Personality Type and Self-Directed Learning

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Abstract

This correlational study was designed to investigate the relationship between self-directed learning and personality type. A sample of 133 graduate and undergraduate education students completed the MBTI and the SDLRS. Two hypotheses were examined: (a) scores on the intuitive scale will account for a significant amount of the variance in the prediction of self-directed learning readiness and, (b) scores on the introverted scale will account for a significant amount of the variance in self-directed learning readiness. Stepwise multiple regression analyses indicated that psychological type accounts for 28% of the variance in self-directed learning. Support for the first hypothesis was found with 15% of the variance in self-directed learning accounted for by intuition. The second hypothesis was not supported. Introversion accounted for 13% of the variance but in a negative manner. Results of this study indicate that personality type does influence the ability of the learner to be self-directed in studies. These findings add another dimension for the adult educator to consider when attempting to develop self-directedness in learners.

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CHAPTER ONE

AN INTRODUCTION TO THE STUDY

The Problem

A university professor recently conducted an introductory course in adult education for master of education students. Learners were exposed to self-directed learning through theory, through classroom experiences and through the instructor acting as a model. At the end of the program, evaluation sheets were completed by the learners and handed in to the instructor. At least one of the learners was adamant that the methods used were not satisfactory. The question asked was, "Why couldn't the instructor just tell us what we needed to know?"

A workshop for secondary school teachers was held on a professional development day. The workshop leader acted as a facilitator, using small group exercises and encouraging large and small group discussion. Again, the completed evaluation forms yielded conflicting information. Someone in the group would have preferred to have attended a lecture and did not learn from "all that playing."

Dr. Samuel Tenenbaum, after participating in a class run by Carl Rogers, made this observation:

> There were three or four students who found the whole idea distasteful. Even at the end of the course, although nearly all became enthusiastic, one student to my knowledge, was intensely negative in his (sic) feelings; another was highly critical. These wanted the instructor to provide them with a well-rounded piece of merchandise which they could commit to memory and then give back on an examination. (Rogers,1961, p.307)

Comments such as these are perplexing, and the desire to understand why learners react differently when exposed to different ways of learning became the basis for this study. The goal of education should be to develop self-directed learners (Gowin, 1981; Brookfield, 1986; Knowles, 1975). Educators tell us that unless self-direction is fostered in learners, education is failing. "Schools which do not produce self-directed citizens have failed everyone - the student, the profession and the society they are designed to serve. The goals of modern education can

not be achieved without self-direction" (Combs, 1975, p.244).

Self-directed learning has been defined by Malcolm Knowles (1975) as "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (p.18).

Many educational theorists agree that it is necessary to become a self-directed learner in order to survive in the world today (Houle, 1963; Tough, 1979; Knowles, 1975, 1984; Toffler, 1971; Brookfield, 1986; Cross, 1981). A number of reasons substantiate this belief.

The first relates to Alvin Toffler's concept of "Future Shock." The world as we know it is in a constant state of change. Change is becoming the only reliable stability. Advances in technology and increased leisure time are but two examples of recent changes. Unless we are able to take the initiative for

our learning, we will be unable to keep up with all the changes around us.

The goal of traditional education has often been cited as the transmission of knowledge for the continuation of culture (Dewey,1938). This goal, if seen as the sole purpose for education, does not address the phenomenon of constant change. "In a world in which the half-life of many facts (and skills) may be ten years or less, half of what a person has acquired at the age of twenty may be obsolete by the time that person is thirty" (Knowles,1975, p.15).

Traditional education, with its teacher-centred approach, imposes subject matter on students who are expected to be passive receptacles of learning. Students are not given the chance to think for themselves, to problem solve, or to develop into self-directed learners. Dewey (1938) asked, "How many [students] acquired special skills by means of automatic drill so that their power of judgement and capacity to act intelligently in new situations was limited" (p.27)?

Second, movement towards self-direction follows natural life progression. As a person matures,

psychologically and physically, more responsibility is accepted for choices that are made in life. The work of theorists such as Loevinger, Perry, and Mezirow suggests that self-direction increases as one moves into the higher levels of cognitive and psychological development (Kasworm, 1983). As an adult is self-directing in most of life's functions, is it not more natural for that same adult to be self-directing in learning activities as well?

The need to guide students towards self-direction becomes increasingly apparent. Yet some learners, despite the efforts of the instructor, resist this direction. It was the purpose of this study to investigate why some adult learners more easily assimilate self-directed learning as a strategy for learning. The focus of this question was placed on the personality of the learner, to determine if there is something within a person's personality that is related to or can predict the integration of self-directed learning as a learning strategy.

Definition of Terms

1. Forced-choice Questionnaire : This is a data gathering instrument in which repondents must answer in an either - or format.
2. Likert-type self-report questionnaire : This is a multiple item scale, called a summated scale, consisting of a set of items that are favourable or unfavourable in direction. Respondents indicate a degree of agreement or disagreement with each item.
3. Typology : This is an attempt to explain the differences in individuals by categorizing variations in attitudes and patterns of behaviour.
4. Self-directed learning readiness : This term is used to denote an individual's ability and willingness to be self-directed. Readiness for self-directed learning can be viewed as a construct and can therefore be subject to measurement.

Assumptions

This study was conducted under the following assumptions:

1. Individuals vary in their personality characteristics.
2. Self-directed learning is a valuable way to learn.

3. Self-directed learning is a goal of education.

Outline of Subsequent Chapters

Chapter Two first acquaints the reader with the philosophical foundations of adult education from the humanistic perspective. Jung's theory of Psychological Type is then presented as the basis for individual personality characteristics. Next, a review of the literature, containing both conceptual discussions and empirical studies, is presented. Finally, the hypotheses to be tested are stated.

Chapter Three presents the methodology of the study. The methodology is discussed in terms of research design, sample, pilot study, instruments, data collection procedures, methods of analyses, and weaknesses and limitations of the study.

Chapter Four is a description of the results of the study. Descriptive statistics and results of the hypotheses-testing are recorded in tables and text.

Chapter Five presents a summary of the preceding chapters and a discussion of the results. Results are discussed in light of theory and research. Implications and recommendations for practice and further research are also included.

CHAPTER TWO

REVIEW OF THE LITERATURE

Philosophical Foundations

Progressive Education

"Philosophy of adult education is defined as a systematic conceptual framework embodying certain values from which one views the many aspects of the field of adult education" (Merriam, 1977, p.34).

Adult education exists for many purposes and contains philosophically quite different approaches to education. The radical approach, as one example, views education as a force for achieving social change. The behaviourist approach emphasizes control, learning through reinforcement and management by objectives. Different again, the humanist approach stresses the concepts of freedom and autonomy, participation and active co-operation, and self-directed learning.

All three of these approaches to education are said to have some of their roots in the American progressive movement in education. The goals of progressive education lay in the liberation of the thinking powers

of the learner, thus releasing the learner's potential to improve society and culture.

The philosophical basis of the progressive movement is found in pragmatism. Pragmatism: (a) accepts the scientific method as the means to develop an understanding of people and their problems; (b) believes in a pluralistic world view; (c) regards human experience as a central concept; (d) sees the consequence of actions as a determining factor to the truth or goodness of the action and (e) believes that social reform is a valid interest of philosophers (Elias & Merriam, 1980, p.46-48).

John Dewey, an American philosopher in the early part of the twentieth century, was part of this progressive movement and is often referred to as the father of progressive education. Two important concepts in his philosophy are the scientific method of thinking and the importance of experience.

Experience, to Dewey, is central to education. He believed in "a philosophy of education based upon a philosophy of experience" (Dewey, 1938, p.29). Experience has two intertwined facets. The

"continuity" of experience means that every experience is influenced by the preceding experience and influences the following experience. The "interaction" of experience refers to fact that experience occurs not only within the individual, but also in the external environment. The reconstruction of experience, which is affected by reflective thinking, leads to growth. The aim of education is growth leading to further growth.

The scientific method provides the process by which growth can be achieved. Five phases make up the scientific method: (a) the process of inquiry or the real doubt (the primary experience); (b) the isolation and clarification of the problem; (c) the establishment of a tentative hypothesis or solution; (d) reflection on the possible results; and (e) the testing of the hypothesis.

To Dewey, the scientific method is directly relevant to education; its application to education results in individuals who are capable of reflective, creative and responsible thought. Certain concepts, arising from his basic beliefs, are central to the Deweyan philosophy of education. First, the <u>objectives</u> of

instruction should be based on learner's needs, native circumstances and general social demands. Second, as problems or objectives change, so should the method used to reach the desired end. The student should not be considered a receptacle of learning but central to and involved in the learning process. The teacher should be viewed as the agent or catalyst of change, willing to adapt the learning materials and methods to the one most conducive to learning. Educational methods should reflect the experiences of life. Third, subject matter should be organized in a dynamic fashion. Ideas, facts and theories should be built upon as problems become more complex, and the subject matter should be interactive with the way the material is presented. Fourth, education, in Deweyan philosophy, is child-centred. Schools should operate on the principle of individual development as only those who have learned to think in a creative and free manner can be expected to contribute to the growth and perpetuation of a democratic society. Fifth, along with creative thinking, the school as a part of society should encourage a social consciousness in its students. This is accomplished by allowing the

students to share in planning activities and curriculum. In doing this, it is hoped that students will develop a general sense of purpose and the ability to be part of the group. The sixth and final concept concerns the role of the teacher. Dewey saw teachers not as authorities dispensing information, but as guides and co-learners. The expertise of these professionals extends beyond subject matter. They must be knowledgeable of their society and in the areas of social and personal psychology. Dewey outlined four duties for the effective teacher: (a) to enrich, balance and clarify experience; (b) to refine experience through guided enquiry; (c) to simplify experience so that the learner does not become confused; and (d) to find ways to connect experience to the learner's society (Skilbeck, 1970, p.20-21).

The overall aims of progressive education, therefore, are to encourage the development of the individual and to aid the individual in fitting into and contributing to society. The former can be conceived of as education for knowing and the latter education for doing. Progressive education provided a revolutionary way of looking at education and while Dewey was

concerned for the most part with "schooling", he opened the door to lifelong education.

> What he (sic) has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. The process goes on as long as life and learning continue. (Dewey, 1938, p.44)

Adult Education

Eduard Lindeman, influenced by the work of Dewey and other progressive educators, specifically uses this philosophy of education to describe adult education. His book, The Meaning of Adult Education (1926), making use of the tenets of the progressive movement and Deweyan philosophy, provided the groundwork for the field of adult education.

Experience and education do not end with initial or compulsory education. "Education is life - not a mere preparation for an unknown kind of future living....The whole of life is learning, therefore education can have no endings. This new venture is called adult education" (Lindeman, 1926, p.4-5).

To Lindeman, the development of the self is not well-served by conventional education. "In the modern world of specialism only a small sector of personality is set into motion through vocational activities" (Lindeman, 1926, p.34). There exists the need to release within persons their differences. "Individuality is the most precious gift we have to bring to the world....Nothing exciting can happen in a world of uniformities and homogeneities" (Lindeman, 1926, p.36-38).

Lindeman viewed the aim of education as the reform of society and the development of social intelligence in individuals. "Adult education will become an agency of progress if its short-term goal of self-improvement can be made compatible with a long-time, experimental but resolute policy of changing the social order" (Lindeman, 1926, p.105).

Unlike conventional education, much of adult education is life specific; that is, the learner enters the learning situation in order to acquire a particular skill or knowledge. Lindeman, like Dewey, believed the most effective way to approach education was a method based on experience.

> Life is confronted in the form of situations, occasions which necessitate action. Education is a method for giving situations a setting, for analyzing complex wholes into manageable, understandable parts, and a method which points out the path of action which, if followed, will bring the circumstance within the area of experiment....the best teaching method is one which emerges from situation-experiences.
>
> (Lindeman, 1926, p. 115)

Lindeman believed that "discussion" was the most effective method of learning in adult education, thus placing the instructor in the role of "group-chair." He viewed discussion as utilizing scientific method in its approach to education.

Conventional education, to Lindeman, was enslaved to and preoccupied with subjects, packets of knowledge conceived of from the experience of others. Knowledge gained from this education produced technicians, not educated individuals.

