences and serve as a useful guide to hypothesizing further different student development theories. This is particularly true for the issue of gender.

For Practitioners

The challenge for student personnel professionals in higher education is to create an array of program alternatives attuned to the diversity of individual differences and particular needs of students. To meet this challenge, professionals will need to creatively design diverse programs recognizing these individual differences. Diverse perspectives should be used to guide practitioners' work. For example, professionals in career development can use the findings of this research to understand the students who are using their

services and how these students' styles and behaviors relate to career planning.

Programs and approaches with students in a career decision-making course might vary depending on the students' MBTI preference. Students with EJ preferences might be dealing issues of career foreclosure, while IP students might need to be taught decision-making models to help them come to closure. In addition, a knowledge of MBTI preference might prove useful in understanding and predicting the of time to complete a course of study.

University counselors and psychologists can use these findings to develop approaches to behavior that reflect some of the complexities of human behavior. For example, understanding the interrelationship of MBTI and SDTI-2 could be helpful in dealing with a student who has a Thinking preference and is experiencing interpersonal problems. Thinking students who have difficulty dealing with relationship issues involving trust, respect and openness might be encouraged to become more aware of the subjective dimension of relationships, focusing on the development and classification of values. Through personal counseling of these students might be encouraged to express their emotions and to assist them in gaining

respect for differences.

Of particular concern to practitioners is the consistent correlation of Extraversion with all three tasks. Practitioners need to be cautioned that Extraversion is not equivalent to good development, or to task accomplishment. With more than 70% of the general North American population reporting this preference, it is no surprise that these students might be reported or described more positively than introverts. In this writer's opinion, the SDTI-2 is biased against introverts. The concepts of developmental task as measured by the SDTI-2 need to be expanded with consideration for type theory. An analysis of SDTI-2 items might reveal an attractiveness of certain questions to students of particular preferences.

Replicating this study with the revised Student Development Task and Lifestyle Inventory (Winston & Miller, 1987) might prove to be interesting and reveal findings different from this study. The new SDTLI has been revised with some consideration given to type bias in items. This critique was requested by Winston and Miller as part of the revision process, and it was provided by this author.

For practitioners this study clearly points to the need to combine gender with MBTI preference in understanding Chickering's theory. This is particularly true for females with a Thinking preference on the Autonomy and Purpose task. Women with this preference might be perceived as more mature through male views of development. This research, however, suggests that practitioners might benefit from using instruments that are minimally effected by the person's MBTI preference on T or F and gender. Practitioners should use the information in this research cautiously, since few correlations exceeded .35 (positive or negative). The slight relationships reported have meaning statistically, especially in suggesting avenues for further research. The statistical results have little practical application.

Future Research Studies

Additional studies suggested by the results of this research are many. One area is a follow-up on the original students in this study which would reveal differences in how they have changed over time in their accomplishment of developmental tasks. Do differences in accomplishment of developmental task continue on into later years, beyond graduation? Is there a pattern to any differences in accomplishment?

Another question to ask is the reliability of using certain MBTI preferences to predict developmental task accomplishment. Where will overall personality types (ISFJ) fit into this equation? What results would be found if only dichotomous (letter) scores were used?

In this study, research was limited to individual differences in relation to MBTI and SDTI-2 scores. More can be gained from expanding differences to include other factors such as academic preparation, high school involvement, and other traditional admissions information?

Using other measures of Jungian typology, would we find the same results in other correlational studies? Specifically, would the Gray-Wheelwright or Singer-Loomis instrument reveal similar results?

Conclusion

The groundwork has been laid for further systematic investigations of the topic. This study has shown that combination of type and task accomplishment can delineate some of the complexities that are fundamental to human behavior. Larger data banks, additional use of other instruments and developmental theories, and other information about students can be

combined to conduct research that furthers the understanding of individual differences.

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