The parallels between Dewey and Lindeman are many: the importance placed on experience, the belief in the scientific method and the value of the individual.

These concepts and others are carried into the Progressive Adult Education movement.

Progressive Adult Education

The progressives' view of education, as we have seen, was adopted by many adult educators. The philosophy of Progressive Adult Education focuses on five main principles (Elias & Merriam,1980). Each extends the precepts of progressive education to incorporate adult learning.

First, progressive adult education broadened the scope of education to extend beyond the traditional confines of the school. Education was looked on as a lifelong process. Socialization occurring in the home, the workplace or the church was included as a part of education. Education came to mean a curriculum of practical and liberal topics.

Second, as experience was considered a focal point in education, the learner became a more significant part of the learning process. The learner was seen as a person with unlimited potential for growth, able to use intelligence to adapt the environment. Insights into individual differences and developmental stages of life were provided by a new breed of psychologists.

These insights provided knowledge of the importance in considering and understanding these differences.

Third, emphasis was placed on the relationship between subject matter and the manner in which it was taught. Theoretically, there was to be a connection between the two. The use of the scientific method of arriving at knowledge was the favoured method.

Fourth, the emphasis now being placed on the learner forced a change in the teacher-learner relationship. The learner was no longer the receptacle of knowledge. The relationship was to become interactive; the teacher was to assume a more co-operative role. The teacher was to encourage the process of guided inquiry.

The final principle of progressive adult education focused on education as an instrument for social change. It was felt that by fostering creative and reflective thinking learners were encouraged to develop a social conscience and individuality. These qualities led to the proper restructuring of society.

Humanistic Adult Education

As was previously suggested, many of the philosophies of adult education can trace their roots, at least in part, to progressive education. Much of

the Humanist philosophy is found here. "Knowledge is humanistic in quality not because it is about human products in the past, but because of what it does in liberating human intelligence and human sympathy" (Dewey, 1916, p.238). This quote from Dewey could be the motto of any humanist. The learner-centred approach and the interactive relationship between the student and the teacher are two concepts central to humanistic adult education.

The goal of humanistic education is the development of the fully-functioning person. The major influence for this approach can be found in the humanistic psychology movement of the 1960's. The primary advocates of this movement were Carl Rogers and Abraham Maslow.

Maslow defines a shift from the belief that adulthood is a static period in the life cycle to a belief that the adult continues to grow and develop throughout the stages of life. The fulfilment theories of personality have provided a base for this work. He says:

> ...the organism is more trustworthy, more self-protecting, self-directing, and self-governing

> than it is usually given credit for....recent developments have shown the theoretical necessity for the postulation of some sort of positive growth ....This kind of tendency to growth or self-actualization...has been found necessary by Goldstein, Buhler, Jung, Horney, Frohmm, Rogers, and many others. (Maslow, 1970, p.78)

Maslow perceives growth as hierarchial, it being necessary to satisfy one need before moving on to the next. The needs are: (a) physiological or survival, (b) safety, (c) love, affection or belonging, (d) esteem and finally, (e) self-actualization. Self-actualization, to Maslow (1970), is attained by those persons who have satisfied the basic needs and have "developed or are developing to the full stature of which they are capable" (p.150).

Rogers' fully functioning person parallels Maslows' self-actualizing person. Rogers (1969) defines the fully functioning person as "able to permit his (sic) total organism to function in all its complexity in selecting, from the multitude of possibilities, that behaviour which in this moment of time will be most generally and genuinely satisfying" (p.290).

With the fully-functioning (Rogers) or self-actualizing (Maslow) person as the goal of humanistic education, it is easy to understand why this approach is student-centred. The learner is considered unique and should be encouraged to grow and develop not only intellectually, but also emotionally. The whole person is to be considered.

The instructors in the humanistic approach act as facilitators of learning. Their roles are to provide a comfortable atmosphere in which to learn, to help in clarifying why and what students are interested in learning, to provide materials and resources for learning and to act as a co-learner and equal member in learning.

This humanistic orientation towards adult education has been embraced and espoused by Malcolm Knowles. The term andragogy, referring to the art and science of helping adults learn, was made popular by Knowles. The andragogical model is based on these assumptions: (a) Adults need to know why it is important for them to learn something. (b) Part of the adult self-concept includes being responsible for their own lives. They may resent and resist situations in which the will of

another is imposed on them. (c) Adults have a greater volume and different kinds of experiences than children. These experiences can affect the learning situation. (d) Adults' readiness to learn is linked to the developmental tasks unique to their particular stage in life. Adults are motivated to learn something that is life-centred; that is, something important to solve at that time. (e) Adults are more likely than children to be motivated to learn for the intrinsic value in learning (Knowles, 1984, p.55-81).

As a humanistic adult educator, Knowles believes that the learning process should involve the whole person. He advocates the role of adult educators as one of facilitating persons in developing to their full potential.

Self-Directed Learning

Self-directed learning is the strategy advocated by humanistic educators to enable learners to develop and grow throughout life. The knowledge that adults are able to and continue to learn throughout their lifespans is a basic premise on which adult education and the need for self-directed learning is based. Lifelong education has been defined by Wain (1987) as:

"a process which covers the entire lifespan of the individual embracing and unifying all stages of education - preprimary, primary, secondary, tertiary and adult education. It views education not as a fragmented spectrum of individual parts but in its totality - an integrated whole" (p.37).

Knowledge that adults can and do learn was empirically proven by Thorndike in the early twentieth century. (Jarvis, 1987) The investigations of Tough, 1971; Coolican, 1974; Orlando, 1977; Penland, 1977; Peters and Gordon, 1974, as cited in Finestone, 1984 and many others have shown the extent to which this learning does exist, both within and without formal institutions of learning.

Lifelong learning can be viewed as a continuum. Pre-initial education occurs from birth until the child goes to school. The parents are normally responsible for this period of education. Initial education is the block of formal education to which individuals are first exposed. It begins with the first encounter with institutional education and continues until an individual leaves school to assume the responsibilities of adulthood.

From this time on, the individual continues to learn, though formal education is not the focus of life. There may be times throughout the lifespan during which an individual will be exposed to recurrent blocks of formal education. At these times, the learning process again becomes life's focal point. These blocks may be a return to formal institutions of learning; upgrading for employment reasons, whether voluntary or compulsory; continuing education for pleasure; or any other extended period of intense learning. Learning continues across the lifespan.

The concern of the humanistic adult educator is that traditional, teacher-directed education does not promote further growth in the learner. Rather, it may produce dysfunctional learners - individuals who are dependent on others for further education. "It is the presence of teaching not of learning that is the defining characteristic of education, for teaching is specific to educational situations but learning is not. We can learn in all the circumstances of life...." (Mea, & Wiltshire, 1978, p.11).

One way to encourage learning outside of education is through self-directed learning. As learning

produces change which in turn produces growth, the importance of self-directed learning becomes evident.

Brookfield attempted to clarify what is meant by self-directed learning. He says; "...to talk of self-directed learning is not to describe a particular kind of change in consciousness, but to refer to the activity involved in acquiring particular skills or knowledge" (1984, p.61). Self-directed learning is, therefore, a strategy or activity which encourages not only learning but also personal growth.

Adult educators have recognized that to become a self-directed learner, an individual must possess certain skills. Knowles (1975) and Tough (1979) were among the first educators to develop a list of the competencies required for self-directed learning. Others, (Brookfield, 1986; Caffarella, 1983; Cheren, 1983; Griffin, 1982; Denis & Richter, 1987) have taken and expanded upon these competencies. At least fifteen skills can be identified as necessary for an individual to function effectively as a self-directed learner. These are the ability to:

1. see oneself as a nondependent learner;

2. decide what knowledge or skills to learn and set achievable goals;

3. assess learning needs, either alone or with the help of others;

4. translate these needs into objectives that can become a feasible learning project;

5. recognize teachers and peers as resources and guides for learning;

6. identify and use the appropriate learning materials and resources;

7. select and use effective learning techniques;

8. recognize and assess blocks to learning;

9. manage time and stress effectively;

10. renew motivation to learn when it lags;

11. recognize the moment of revelation in the learning process;

12. reflect on what has been learned at appropriate stages in the learning process;

13. engage in an internal change of consciousness;

14. evaluate what has been learned and obtain feedback from others;

15. document what has been learned using the appropriate media.

As a strategy, self-directed learning could be viewed as mainly a mechanistic process. With practice, most adults can learn to plan, conduct and assess a learning experience. Self-directed learning is set apart from being purely mechanistic by the ability to engage in reflective thought and to incur an internal change in consciousness. Brookfield (1985) states:

> When the techniques of self-directed learning are allied with the Adult's quest for critical reflection and the creation of personal meaning after due consideration of a full range of alternative value frameworks and action possibilities, then the most complete form of self-directed learning is exemplified....In such a praxis of thought and action is manifested a fully adult form of autonomous, self-directed learning. (p. 15)

Mezirow's work (1977, 1985) on perspective transformation offers further clarification of the need for a "praxis of thought and action" (Brookfield, 1985, p. 15). Mezirow tells us that through reflective learning, an individual can begin to understand the restraints the process of socialization may have put on

the ability to understand different meanings. Once the individual is able to see alternative paths, learning becomes "appraisive rather than prescriptive or designative" (Mezirow, 1985, p.21).

To Mezirow, "perspective transformation is the process by which adults come to recognize introjected dependency roles and relationships and the reasons for them and to take action over them....The fully functioning self-directed adult learner moves consistently toward a more authentic meaning perspective" (1985, p.22).

The learner who follows the course of self-directed learning may find the process leads in many directions. Self-directed learning is not synonymous with autonomous learning. Once the learner has established objectives for learning, many options for actually acquiring the desired knowledge become available. The learner may decide to join an informal group, or register in a formal institution of learning, or simply go to a library and read. The emphasis is on choice: the learner makes the best choice possible for learning in any given situation.

Knowles does recognize that not all adults mature at the same rate and will not move towards self-direction at the same rate (Knowles, 1980. p.43). These differences in individuals could be due, in part, to differences in personalities.

As was previously noted, some of the groundwork for Humanist education can be seen in the work of Carl Jung. Maslow, in particular, refers to the work of Jung as having affected his philosophy (1970, pp.35, 68). Knowles (1980) recognized that Jung "advanced a more holistic conception of human consciousness, introducing the notion that it possesses four functions.... His plea for the development and utilization of all four functions in balance laid the groundwork for the concepts of the balanced personality" (p.38). An investigation of Jung's theory of personality types may offer some suggestion as to why some learners may assimilate self-directed learning more easily than others.

Jung's Theory of Psychological Types

Carl Jung is acknowledged as one of the foremost psychologists of the twentieth century. His work is usually identified as analytical psychology because of the emphasis that is placed on the unconscious processes.

Jung's work differs from other psychoanalysts in a variety of ways. He believed that maturity is defined in terms of the integration or balance an individual achieves within the self. An individual with a fully integrated psyche is said to have attained self-realization. Another distinctive feature of Jung's work is his belief that in order to understand the person, one must look not only at the individual's history (causality), but also at the individual's aims, aspirations or purposes (teleology) (Hall & Lindzey, 1970, p.79-80).

Finally, Jung's use of archetypes is distinctive to his work. Archetypes are "the abstract essence of the experience and aspiration of humanity. They are the universals, the shapes of thought, which bring pattern and meaning out of the overwhelming multiplicity of life" (Briggs Myers, 1980, p.53).

Jung's Typology

Jung believed that individual differences in personality were not random occurrences. Through observations in work and through reflection on human history, Jung noted recurring patterns in human behaviour. Years of work with his patients led Jung to the following realization. "But anyone with a thorough knowledge of human nature will soon discover that the contrast is by no means a matter of isolated individual instances but of typical attitudes which are far more common than one with limited psychological experience would assume" (Jung, 1962, p.179).

Investigations of the question of type in history and literature also influenced his work. His theory is reinforced by references to the work of William James, Wilhelm Ostwald, Wilhelm Worringer and Nietzsche among others (Jung, 1953- 1979, p.501-507).

These observations and reflections led to the development of his theory of psychological types. Typologies have often been used to classify and categorize individuals in order to explain differences. Astrologers used the horoscope; the Greeks used a physiological model. Jung's typology is based on the

psychic flow of energy and the way individuals prefer to orient themselves in the world (Sharp, 1987, p.11-12). Jung stated, "We can take the manifestations of the psyche as expressions of its intrinsic being, and try to establish certain conformities or types. So when I speak of a psychological typology, I mean by this the formulation of the structural elements of the psyche" (Jung, 1953-1979, p.548).

The Attitudes

Jung differentiated two basic attitudes: introversion and extraversion. The attitudes are distinguished by the direction or the flow of psychic energy in the libido. For the extravert, energy is directed to the outer world, towards the object. The extravert, according to Jung "has a positive relation with the object. He (sic) affirms its importance to such an extent that his (sic) subjective attitude is constantly related to and oriented by the object" (Jung, 1971, p.179). Consequently, the extraverted individual is one who enjoys the noise and confusion of the outer world and has a great many friends. Outer appearance is important to this type, and morals and

ethics are often guided by the status quo (Jung, 1953-1979, p.549).

For the introvert, energy is directed towards the inner world, to the subject. The introvert, according to Jung, "sets the self and the subjective psychological process above the object and the objective process, or at any rate holds its ground against the object" (Jung, 1962, p.12). Due to this struggle against the object, the introverted individual is one who is most uncomfortable in crowded social situations, who is content when alone. Jung tells us that, "his (sic) best work is done with his (sic) own resources, on his (sic) own initiative, and in his (sic) own way" (Jung, 1953-1979, p.551).

Jung noted that individuals possess both introversion and extraversion. "There can never occur a pure type in the sense that he(sic) is entirely possessed of the one mechanism with a complete atrophy of the other. A typical attitude always signifies the merely relative predominance of one mechanism" (Jung, 1962, p.13). While Jung's theory is most concerned with individuals who show differentiation in their attitudes, he recognized the existence of individuals

who are not strongly differentiated in their attitudes.

> There is, finally, a third group and here it is hard to say whether motivation comes from within or without. This group is the most numerous and includes the less differentiated normal man (sic), who is considered normal either because he allows himself no excesses or because he has no need of them. The normal man (sic) is by definition, influenced as much from within as from without. (Jung, 1953-1979, p.516)

The Functions

Jung stated that individuals further relate to the world through their functions. A function is defined by Jung as:

> A certain form of psychic activity that remains theoretically the same under varying circumstances. From the energic standpoint a function is a phenomenal form of libido which theoretically remains constant, in as much the same way as physical force can be considered as the form or momentary manifestation of physical energy. (1962, p.547)

There are two sets of functions : the rational functions of thinking and feeling, and the irrational functions of sensing and intuition. The functions supply the way one orients oneself to the world. Each function supplies a different part of this orientation. According to Jung, " The essential function of sensation is to establish that something exists, thinking tells us what it means, feeling what value it is, and intuition surmises whence it comes and whither it goes" (Jung, 1953-1979, p.553).

The rational functions. Thinking and feeling are the rational or judging functions. The term rational is used to define the functions that use reason and reflection. "Thinking and feeling are rational functions in so far as they are decisively influenced by the motive of reflection. They attain the fullest significance when in fullest possible accord with the laws of reason" (Jung, 1962, p.584).

Thinking is defined by Jung as "the linking up of representations by means of a concept, where, in other words, an act of judgement prevails" (1962, p.611). Thinking is the use of logical, factual reasoning to produce judgements.

Feeling is defined by Jung as "a process that takes place between the ego and a given content...that imparts to the content a definite value in the sense of acceptance or rejection" (1962, p.543). Feeling is the process of evaluating or judging by subjective criteria or values.

The irrational functions. Sensing and intuition are the irrational or perceiving functions, the methods used to collect information. By irrational, Jung means "functions which achieve their functional fulfilment in the absolute perceptions of occurrences in general" (1962, p.570). They are termed irrational because they exist outside the realm of decision-making. They are not, however, unreasonable. Jung finds these functions "in a high degree empirical; they are grounded exclusively upon experience, so exclusively, in fact, that as a rule, their judgement cannot keep pace with their experience" (1962, p.468).

Sensing as a function involves perception of the observable by way of the senses. Individuals become aware of things directly through the use of their senses. Jung defines sensing as "perception

transmitted via the sense organs and 'bodily senses'" (1962, p.586).

Intuition as a function involves perception of meanings, relationships and possibilities by way of insights. Jung sees intuition as "a kind of instinctive apprehension, irrespective of the nature of its contents....(it) possesses an intrinsic character of certainty and conviction" (1962, p.568). Briggs Myers (1980) clarifies: "intuition... is indirect perception by way of the unconscious, incorporating ideas or associations that the unconscious tacks on to perceptions coming from the outside" (p.2).

Jung believed that individuals do not develop all their functions simultaneously. He felt that the pressures of society forced the development of one, primary function. "The very conditions of society enforce a man (sic) to apply himself (sic) first and foremost to the differentiation of that function with which he (sic) is either most gifted by Nature, or which provides the most effective means for social success" (Jung, 1962, p.564).

Recognition has also been given to the existence of those types whose functions are not differentiated.

These are individuals who have not developed one of their functions as the primary function and one as the auxiliary function. Jung believed that individuals whose functions are equally undeveloped display "the mark of a primitive mentality" (p.267). It is considered normal, by Jung, to develop differentiated functions.

The Eight Types

Jung postulated that individuals differ from one another not only in their basic attitudes of introversion and extraversion, but also in the combination of the attitude with one of the functions. "We then discover that no individual is simply introverted or extraverted, but that he (sic) is so in one of his (sic) functions" (Jung, 1953-1979, p.519).

One of the four functions is the primary function, the function which is most developed in the personality. The dominant attitude and the primary function combine to form the foundation of an individual's personality. Jung describes eight personality types: extraverted thinking, extraverted feeling, introverted thinking, introverted feeling,

extraverted sensing, extraverted intuition, introverted sensing and introverted intuition.

The extraverted thinking type. Thinking combined with the dominant attitude of extraversion produces individuals who are concerned with the intellectual construction of concrete reality. Their thinking is always related to facts, generally accepted ideas and objective data. To this type, objective reality becomes the guiding force or ruling principle of life, not only for the individual type, but also for all of those around this person.

When this type is not too rigid, it produces the social reformer, the scientist or the lawyer, for these are individuals who are able to clarify a situation, to establish the basic facts and to determine how to proceed to a solution. Jung thought this type to be predominant in men and gives Darwin as an example of an extraverted thinking type.

Extremes of this type will produce an individual who is ruthless, who tolerates no criticism and to whom the end justifies the means.

The extraverted feeling type. The extraverted feeling types are able to evaluate objects and preserve

a suitable association with them. Their values are traditional, generally determined by social standards. They are individuals who make friends easily, are not easily fooled by others, are well-adjusted and seem to be able to cope well with life. Also, they strive for and produce harmony in the world around them. This type, whom Jung believed to be predominantly found in women, is valuable to society as it is responsible for the existence of such cultural institutions as theatre, church and fashion.

This type can have very definite likes and dislikes and can exhibit an appraising quality that is most rational. They do not, however, like to think about abstract ideas or philosophical tenets.

The extraverted sensing type. The extraverted sensing type can be seen as the practical realist; the individual who values objects as long as they excite the senses. This type is the most practical of the types and can adapt to any circumstance. This type is able to observe and note the details of any situation, being able to relate after leaving a room how many people were there, what they wore and what had changed about them.

"Life lived to the fullest" would be the motto of this type. This type is in constant search of those places, persons and things which provide for them the greatest sensations; the person who would climb a mountain because it was there.

As this is the individual who requires the constant experience of the concrete world, decisions in life are based on real experiences and concrete facts. Abstract ideas hold no place in the real world. If sensation becomes too pronounced, this type becomes extremely materialistic or a crude pleasure-seeker.

The extraverted intuitive type. The extraverted intuitive is the type that can "smell out" new possibilities and will direct all interest to objects in so far as the object provides a stepping stone to the next possibility. Problems arise in that the extraverted intuitive is easily bored with repetition and will often not stay with a project to see it to its fruitful conclusion. This type is loyal only to the vision they see and are often not considerate of others. This type is often found as the business tycoon or the politician. When this type is oriented to people rather than to things, he/she can

inspire enthusiasm and courage in followers, often providing a great service to society. Civil rights leaders such as Martin Luther King Jr. and Nelson Mandela may be examples of this type.

The introverted thinking type. The thinking of the introverted type is oriented by subjective data, whether it is concerned with the concrete or the abstract. An introverted thinking type would be more interested in elucidating ideas than facts. This type's strengths lie in the ability to formulate questions and theories, only using objective facts as evidence for their work. Though he/she may not have particularly original ideas, he/she is able to consider with clarity every aspect of the theory, conscientiously including every detail. Persons of this type will allow themselves to be exploited by others as long as they can continue their work.

Introverted thinking types are often inarticulate, poor teachers, unable to understand why another doesn't grasp their meaning. They can exhibit a horror for publicity and may not handle criticism well.

To casual acquaintances they may appear inflexible and superior, but their closest friends value their

opinions. Jung uses the example of Kant as one of this type.

The introverted feeling type. Introverted feeling types are oriented to the world by highly discriminated values, but do not allow these values to be seen by the outer world. Both their personal and professional lives are built on these ethics. They are often found as the backbone of important happenings, acting as the moral and ethical barometer. Without outwardly imposing their beliefs on others, they are often able to provide a group with the ethical base it requires.

This type may have extreme difficulty in communicating with the outside world, often finding the needed release in artistic pursuits. While this type may exhibit an outward appearance of harmony, they are often insecure. They may be hard to understand, silent and inaccessible. When the outer world tries to close in on them, they may react with indifference or superiority or attempt to dominate their world.

The introverted sensing type. The introverted sensing type, according to Jung, is the most difficult to describe and understand. They have difficulty

understanding themselves. What this type will perceive is merely suggested by the object, making it impossible to predict what relationship will exist between the object and sensation.

If a group of this type was asked to draw the same object, none of the pictures would exactly represent the object. The pictures, possessing a life of their own, would be representative of the individual's impression of the object. The movement of energy comes from the object to the individual.

This type may be seen as highly tuned and spiritual. These individuals may exhibit calmness and passivity, a form of rational self-control. They are often slow-moving and may have trouble completing tasks but derive great pleasure in completing tasks that require great attention to detail. They may lack the ability to perceive the possibilities in life.

The introverted intuitive type. Introverted intuitives are able to discern all the peripheral mechanisms of consciousness. These types are able to look behind the curtains, at the internal workings of a situation. Their ability to sense the future is subjective in nature, leading them to be artists,

prophets, mystics or poets. If this type is morally oriented, a concern for the moral effects of the vision arises and may lead this type to become a type of prophet, the person who must "spread the truth."

These types may have trouble being understood by others, often lacking skills in communication. As they are often vague when it comes to remembering facts, they will forget appointments, their keys, etcetera. This vagueness will also extend to their ability to relate a past occurrence with clarity. This may give them the appearance of being a fraud to others.

In their personal life they are often not very well-organized and are known to hate repetitive tasks. Their lives are future-oriented, and they are always seeking out new possibilities.

They may lack good judgement about themselves and others and may neglect their physical well-being. To the outside world they may appear cold and aloof.

Influence of the Remaining Functions

Although Jung's descriptions are of pure types, that is, types defined by the dominant attitude and a primary function, he does not believe pure types exist.

Consideration must be given to the influence of the other functions.

Jung acknowledges the influence of the other functions. He says,"...I have no desire to give my readers the impression that such pure types occur at all frequently in actual practice....in conjunction with the most differentiated function, another function of secondary importance...is constantly present, and is a relatively determining factor" (1962, p.513). The secondary function is called the auxiliary function.

The secondary or auxiliary function will be the stronger function of the remaining pair of functions. That is to say, if the primary function is feeling, one of the rational functions, then the auxiliary function would be either sensing or intuition, one of the irrational functions. "The resulting combinations present the familiar picture of, for instance, practical thinking allied with sensation, speculative thinking forging ahead with intuition, artistic intuition selecting and presenting its images with the help of feeling-values...and so on" (1971, p.268). It is possible for the remaining pair of functions to be

undifferentiated, in which case the individual would possess two auxiliary functions.

The auxiliary function assumes a unique role when the dominant attitude is introversion. Jung stated, " The undeveloped functions possess the further peculiarity that, when the conscious attitude is introverted, they are extraverted" (1953-1979, p.521). If, for example, an individual is an introverted thinking type, the auxiliary function (which may be either sensing or intuition) becomes extraverted. The auxiliary function is the function visible to the outside world.

The Inferior Functions

The inferior function is the remaining function of the pair from which the dominant function is found. For example, if an individual is a sensing type, the inferior function would be intuition. According to Jung, due to the dominance of one function, and "as a consequence of such one-sided development, one or more functions necessarily remain backwards in development" (1962, p.564), becoming the inferior function. If the primary function is extremely dominant, then the inferior function is also exaggerated.

Jung described a way to determine the inferior function:

> An essential criterion is its lack of self-sufficiency and consequent dependence on people and circumstances, its disposing us to moods and crotchetiness, its unreliable use, its suggestible and labile character. The inferior function always puts us at a disadvantage because we can not direct it, but rather we are its victims.
>
> (Jung, 1953-1979, p.540)

Von Franz (1971) further clarifies with: "it is a horse that can not be educated. It is something that can be subjugated to the extent that you do not do something stupid" (p. 19).

The inferior function, because it has not been developed by use, is banished to the realm of the unconscious. Here it remains in a more or less primitive state. It can surface to cause undue stress and grief. The inferior function is, therefore, the cause of trouble for most individuals.

The Role of the Unconscious

Jung maintained that while the dominant attitude and primary function form the conscious processes of

the psyche, there also exists an unconscious process to balance the psyche. Therefore, only the primary function may be freely managed by conscious resolution and the other functions may be only partially conscious.

Other than the inferior function that may be well-repressed into the unconscious, the remaining functions may be only partially unconscious. This allows these functions to be drawn on when needed.

Individuation

Jung believed that individuals today progress through life for the most part with differentiated functions, however, a step towards the goal of individuation is reached when individuals develop all their functions to an equal level. This occurs as the individual matures, often in the latter part of life, and results in a harmonious blending and differentiation of the personality.

> For complete orientation all four functions should contribute equally: thinking should facilitate cognition and judgement, feeling should tell us how and to what extent a thing is important or unimportant for us, sensation should convey

> concrete reality to us through seeing, hearing, tasting, etc., and intuition should enable us to divine the hidden possibilities in the background, since these belong to the complete picture of a given situation. In reality, however, these basic functions are seldom or never uniformly differentiated and equally at our disposal.
>
> (1953-1979, p.518)

The psychological aim of life, according to Jung, is not to repress the less developed functions, but to control the whole range of one's capabilities. Individuation is Jung's term for the process of achieving equal command of all the functions.

Identification of Types

Jung qualified his description of the types with two caveats to the reader. First, Jung warns us that his description of the types is influenced by his own psychology. "I am convinced that, had I myself chanced to possess a different psychology, I would have described the rational types in the reverse way, from the standpoint of the unconscious as irrational" (Jung, 1971, p.213).

We are warned that it is difficult to determine an individual's type. "But it is often a difficult matter to discover to which type an individual belongs, especially when oneself is in question. Judgement in relation to one's own personality is indeed always extraordinarily clouded" (Jung, 1962, p.10). Also, "Although there are doubtless individuals whose type can be recognized at first glance, this is by no means always the case. As a rule, only careful observation and weighing of the evidence permit a sure classification" (Jung, 1953-1979, p.515).

While it may be difficult to determine the type of an individual, Jung asserts that it is important to try. If we can understand that different types exist and that their psychological processes function in a different manner, we may be able to accept these differences. This acceptance could lead to appreciation of each type's strengths and patience with its weaknesses.

> It is my conviction that a basis for the adjustment of conflicting views could be found in the recognition of types of attitudes, not however of the mere existence of such types but also of

> the fact that every man (sic) is so imprisoned in his type that he is simply incapable of a complete understanding of another standpoint. Without a recognition of this far-reaching demand a violation of the other's standpoint is practically inevitable. Just as parties in dispute forgathering before the law refrain from direct violence ... so each type, conscious of his(sic) own predilection, must abstain from casting indignities, suspicions, and depreciatory valuations upon his opposing type.
>
> (Jung, 1962, p.621)

Jung also sees his theory as an important tool for the researcher. His typology helps the researcher to find some order, some place to begin in the understanding of individual differences. "It is not the purpose of a psychological typology to classify human beings into categories - this in itself would be pretty pointless. Its purpose is rather to provide a critical psychology which will make a methodical investigation and presentation of the empirical material possible" (Jung, 1953-1979, p.554-555). Finally, Jung tells us that an understanding of one's

own type will help the researcher or analyst to resist making serious errors of judgement when dealing with differing types.

Related Research

The review of the related research covers empirical research and conceptual discussions relating self-directed learning to the personality of the individual. The first part of this review will include research using the Myers-Briggs Type Indicator (MBTI) ; the second part will consider research using the Self-Directed Learning Readiness Scale (SDLRS). Only one study was found which employed both the MBTI and the SDLRS. Discussion of the properties of the MBTI and the SDLRS can be found in Chapter Three under the heading of Instruments.

Research using the MBTI

When Jung's theory of psychological type was published in 1923, Briggs had already been working on her own personality theory. She found Jung's work to be congruent with her own, but much further evolved. Briggs believed in and based the development of the MBTI on Jung's theory.

Briggs' research conducted in 1957 with the MBTI first concentrated on discovering typological trends in the general population. Investigations were made into the types of 4033 male and 4039 female high school students. Results of the highest and lowest percentages of types are indicated in Table 1.

Table 1

Highest and Lowest Types in High School Students *

	Male	Female
College Prep	ESTJ (16.9%)	ESTJ (17.6%)
	INFJ (2.0%)	INTJ (1.8%)
Other Than	ESTJ (20.5%)	ESFJ (25.3%)
College Prep	INFJ (.3%)	INTJ (.4%)

* Myers, 1985.

The results of Table 1 indicate a predominance of extraverted sensing types in the general population of high school students. Briggs further attempted to determine if these classifications changed as students moved into more specific areas of study or employment.

Results as indicated in Table 2 depict a self-sorting of types into different careers and areas of study.

Table 2

Predominance of Types in Different Areas of Study or Employment *

Group	Type
Engineering Students	IN
Finance and Commerce Students	ES
Science Students	IN
Fine Arts Seniors	IN
Counsellor/Education	NF
Law Students	TJ
Urban Police	IS or ES
School Administrators	J

* Myers, 1985.

Briggs investigations of success in school led to the conclusion that intuitive students were more successful in their studies than sensing students. A study of National Merit Finalists indicates a rise from

the general population in intuitive males (n=671) from 54 to 82 per cent (Myers, 1985, p.37).

Myers states that while sensing children tend to score lower on intelligence tests and appear to have less scholastic interest, it would be improper to consider them less intelligent than intuitive children. Intelligence and other tests of ability offer the intuitive child an advantage. The intuitive works in the realm of symbols and metaphors - the word. The sensing child functions in the realm of the senses - the concrete; therefore, the sensing child may need to do more internal translating on tests. This may limit the ability to work through tests quickly and efficiently.

Many studies of type in education are discussed in the MBTI Manual, 1985. One such study, Eggins (1979), investigated type differences in how students learn. In a study of 350 sixth-grade students, Eggins concluded, among other things, that: (a) intuitives benefit most from an inductive approach based on Bruner's model; (b) field dependent, sensing types learn better using Gagne's highly structured approach; (c) field independent, sensing types prefer Ausubel's

advance organizer model; (d) sensing-judging and intuitive-judging types succeeded in learning by all three models and (e) sensing-perceiving types were most successful using the highly structured Gagne model (Myers,1985, p.130).

The results of some of the other studies reported by Myers (1985) are listed below with the appropriate authors:

1. Extraverts enjoy learning in groups (McCaulley and Natter, 1974; Haber, 1980; and Kilmann and Taylor, 1974).

2. Sensing types appreciate television and audiovisual aids (McCaulley and Natter, 1974; and Golanty-Koel, 1978).

3. Sensing types find it relatively easy to memorize (Hoffman, Walters and Berry, 1981).

4. Intuitive types prefer self-paced learning and studying on their own initiative (McCaulley and Natter, 1974; and Smith, Irey and McCaulley, 1973).

5. Thinking types prefer structured courses with clear goals. (Smith, Irey and McCaulley, 1973)

These few of the multitude of studies listed in the MBTI Manual indicate the importance of considering type

in the learning situation. Attempts have been made to consider type in relation to many personality characteristics. Some of the research which has used the MBTI in connection with different personality characteristics is discussed below.

Carlson and Levy (1973) conducted four studies "designed to examine the usefulness of Jungian typology as a framework for inquiry in personality" (p.562). The first two studies investigated the differences in memory task performances.

In Study One, 24 female undergraduates, selected to compose four groups of ITs, ETs, IFs and EFs, were administered the Digit Span subtest of the Wechsler Adult Intelligence Scale and the Lightfoot facial expression series. Results of the Digit Span task indicated that ITs were significantly ($p<.002$) superior in remembering emotionally neutral stimulus material. Results of the Lightfoot series indicate that EFs were significantly ($p<.002$) more accurate in recognition of facial expressions.

In the second study, 32 female undergraduates, evenly divided between IT and EF, were administered two basic memory tasks, one using numbers and the other

using names as the recall criteria. A comparison of discrepancy scores of the types, evaluated with the Mann-Whitney U test, confirmed that ITs remember better than EFs using objective impersonal material (zu=3.49; p,.003).

The third study was an investigation of type difference in relation to perception, specifically in interpreting facial expressions. A sample of 56 intuitive perceptive (NP) and 42 sensing judging (SJ) types were asked to interpret the emotional expressions of a series of slides depicting different emotions in a black female drama student. The findings suggest that NPs were significantly more accurate in interpreting emotional expressions than SJs, and that women were more accurate than men.

The final study took investigation of type into a field situation. Ten students who were regular volunteers in a social agency were paired with ten other nonvolunteer students. The twenty students were paired as to race, age, sex, specific parental occupations, number of siblings and ordinal position. After administering the MBTI, it was discovered that seven of the ten volunteers were extraverted intuitive

perceiving (ENP) types. The nonvolunteers were more evenly distributed, representing seven of the type categories, with only one person falling into the ENP category.

These studies merit consideration in their collective conclusion that the MBTI may be used "for deepening understanding of how personality characteristics interact with social-situational variables" (Carlson & Levy, 1973, p.574). They may, however, be criticized for the small samples, the sole use of female participants in the first two studies, and the fact that they did not specify the type of analyses used to obtain their results.

In three studies, Carlson (1980) attempted to "test derivations of Jungian theory in the personal world of memories and interpersonal schemas" (p.802). The first study examined type differences in memories related to significant personal experiences. Thirty-three subjects were asked to describe, in writing, incidents of seven affects. They were then typed according to the MBTI. The written material was analyzed to test three hypotheses. Judges were able to recognize the majority of the introverted thinking types (IT) and the

extraverted feeling types (EF) in the sample and were able to discern different qualities of affective memory between ITs and EFs. Results also confirmed that extraverts, as compared with introverts, reported more interpersonal memories of joy ($p<.05$), excitement ($p<.01$) and shame ($p<.01$). Finally, feeling types were found to exhibit more emotional memories of joy ($p<.001$), excitement ($p<.01$), and shame ($p<.05$).

The second study investigated type differences in personal constructs and predicted that intuitives rather than sensing types would develop personal constructs that were inferential in nature. Twenty persons classified as intuitive and fourteen persons classified as sensing were administered the Role Construct Repertory Test. Their constructs were classified as inferential or concrete. Constructs were deemed inferential if they appeared to include interpretations beyond observable facts. Results confirmed that intuitives did use inferential constructs more than sensing persons ($p<.01$).

The third study attempted to differentiate type in an imagined relationship. Nineteen intuitive and thirteen sensing types were asked to write a letter of

introduction to an unknown person. Their responses were scored, seeking self-presentation as a sensing quality and imaginative participation as an intuitive quality. Predictions were supported, with 16 of the 19 intuitives, but only 3 of the 13 sensing types using imaginative participation and with 8 of the sensing types and only 3 of the intuitives introducing themselves by their physical appearance.

In these three studies, the author attempted to verify that type differences which are often tested in laboratory settings also operate in the personal world of memory and imagination. These findings do support "the power and generality of type theory" (Carlson, 1980, p.809) and the MBTI as a tool for investigation into personality.

Three weaknesses have been noted in this research: the relatively small sample used in each study, the Jungian functions distinguished as variables were not differentiated as to their dominance and the possibility of subjective decisions on the part of the judges.

Schweiger and Jago (1982) employed the MBTI and the Vroom/Yetton Problem Set in a study to determine if

personality affects autocratic versus participative decision-making methods. An investigation of type theory led to the hypothesis that sensing rather than intuitive types would be more participative in their decision-making methods. Correlations on the continuous Myers-Briggs scores and the Vroom-Yetton Problem Set support the hypothesis that intuitive types employ greater use of autocratic decision-making methods and less use of participative methods than sensing types.

Ferguson and Fletcher (1987) explored the relationship between the different dimensions of the MBTI and cognitive abilities of individuals. A sample of 76 undergraduates was administered the MBTI and the Weschler Memory Scale. Results indicated correlations between style of information processing and cognitive ability, and different psychological types. Scores for intuitives indicated a positive association with cognitive integration, and scores for feeling types related positively to cognitive complexity.

White and Smith (1974) conducted a study to determine how personality type affects the degree of student responsibility for learning decisions. One

hundred and five teacher education students were classified as extraverted intuitive (EI), extraverted sensing (ES), introverted intuitive (IN) or introverted sensing (IS). They were assigned to one of four treatment groups, were asked to complete and were evaluated on a computer assisted instruction (CAI) program. The data were analyzed using multivariate analysis of covariance. Results indicated a negative shift in satisfaction in intuitive types with the CAI program, as responsibility for learning selection was taken away from the participants. Sensing types showed a positive response to this procedure. Also, the sensing types had a more positive reaction to the use of behavioural objectives for instructional planning than did the intuitive type.

The results of this study are congruent with Jungian theory. As intuitives are more interested in possibilities and ideas, and sensing types are concerned with concrete objects and facts, it is reasonable for sensing types to be more satisfied with the structure and stability provided by CAI. As in previous studies, however, the results should be accepted with caution. Individuals were classified

without consideration of their dominant function, the sample groups were relatively small, and the sample was not generalizable beyond the group with whom the experiment was conducted.

Two studies were found which investigated personality differences in science students. Novak and Voss (1981) examined the relationship between cognitive preference orientation and personality. The authors define cognitive preference orientation as a preference for either traditional (teacher-directed learning) or inquiry learning. The Cognitive Preference Examination II (CPE II) and the MBTI were administered to 271 eighth-grade students. The hypothesis that INTP personalities would prefer inquiry learning and ESFJ types would prefer traditional learning was not supported by chi square analyses of the two scores. If Novak and Voss had used a different statistical procedure and had retained continuous data, the results may have been different.

Reynolds and Hope (1970) used the MBTI to determine "its utility in differentiating between degrees of success of science students in intellective tasks" (p.711). The hypothesis suggested the more successful

science student would be an introverted, intuitive, thinking and perceiving type (INTP). Three groups of high school science students, two general and one advanced level, were administered the MBTI and The Methods and Procedures of Science: An Examination (MPS). Each group was then given a Cooperative Science Test (ETS) appropriate to its level. The results showed a significantly greater proportion of INs in the advanced group than in the general group. The hypothesis was correct, but the results were not statistically significant. The authors call for a longitudinal in-depth study of typology to clarify the role of typology in science instruction. Again, the use of dichotomous data reduces the possibility of obtaining meaningful results.

The research of Carlson and Levy (1973), Carlson (1980) and Schweiger and Jago (1982) offered support for the use of the MBTI and type theory as a tool in the investigation of personality. Ferguson and Fletcher (1987), Novak and Voss (1981), Reynolds and Hope (1970) and White and Smith (1974) have examined type theory in relation to education. Their work suggests the importance of considering the individual

differences of students and supports the use of type theory in the design and consideration of education curriculum.

Summary of research using the MBTI. In summary, the results of these studies have been compiled in order to present a synopsis of the findings according to type:

Intuitives were found to be more likely to:

1. use inferential constructs;
2. take part in imaginative participation;
3. prefer autocratic decision making;
4. display higher cognitive integration;
5. prefer to exercise responsibility for learning;
6. prefer self-paced learning and studying on their own initiative;
7. benefit most from an inductive approach.

Intuitive perceiving types were more likely to:

1. more accurately interpret emotional facial expressions.

Extraverted, intuitive perceiving types were:

1. more likely to be social service volunteers.

Sensing types were found more often to:

1. objectively present themselves;

2. prefer participative decision-making;

3. react positively to the use of behavioural objectives;

4. prefer highly structured learning if they were field dependent, and prefer an advance organizer if they were field independent;

5. like television and other audiovisual aids;

6. find it relatively easy to memorize learning material.

Thinking types prefer:

1. structured courses with clear goals.

Introverted thinking types were better at:

1. recalling neutrally emotional stimulus.

Extraverted feeling types were better at:

1. recalling facial expressions.

Extraverted types were more likely to:

1. recall interpersonal memories of affective happenings;

2. enjoy learning in groups.

Feeling types were more likely to:

1. recall emotional memories of affective happenings;

2. display higher cognitive complexity.

Research into Self-Directed Learning

Research into self-directed learning has mainly taken two forms: empirical studies using norm-based tests and interview investigations with a field research component. Little qualitative research was found.

Interview investigations.

Interview investigations into self-directed learning were set in motion by Tough (1971), in an attempt to discover what percentage of people engage in learning projects, how many learning projects people conduct in a year, what they are learning, and who plans and guides the learning. Tough's investigation led to the following conclusions:

> Almost everyone undertakes at least one or two major learning efforts a year, and some individuals undertake as many as 15 or 20....It is common for a man or woman to spend 700 hours a year at learning projects....About 70% of all learning projects are planned by the learner himself (sic), who seeks help and subject matter from a variety of acquaintances, experts, and printed sources. (1979, p.1)

Penland (1979), in a national American sample of 1501 adults, found 78.9% of those surveyed perceived themselves to be continuing learners. Respondents also indicated that almost 76% of this learning was self-initiated. The reasons most often given for self-initiated learning were, (a) the desire to set their own pace of learning, (b) the desire to use their own learning style and structure, (c) the need for immediate learning and (d) the lack of knowledge as to where a class to suit their needs might be held.

Similar patterns of learning were found by other researchers investigating different samples. "Allerton (1974) studied ministers,...Coolican (1973) studied mothers, Johns (1973) queried pharmacists..." (Long, 1983. p.109-110). Brookfield (1984) cites other studies which have replicated, to some degree, these results with: professional men (McCatty, 1974), teachers (Fair, 1975; Kelley, 1976; Strong, 1976; Miller, 1977), university and college administrators (Benson, 1975), degreed engineers (Rymell, 1981) and nurses (Kathrein, 1982) (p.59).

Even among samples of adults considered hard-to-reach, regular instances of self-directed learning were

found. Hard-to-reach adults are those "individuals of low socio-economic status, persons in their later years, and individuals who, because of physical handicaps or geographic location, are isolated from educational opportunities" (Brockett,1983, p.16). Hiemstra (1975) interviewed 256 older adults with less than a high school education, to find that they completed an average of 3.3 learning projects a year, 55% of which were self-planned. Leann and Sisco (1981) studied 93 adults of low educational attainment who completed four learning projects a year, 50% of which were self-planned.

The research of these investigators has verified the existence of self-directed learning in individuals beyond the initial stages of education. The following studies have attempted to determine which individual characteristics facilitate self-directed learning.

Qualitative approach. Taylor (1979) conducted a study of the processes involved in becoming a self-directed learner. This qualitative study was based on the experiences of eight graduate students in a course which promoted self-directed learning. Upon reflecting on the results of the study, Taylor noted four

dimensions of the experience of learning for self-direction which were evident in her results but were for the most part missing in the literature. One of these dimensions was intuition. Taylor noted that rationality and logic will not aid a student in the initial phase of becoming self-directed, that of disorientation. Intuition, though referred to in the popular rather than the Jungian sense, is important at this time.

Empirical studies. Bejot (1981) conducted a study to determine the self-directedness towards learning of individuals participating in extension education. Bejot administered the Self-Directed Learning Readiness Scale (SDLRS) and a structured interview questionnaire to 77 adults. Results indicated no correlation between self-directed learning and age, sex or place of residence. The only variable which affected self-directed learning was level of formal education.

Another study by Young (1985) found no significant relationship between self-directed learning readiness and sex, race or locus of control. This investigation of 126 college students used a multivariate analysis of

variance of sex by race with locus of control and self-directed learning as dependent variables.

Results of a study by Hassan (1981) found there to be a " significant predictable statistical relationship... between readiness for self-direction in learning and number of learning projects completed in a year" (p. 3838-A). In a random sample of 77 adults, Hassan found highly self-directed learners not only conducted a greater number of learning projects, they also experienced greater satisfaction with their projects.

Brockett (1985B) explored the area of satisfaction but extended it to life satisfaction in older adults. In a study of 64 adults of at least 60 years of age, Brockett found a statistically positive relationship between scores on readiness for self-directed learning and life satisfaction. The SDLRS and the Salmon-Conte Life Satisfaction in the Elderly Scale (SCLSES) were administered, and a Pearson correlation coefficient of .24 ($p<.05$) was obtained. Brockett also verified a relationship between previous formal education and self-directed learning. There was, however, no relationship between age and self-directed learning.

Hall-Johnsen (1985), in a study of 65 professional staff of a university, found a positive correlation between self-concept as an effective, independent learner and the number of self-planned learning projects conducted (R sq. =.20). This author also determined no relationship existed between readiness for self-directed learning and gender, full- or part-time employment, educational level beyond a bachelor's degree or job tenure.

A positive relationship was also found between adults' self-directedness in learning and their self-concepts (0.558) by Sabbaghian (1979). A sample of 77 adult university students indicated that highly self-directed adult students had more positive self-esteem and self-acceptance and were more effective in different aspects of life than less self-directed adults.

Carney (1985) conducted a study to investigate why some intellectually gifted students would not perform well on self-directed independent study programs. Self-directed (n=40) and non-self-directed (n=38) groups of grades 5-8 intellectually gifted students were formed, based on SDLRS scores and teacher

observation. All students completed the Group Embedded Figures Test, the Swassingarbe Modality Index and the Learning Styles Inventory. The results of t-tests found self-directed learners significantly more field independent and the non-self-directed learners more auditory at the .05 level.

An experimental study by Wiley (1981) examined the effects of preference for structure and a process-oriented self-directed learning project on the self-directed learning readiness of student nurses. Subjects were divided into a control group (n=50) who did not experience a self-directed learning project and an experimental group (n=54) who did experience a self-directed learning project.

A pretest of the SDLRS and Ginter's Reaction to Statements indicated all students were similar in their preference for structure and their readiness for self-directed learning. All students were posttested using the SDLRS. Using a multiple regression analysis, the author concluded only "interaction between experiencing an SDL project and preference for structure did contribute significantly to variance in posttest SDLRS scores" (p.50-A).

When students in each group were divided into high, medium and low preference for structure, of the students who preferred low structure, the experimental group had a higher residual-score mean than did the control group.

Johnson, Sample and Jones (1988) explored the relationship between personality type and self-directed learning in 76 adult degree students. They hypothesized that intuition and judging as measured by the MBTI would be positively correlated to self-directed learning. After administering the MBTI and the SDLRS, the scores of the SDLRS were collapsed to form three groups. The authors cross-tabulated the scores and employed percentage distributions, chi square, and T-tests to test their hypothesis. Support for intuition was found at the $p<.01$ level with respect to chi square and at the $p<.0005$ level on the T-test. Slightly weaker but still significant results were found in relation to judging.

The authors concluded that position on the S-N and J-P scales of the MBTI was related to readiness for self-directed learning.

Summary of Research Using the SDLRS. The research of Johnson, Sample and Jones (1988) is discussed separately as the intent and methodology of this study are similar to the investigation in the present research.

It is unclear as to why the authors of this study chose to collapse the SDLRS scores into three groups and employed chi-square and T-tests to determine the relationship between personality type and self-directed learning. A regression analysis of the two sets of scores would have determined if there was a relationship between the two variables. It appears that an inappropriate statistical procedure may have been employed in this study.

The qualitative study of Taylor (1979) presented a different approach to the study of self-directed learning. The focus of this study was the transition to self-directed learning, the process involved in becoming self-directed. The qualitative approach offers a refreshing view from the learner's perspective.

The results of the rank correlational study of Carney, 1985, and the correlational studies of Bejot, 1981; Hassan, 1981; Brockett, 1985; Hall-Johnsen, 1985;

and Sabbaghian, 1979 offer support for further studies investigating the SDLRS in relation to personality characteristics. All the sample sizes are adequate and the statistical procedures utilized in these studies appear to be congruent with their designs. However, attempts should not be made to generalize the results of these studies beyond their target populations.

The results of these studies using the SDLRS indicate self-directed learning to be positively related to the following characteristics:

1. increased levels of education;
2. number of learning projects completed in a year;
3. satisfaction with life in general;
4. self-concept as a learner;
5. positive self-esteem;
6. field independent learning;
7. having experienced self-directed learning projects;
8. low structure in learning and
9. intuition and judging as defined by the MBTI.

Attributes which have been shown as having no affect on self-directed learning are:

1. age;
2. gender;
3. place of residence;
4. full- or part-time employment;
5. education beyond a B.A.;
6. job tenure;
7. locus of control.

Hypotheses

The literature strongly suggests that readiness for self-directed learning is not influenced by demographic or situational characteristics. Only level of education appears to influence self-directed learning. It would appear, therefore, that the personality of the learner is likely to influence readiness for self-directed learning.

Intuitive types were found to prefer autocratic decision-making, self-paced learning and studying on their own initiative. Self-directed learning has been shown to be positively related to a desire for low structure in learning.

Briggs and Myers stated that intuitives are often more successful in school. It has been shown that to

be a successful self-directed learner, one must have a positive self-concept of oneself as a learner.

Finally, the Johnson, Sample and Jones (1988) study does indicate a positive relationship between self-directed learning and intuition.

Another aspect of being a successful self-directed learner comes from the ability to independently make major decisions regarding the learning process - the how, why, what, where and when of learning. In reference to the introverted type, Jung stated: "His (sic) best work is done with his (sic) own resources, on his (sic) own initiative, and in his (sic) own way" (Jung, 1936, p.551).

Based on the empirical research cited and Jungian theory, this study's major hypotheses are:

1. Scores on the intuitive scale will account for a significant amount of the variance in the prediction of self-directed learning readiness.

2. Scores on the introverted scale will also account for a significant amount of the variance in self-directed learning readiness.

CHAPTER THREE

METHODOLOGY

Overview

This chapter describes the research design, sample, pilot study, instruments, data collection procedures, and analyses of data for the present study. Potential weaknesses and limitations of the study are also addressed.

Research Design

In order to determine if there is a relationship between personality type and self-directed learning, a correlational study was conducted. Self-directed learning is considered the dependent variable. Independent variables are gender, level of education and the Jungian functions and attitudes as measured on each of the MBTI scales.

Pilot Study

A pilot study was completed using the Myers Briggs Type Indicator (MBTI) and the Self-Directed Learning Readiness Scale (SDLRS). Instruments were completed and self-scored, and data were collected on 48 graduate students in the Brock Faculty of Education during class time. This proved to be a feasible approach to data

collection. However, during the discussion period which followed the scoring procedures, it became apparent that an exercise which experientially explained the importance of considering type in relation to education would be beneficial.

The data were analyzed by SPSSPC. A positive correlation of .52 was found between intuition and self-directed learning. A stepwise multiple regression analysis indicated a R square value of .269 in the prediction of the SDLRS from the intuitive scale. These results provided support for the continuation of the study.

Sample

The sample consisted of graduate and undergraduate students from the Faculty of Education, Brock University. A total of 133 students completed the SDLRS and the MBTI. Three undergraduate classes, preservice students taking part in an Educational Psychology course, provided 50 participants. Six graduate classes, two from the foundations stream, two from the administration stream, one from curriculum and one from adult education provided the remaining 83 participants. All participants have a minimum of a

Bachelor's degree. There were 92 female and 41 male subjects (Table 3).

Table 3

Distribution of Sample by Gender and Area of Study

	Area of Study	
Gender	B.ED	M.ED
Female	39	53
Male	11	30

Instruments

MBTI

For the purpose of this study, the Myers-Briggs Personality Type Indicator (MBTI) (Appendix 1) was chosen to measure personality according to the Jungian theory of Psychological Type. The MBTI was developed by Isabel Briggs-Myers and Katherine Briggs in an attempt to operationalize and extend Jung's theory.

The MBTI has undergone revisions since it first appeared in 1962. The present version, Form G, consists of 126 forced-choice items, presented in a self-

scorable format. The instrument consists of four separate scales: extraversion - introversion, sensing -intuition, thinking - feeling and judging - perceiving. The judging - perceiving scale was created by the authors to determine which function an individual uses in the outside world. This function would be the dominant function of an extravert and the auxiliary function of an introvert. Using the highest score on each index as a reference, a four-letter type is determined. In all, the MBTI discerns 16 personality types.

The personality dimensions measured by the MBTI are all considered positive descriptors, and the items are designed to measure two opposing, not two competing, choices. The Indicator, therefore, offers an assessment of an individual which should be nonthreatening and nonjudgemental. It is an attempt to sort individuals into groups to which, in theory, they already belong.

Validity. Several researchers have offered support and criticism for the validity of the MBTI. Stricker and Ross (1964) conducted four studies to investigate criterion validity by correlating each of the MBTI scales with eight different personality tests.

Stricker and Ross (1964A) indicate high correlations for the E-I scale of .63 on the MMPI and .79 (p=.01) on the Gray-Wheelwright Psychological Type Indicator (G-WPT). The S-N scale was positively correlated with the G-WPT at .58 and the Strong Vocational Interest (SVI) at .29 (p=.01). The T-F scale correlated highly with the G-WPT at .60, the masculinity - femininity scale of the MMPI at .22, and the masculinity - femininity scale of the California Psychological Inventory at .17 (p=.01).

Their findings indicate that the sensing - intuition (S-N) and the thinking - feeling (T-F) scales seem to be consistent with their conceptual definitions. The extraversion - introversion (E-I) and the perceiving - judging (P-J) scale do not fare as well. The E-I scale appears to measure an "interest in things and people versus concepts and ideas" (Stricker & Ross, 1964, p.635), rather than the directional flow of psychic energy. Coan, 1978 and Mendelsohn, 1965, also support the findings of Stricker and Ross.

Criterion validity has been investigated by numerous correlational studies. Myers and McCaulley (1985) have compiled the work of twenty studies into a nineteen

page chart. This chart displays the correlations of the MBTI with a number of other measures, such as the Kuder Occupational Interest Survey; the Opinion, Attitude and Interest Scales; the Sixteen Personality Factor Questionnaire; the Personality Research Inventory; and the California Psychological Inventory. From the volume of studies discussed, there appears to be considerable support for the criterion validity of the MBTI.

Construct validity in the MBTI is difficult to measure. Sundberg (1965) offers a realistic perspective on construct validity: "The question of construct validity is always a complex one: Do these indexes really measure the underlying personality types postulated by Jung's theory" (p.324)? This would be a difficult task. What can be somewhat determined, however, is Myers and Briggs interpretation of Jung. Carlson (1980), in three studies of qualitative personal documents, stated that her findings "contribute evidence on the construct validity of Jungian typology...(and) add to the increasing body of evidence supporting the power and generality of type

theory and the value of the MBTI as a sensitive indicator of psychological type" (p.809).

There is considerable support for the S-N and the T-F scales (DeVito, 1985; Sewall, 1986; Sundburg, 1965). Stricker and Ross (1964A) question construct validity on the E-I and the J-P scales. Support for the E-I scale has been found by Sewall (1986) in the work of several researchers (Steel and Kelly, 1976; Wakefield, Sasek, Brubaker and Freidman, 1976).

Research on predictive validity in the MBTI has centred on career- and achievement-related variables. According to Sewall (1986), studies of the moderate predictive success of the MBTI include Buhmeyer and Johnson (1978) on physician extended training and Bruhn, Bunce and Floyd (1980) on job satisfaction among paediatric nurses (Sewall, 1986, p.17).

Myers' ten year follow up of a longitudinal study (1967) of 5,355 medical students, found significance in the prediction of specialty choices made according to type theory (Myers & McCauley, 1985, p.223). McCaulley (1977), investigated the same sample ten years after Myers to discover that those who had changed their

speciality had done so in favour of their type (Myers & McCaulley, 1985, p.223).

Reliability. A number of studies have been conducted of the test-retest reliability of the MBTI. "Test-retest reliability from these studies are good, ranging from .48 (14 months) to .87 (7 weeks). The test-retest reliability of males on T-F seems to be the least stable" (DeVito, p.1032).

Mendelsohn (1965), on the test-retest reliability of the MBTI stated: "14-month, test-retest correlations of approximately .70 were obtained for EI, SN, and JP, and .48 for TF. In general, the reliabilities of the test are like those of similar self-report inventories, TF appearing least stable" (p. 147).

Carskadon (1977), using an eight-week test-retest time interval, found reliability ranging from .73 to .87, with the T-F scale for males having the lowest score at .56. Also in this study, Carskadon referred to the work of Levy, Murphy and Carlson (1972) who, using an eight-week test-retest interval on 146 male and 287 female college students, obtained coefficients ranging from .69 to .80 for the males and .78 to .83 for the females.

Levy and Ridley (1987) tested the stability of personality types in a college population over a 10 year period. Their results indicated only a slight change in the modal personality type from ISFJ to ISTJ. There was no statistical significance in the difference of the distribution of personality types.

Sewall (1986) records the results of split-half reliability tests conducted by Myers (1962), Webb (1964), and Stricker and Ross (1964) which indicate reliability coefficients in the .70 to .80 range with the T-F scale appearing to be the least stable.

Representation of Jung's theory in the MBTI.

As proof that the MBTI embodies Jung's theoretical framework, two claims have been made: (a) the scales are bipolar and have a true zero point, and (b) the four scales interact in an intricate manner. Mendelsohn (1965), and Mendelsohn, Weiss and Feimer (1982) give evidence that the methods used to determine the bipolar nature of the scales are weak. "The regressions shown in the manual change slope or are discontinuous in the area of the zero point. There are weaknesses in this method of demonstrating a dichotomy ..." (p.147).

As to whether or not the scales interact, Mendelsohn (1982) states that there is little research available to verify this assumption. McCrae and Costa (1989) examine the work of Hicks (1984) and Stricker and Ross (1964B) on this problem. They state that neither study provides any evidence of interaction among the scales and suggest that more testing should be done in this area.

Attempting to measure Jung's theory presents problems for the researcher. First, there is the warning from Jung that what he has written is indeed just a theory and may be subject to much refinement (Jung, 1962, p.627). Jung also warns the reader, more than once, that measurement of this theory would be difficult. This theory deals with variables which are not manifested directly and are therefore not open to immediate self-awareness. For example, as the attitudes are identified by the flow of psychic energy, they are difficult to translate into concrete terms except by indirect representation in personality characteristics.

It is also known that all variables are operative to some extent. This may make it difficult to determine

which attitudes and functions are superior. Jung tells us that it is sometimes easier to identify the primary function by noting the inferior function.

Finally, it must also be noted that because the primary function of an introvert becomes introverted, it is not as accessible to observation in the outside world. What is noted is the extraverted auxiliary function.

While there are problems with this scale, the MBTI is not without merit. Many researchers agree that it is the best available measure of Jung's theory. Sewall (1986) states: "Taken as a whole, the evidence gathered from a variety of sources presents a strong argument that the scales are measuring the attitudes formulated by Jung and conceptualized by Myers" (p.17). Coan (1978) offers this evaluation: "The MBTI is designed to meet a difficult psychometric challenge - the assessment of Jungian types. It probably approximates it to a fair degree, but it is subject to further refinement, particularly with respect to item content" (p.631).

The Self-Directed Learning Readiness Scale

The Self-Directed Learning Readiness Scale (SDLRS) (Appendix 2) was created by Lucy Guglielmino as part of her doctoral dissertation. The scale was developed "primarily as a predictive or diagnostic instrument for those who are preparing to begin self-directed study in an academic area at a high school, college, or graduate level" (Oddi, 1987, p.25).

Guglielmino uses a modified version of the Delphi technique, and asked fourteen authorities on self-directed learning to participate in a three-round survey. Chickering, Coolican, Houle, Knowles and Tough were among the participants. They were asked to name and rate attitudes, abilities, values and personality characteristics which they considered important for self-directed learning. Round Three of the survey produced thirty-three characteristics from which a Likert-type questionnaire was developed. The instrument was administered to 307 subjects in Georgia, Virginia and Canada.

A factor analysis indicated the following eight factors are present in self-directed learning: openness to learning opportunities, creativity, future

orientation, self-concept as an effective learner, initiative and independence in learning, informed acceptance of responsibility for one's learning, love of learning and the ability to use basic study and problem-solving skills (Guglielmino, 1977, p.6467-A).

Reliability. Guglielmino (1977) estimated the reliability of the SDLRS to be .87 (Cronbach Alpha). This was verified by Brockett (1985A) in a study of 64 older adults (Cronbach Alpha = .87). According to Guglielmino (1989), the most recent data analysis of 3151 subjects yielded a split-half reliability estimate of .94.

Criterion Validity. Guglielmino (1989), as proof of the validity of the scale, states:

> At least 17 studies have been conducted specifically to examine the validity of the SDLRS, and a recent meta-analysis of 29 studies using the scale provides further evidence of its validity, revealing positive associations with self-directed learning activity (.27), autonomy (.22), and growth orientation (.22), and a negative relationship with dependence (-.12). (p.238)

Mourad (1979), in an investigation of the validity of the SDLRS, reproduced, by the use of a principal component analysis, eight factors much like those originally established by Guglielmino. This research also found significant relationships between the Teacher Rating Scale for self-directed learning and the SDLRS scores.

Construct Validity. Finestone (1984), in a study to determine the construct validity of the SDLRS, stated: "The SDLRS appears to measure personal characteristics related to self-directedness. Results of the test correlate significantly with some behaviours associated with self-directedness" (p.182-183).

Torrance and Mourad (1978) support the construct validity of the scale with statistically significant relationships on three measures of originality (.52, .38 & .52), a measure of analogy-producing ability (.48), a measure of creative achievements and experiences (.71) and right and left hemisphere learning styles (.43 & -.34) (p.1167).

Predictive Validity. Little research exists on the predictive validity of the SDLRS. The research of

Savoie (1979), as cited in Finestone (1984), supported the predictive capabilities of the SDLRS for success in self-directed learning courses. However, Finestone warns the reader that to refuse admission to a self-directed course solely on the basis of a low SDLRS score, without considering other variables, may be as yet presumptive. Not enough work on predictive validity has been done on this scale.

Criticism and Support

The SDLRS is not without its critics. Brockett (1983,1985), in a study with older adults of low educational attainment, found problems with the reading level of the scale, with the reverse items and with the items associated to a school- and book-oriented approach to learning.

In response to Brockett's criticisms, Guglielmino has adapted this scale to suit the needs of adults with lower levels of education. This new scale is known as the SDLRS-ABE. Guglielmino stated that the reverse items are necessary in a scale such as this in order to limit response bias. To address Brockett's concern that there is too much emphasis on school and book learning, Guglielmino offered this defense:

> Only 5 of the 58 items of the original scale (8.6%) referred to classrooms, tests, study skills or libraries....The author feels that an instrument in which 91.4% of the items do not relate to books and schooling does not reflect 'a strong emphasis on books and schooling'.
>
> (1989, p. 68)

Field (1989), in a critique of the SDLRS, questioned the validity of the factor analysis conducted by Guglielmino. When Field applied a factor analysis using his own sample, the results indicated only four factors: love of and/or enthusiasm for learning, initiative and independence in learning, facility with negatively phrased items, and acceptance of responsibility for one's own learning. Further investigation using Cronbach's coefficient alpha led Field to the conclusion that only the first three factors were reliable. Field interpreted these findings to suggest that the SDLRS measures a homogeneous construct related to love of and enthusiasm for learning.

McCune (1989) discounted Field's criticisms. McCune defended the method of factor analysis chosen by

Guglielmino. She stated that since Guglielmino had not set forth any hypotheses to be tested, she was correct in using an exploratory or principal component factor analysis on her data. Field, however, was attempting to confirm the underlying factors and should have used confirmatory factor analysis not a common factor analysis. McCune stated that it would be impossible to expect the same factor results due to the different methods of factor analysis and to the different populations. She said, " Field's article was based on inadequate or weak statistical applications. His findings should be dismissed as unreliable and invalid" (McCune, p. 245).

The SDLRS has potential as an instrument in the investigation of self-directed learning. There does not appear to be sufficient evidence to label this instrument truly valid and reliable. More investigations on predictive validity, split-half and test-retest reliability appear necessary.

Finestone (1984) stated that validation work should be conducted. He did, however, recommend its use: "The SDLRS is a very promising instrument with great

potential. At this stage in its development, it is probably valid as a research tool" (p.184).

Procedures

Data collection was carried out during class time. Each participant was asked to complete a copy of the SDLRS and the MBTI. It was emphasized that participation in this research was voluntary.

The SDLRS was introduced as a learning style questionnaire as is recommended by Guglielmino, the author of the instrument. The MBTI was introduced as a personality assessment questionnaire. Participants were assured that both instruments provided nonthreatening, nonjudgemental information and that all information would be kept confidential. The researcher was on hand at all times to answer any questions or aid with any difficulty resulting from either of the instruments.

As both instruments were self-scoring, results were tabulated by the participants. The meaning of the scores and the connection that was being sought between the results of the two instruments were explained. Groups of three to five individuals were formed each based on the MBTI results. Like types were put in the

same group as much as possible. Each group was asked to brainstorm and record their thoughts on the phrase "Describe self-directed learning." Members were asked to note not only the answers they gave but also the processes used by the group to reach these answers. Answers were recorded on flip chart paper, and the results between groups were compared by the class as a whole.

This exercise was completed to observe differences in answers and processes between the groups and to allow the opportunity for the participants to gain some knowledge of how the results may be applied in an educational setting.

As a final step, a data collection sheet (Appendix 3) was completed by each participant. Information was recorded on gender, SDLRS and MBTI scores, attained level of education, present course of study and present or most recent area of employment.

Data Analysis

The statistical model used in this study is a regression model. A stepwise multiple regression was used in the statistical analysis. All data were entered and analyzed using SPSSX.

The original regression equation yielded sensing as the variable most highly related to self-directed learning. Due to the high negative correlation between sensing and intuition, intuition was subjected to forced entry in the regression equation. A third stepwise multiple regression equation analysis was conducted, with introversion forced into the equation at the first step. A fourth analysis, forcing extraversion in at the first step, was also conducted. All analyses were preformed separately for males and females and for B.Ed. and M.Ed. students.

Limitations

There are a number of factors which may jeopardize validity of a correlational study. A major shortcoming of this design is that it does not establish causal relationships. As all measures are taken at the same time, history is of little consequence. If these measures were to be taken at another time, other variables might intervene to affect the results.

Another problem is instrument reactivity. Correlation coefficients may be enhanced if participants report attitudes and behaviours in a

manner that is more consistent than they are in reality.

Somewhat akin to instrument reactivity are Hawthorne effects. Participants, knowing they are in a study, may distort their responses either to look good in the results or to aid the researcher.

Also, caution must be used in any attempt to generalize these findings beyond the sample which was used in this study, as the size of the sample is small and a random sample was not used.

Finally, this study is reliable and valid only to the extent that the instruments used are reliable and valid.

This chapter has discussed the present study in terms of research design, sample, instruments, data collection procedures, and analyses of data, and the potential limitations which may affect this study. The following chapter will present the results of the statistical analyses.

CHAPTER FOUR

RESULTS

Introduction

This chapter presents the results of this study. Means, standard deviations, and Pearson correlations are found in the section on descriptive statistics. The results of the group exercise is presented next. The analyses of the findings investigating the research questions follow in the section on hypotheses testing.

Descriptive Statistics

Descriptive data are contained in Tables Four to Eight. Table 4 indicates means and standard deviations for dependent and independent variables of the total sample. Table 4 also contains information on the distribution by type within the group. Table 5 indicates means and standard deviations by gender and Table 6 by area of study. Intercorrelations are recorded in Tables 7 and 8. Table 7 indicates results for the total sample; Table 8, by gender and area of study.

Means and Standard Deviations

As is indicated in Table 4, the mean of the SDLRS scores for the total sample is 235.78. By gender, the

mean of the male sample is 233.97 and the female sample is 236.60 (Table 5). By area of study, the mean of the B.Ed sample is 231.04 and of the M.Ed sample, is 238.59 (Table 6).

Results indicate that the mean scores for SDLRS do not vary greatly from those for the whole sample when measured by gender and area of study. All means are well above the average of 214 as established by Guglielmino for the SDLRS.

As recorded in Table 4, the standard deviation for the total sample on SDLRS is 22.61. The standard deviation for the male sample on SDLRS is 25.39 and for the female sample is 21.34 (Table 5). When area of study is considered, the standard deviation for B.Ed students is 19.16 and M.Ed students is 24.09 (Table 6). Guglielmino recorded a standard deviation of 25.59 in her sample of a general adult population. The standard deviations for this sample are comparable with Guglielmino's standard deviation.

The means for the MBTI of the whole sample are 14.07 for extraversion, 12.16 for introversion, 11.88 for sensing, 13.33 for intuition, 11.33 for thinking,

9.86 for feeling, 14.98 for judging, and 12.26 for perceiving.

The standard deviation for the whole sample for the extraversion scale was 6.71; for introversion the standard deviation was 7.09; for sensing, 8.18; for intuition, 6.39; for thinking, 7.85; for feeling, 5.80, for judging, 7.28; and for perceiving, 7.27.

Only the thinking-feeling scores indicated some deviance from the total sample when measured by gender and area of study. The mean of the thinking scale for the total sample is 11.33. When considered by gender, the mean for males was 15.09 and for females was 9.65. When considered by area of study, the mean score of the thinking scale for B.Ed students was 9.40 and for M.Ed students was 12.49.

The feeling scale for the total sample yielded a mean of 9.86. When considered by gender, the mean score for males was 7.53 and for females was 10.90. When considered by area of study, the mean score of the feeling scale for B.Ed students was 11.34 and for M.Ed students was 8.97.

As the only discrepancy in the mean scores was found in the thinking and feeling scales, only these standard

deviations are being noted by gender and area of study. The other standard deviations can be found in Tables 5 and 6.

By gender, the male sample yielded a standard deviation of 6.99 and the female sample was 7.66. By area of study, the standard deviation for the B.Ed students was 7.81 and the M.Ed students was 12.49.

The standard deviation on the feeling scale for the whole sample was 5.80. By gender, the male sample indicated a standard deviation of 5.20 and the female sample was 5.77. By area of study, the standard deviation for the B.Ed students was 5.73 and the M.Ed students was 5.69.

Distribution by Dominant Type

In this sample, 54.9% were found to be dominant in the attitude of extraversion and 42.9% were found to be dominant in introversion. When considered by function, 28.6% were found to be higher in sensing, 33.8% higher in intuition, 21.1% higher in thinking, and 12.8% higher in feeling.

Table 4

Means and Standard Deviation for Dependent and Independent Variables and Dominance by Attitude and Function of Total Sample

Variable	Mean	Standard Deviation	%*
Extraversion	14.07	6.71	54.9
Introversion	12.16	7.09	42.9
Sensing	11.88	8.18	28.8
Intuition	13.33	6.39	33.8
Thinking	11.33	7.85	21.1
Feeling	9.86	5.80	12.8
Judging	14.98	7.28	-
Perceiving	12.26	7.27	-
SDLRS	235.78	22.61	-

* percent of total sample

Table 5

Means and Standard Deviations of Independent and Dependent Variables by Gender (M = 41, F = 92)

Variable	Gender	Mean	Standard Deviation
Extraversion	M	14.70	6.38
	F	13.79	6.87
Introversion	M	11.46	6.93
	F	12.47	7.18
Sensing	M	11.34	8.80
	F	12.12	7.92
Intuition	M	14.02	6.58
	F	13.02	6.32
Thinking	M	15.09	6.99
	F	9.65	7.66
Feeling	M	7.53	5.20
	F	10.90	5.77
Judging	M	14.17	7.21
	F	15.34	7.33
Perceiving	M	13.00	7.37
	F	11.93	7.24
SDLRS	M	233.97	25.39
	F	236.60	21.34

Table 6

Means and Standard Deviations of Independent and Dependent Variables By Area of Study

(B.Ed = 50, M.Ed = 83)

Variable	Study	Mean	Standard Deviation
Extraversion	B.Ed	14.28	6.33
	M.Ed	13.95	6.97
Introversion	B.Ed	12.62	6.36
	M.Ed	11.89	7.52
Sensing	B.Ed	11.34	7.47
	M.Ed	12.20	8.60
Intuition	B.Ed	13.70	6.05
	M.Ed	13.10	6.62
Thinking	B.Ed	9.40	7.81
	M.Ed	12.49	7.69
Feeling	B.Ed	11.34	5.73
	M.Ed	8.97	5.69
Judging	B.Ed	14.68	6.65
	M.Ed	15.16	7.68
Perceiving	B.Ed	12.54	6.29
	M.Ed	12.09	7.83
SDLRS	B.Ed	231.04	19.16
	M.Ed	238.59	24.09

Pearson Correlations

An examination was conducted of the associations between variables using the Pearson product-moment correlation coefficient. As presented in Table 7, the correlation matrix for the total sample indicated modest correlations between SDLRS scores and extraversion (r=.331), introversion (r=-.367), sensing (r=-.398) and intuition (r=.385) scores on the MBTI. When considered by gender (Table 8), the same four variables on the MBTI were correlated with SDLRS. There is also a slight correlation for females between SDLRS and level of education (r=.186).

Moderate correlations were again found with the same MBTI variables when the variables were considered by area of study (Table 8). A negative correlation (r=-.329) was found between SDLRS and judging and a positive correlation (r=.263) between SDLRS and perceiving for B.Ed students. A negative correlation (r=-.227) was found between SDLRS and thinking, and a positive correlation (r=.323) was found between SDLRS and feeling for M.Ed students.

Table 7

Intercorrelations between SDLRS and Independent Variables of Total Sample

Variable	r
Introversion	-.367 **
Extraversion	.331 **
Sensing	-.398 **
Intuition	.385 **
Thinking	-.076
Feeling	.131
Judging	-.099
Perceiving	.042
Education	.015

** p< .001

Table 8

Intercorrelations of Variables by Gender and Area of Study

	Gender		Area of Study	
Variable	Male	Female	B.Ed	M.Ed
Introversion	-.346**	-.389***	-.337***	-.371***
Extraversion	.283*	.365***	.369**	.324**
Sensing	-.516***	-.334**	-.396**	-.421***
Intuition	.445**	.362***	.362**	.415***
Thinking	-.114	-.037	.140	-.227*
Feeling	.188	.090	-.167	.323**
Judging	-.032	-.141	-.329*	-.013
Perceiving	-.026	.086	.263*	-.034
Level of Educ	.018	.186*	.134	-.009

*p< .05

**p< .01

***p< .001

Group Exercise

Each class within the sample was broken into smaller groups of three to five individuals based on the results of the MBTI. Like types were put in the same group as much as possible. Answers to the statement, "Describe self-directed learning", were recorded and collected.

Within the sample, there were five groups composed soley of sensing types, and nine groups composed solely of intuitive types. Results were charted for the intuitive and sensing groups only. The results were surveyed using the fifteen competencies previously recorded as necessary to function as a self-directed learner. The groups were compared to determine how many of the competencies each group was able to identify.

The results were very similar; both sensing and intuitive groups identified ten of the fourteen competencies. Both groups failed to note three of the competencies: (a) the ability to recognize and assess blocks to learning, (b) the ability to engage in an internal change of consciousness and (c) the ability to document what has been learned, using the appropriate media. The only obvious difference was that the intuitive group recognized teachers and peers as

resources for learning, whereas the sensing group alluded to a more autonomous form of learning.

Hypotheses Testing

As was previously stated, two hypotheses have been developed for testing.

1. Scores on the intuitive scale of the MBTI will account for a significant amount of the variance in self-directed learning.

2. Scores on the introverted scale of the MBTI will account for a significant amount of the variance in self-directed learning.

A regression model was used to assess the amount of variance which could be explained in the dependent variable, self-directed learning readiness, by the independent variables. A stepwise multiple regression analysis was used to help determine the order of importance of the variables and the amount of influence each variable has on the dependent variable, SDLRS. Table 9 indicates the results of a stepwise multiple regression on the total sample. Table 10 indicates the results of the same equation with intuition entered on the first step in order to test Hypothesis 1. Results are also recorded by gender and area of study. Table 11 indicates the results with introversion entered on the first step in order to test Hypothesis 2. Results are also recorded by gender and area of study. Table

12 indicates the results with extraversion entered on the first step. This was done because of the high inverse correlation between introversion and extraversion. Results are again recorded by gender and area of study.

As can be seen from Table 9, sensing, the variable which entered the equation at the first step, appears to be the most important variable in explaining self-directed learning. This variable explains about 16 percent of the variance (R square, .158).

The next variable to enter this regression equation is introversion, which accounts for another 9% of the variance. Together with sensing, these variables account for 25 percent of the variance (R square, .248).

The final variable to enter the equation was perceiving, which accounted for approximately 6% of the variance. All three variables appear to account for almost 28% of the variance. Beta, the pull or influence a variable exerts on the dependent variable, is -.398 for sensing, -.304 for introversion and -.204 for perceiving.

Table 9

Stepwise Multiple Regression Equation for Self-Directed Learning n=131

Variable	r^2	B	SE (B)	P
Sensing	.158	-.398	.222	.0001
Introversion	.248	-.304	.248	.0001
Perceiving	.282	-.204	.258	.0001

As Intuition did not appear in the first equation, the stepwise multiple regression equation was run again with intuition forced into the equation in the first position. As sensing and intuition are, by definition, highly negatively correlated, and as Hypothesis 1 was stated in terms of intuition, this procedure was conducted in order to determine the variance accounted for separately by intuition. Table 10 indicates the results of these analyses for the whole group and by gender and area of study.

When considering the whole sample, intuition accounts for almost 15% of the variance in SDLR. Introversion entered the equation in the second step, accounting for an additional 9% of the variance.

Perceiving entered on the third step, accounting for a further 3% of the variance.

In the male sample, intuition accounted for almost 20% of the variance and introversion added another 14%. Sensing entered on the third step to bring the total variance accounted for up to 42%. For the female sample, intuition accounted for 13% of the variance, with introversion added in the second step, to bring the amount of variance accounted for up to 22%.

When considered by area of study, the M.Ed sample showed intuition accounting for 17% of the variance when entered at the first step. Introversion entered the equation at the second step to account for a further 7% of the variance, and perceiving entered the equation at the third step to bring the total variance accounted for up to almost 32%.

The B.Ed sample indicated 13% of the variance accounted for when intuition was entered in the first step, and an additional 13% accounted for by introversion at the second step.

Table 10

Stepwise Multiple Regression Equation for SLDRS with Intuition entered first

Variable	r^2	B	SE (B)	P
Total Sample n=133				
Intuition	.148	.385	.285	.0001
Introversion	.242	-.310	.249	.0001
Perceiving	.275	-.203	.260	.0001
Male Sample n=41				
Intuition	.198	.445	.553	.0035
Introversion	.342	-.381	.483	.0003
Sensing	.424	-.667	.839	.0001
Female Sample n=92				
Intuition	.131	.362	.331	.0004
Introversion	.221	-.313	.293	.0001
M.Ed Sample n=82				
Intuition	.172	.415	.367	.0001
Introversion	.243	-.276	.324	.0001
Perceiving	.319	-.306	.317	.0001
B.Ed Sample n=50				
Intuition	.131	.362	.425	.0105
Introversion	.261	-.360	.392	.0010

In another analysis, introversion was entered into the regression equation in the first position. Table 11 indicates the results of this analysis for the whole sample, by gender and by area of study.

When the whole sample was considered, introversion accounted for 13% of the variance. Sensing added another 11% and perceiving another 4%, bringing the total amount of the variance accounted for up to 28%.

Introversion accounted for almost 12% of the variance for the male sample and sensing added another 22%, to bring the total variance accounted for up to 42%. For the female sample, introversion accounted for 15% of the variance and intuition was added at the second step to account for a further 7%.

When area of study was considered, it was found that introversion accounted for 11% of the variance for B.Ed students, and sensing added a further 17% to this equation. For M.Ed students, introversion accounted for almost 14% of the variance and sensing entered at the second step to account for a further 11%. Perceiving was entered at the third step, to account for a further 7% of the variance.

Table 11

Stepwise Multiple Regression Equation for SDLRS with Introversion entered first

Variable	r^2	B	SE (B)	P
Total Sample n=133				
Introversion	.135	-.366	.261	.0001
Sensing	.248	-.342	.213	.0001
Perceiving	.281	-.203	.258	.0001
Male Sample n=41				
Introversion	.119	-.345	.550	.0268
Sensing	.421	-.551	.357	.0001
Female Sample n=92				
Introversion	.151	-.388	.292	.0001
Intuition	.222	.276	.328	.0001
B.Ed Students n=50				
Introversion	.114	-.337	.424	.0176
Sensing	.289	-.420	.317	.0004
M.Ed Students n=83				
Introversion	.137	-.370	.330	.0006
Sensing	.244	-.341	.284	.0001
Perceiving	.314	-.291	.315	.0001

In a final analysis, extraversion was entered into the equation first. This variable is highly negatively correlated with introversion, therefore, in order to determine the variance accounted for by extraversion, it was forced into the equation first. Table 12 indicates the results of this analysis for the whole study and by gender and area of study.

When the whole sample was considered, extraversion accounted for almost 11% of the variance. Sensing added another 11% in the second step, and perceiving added almost 4% in the final step. The total variance accounted for was 26%.

In the male sample, extraversion accounted for 8% and sensing added 30% , to account for a total of 38%. For the female sample, extraversion accounted for 13%, with intuition entering at the second step at 7%, for a total amount of the variance of 20%.

Extraversion accounted for approximately 14% of the variance for B.Ed students. Sensing added another 25%, to account for a total of almost 30% of the variance. For M.Ed students, extraversion accounted for 10% of the variance, sensing entered at the second step to account for a further 12%, and perceiving added another 7%. Almost 30% of the variance is accounted for.

Table 12

Stepwise Multiple Regression Equation for SDLRS with Extraversion entered first

Variable	r^2	B	SE (B)	P
Total Sample n=133				
Extraversion	.109	.330	.279	.0001
Sensing	.227	-.350	.216	.0001
Perceiving	.263	-.212	.263	.0001
Male Sample n=41				
Extraversion	.080	.282	.610	.0731
Sensing	.383	-.553	.369	.0001
Female Sample n=92				
Extraversion	.133	.365	.308	.0004
Intuition	.203	.277	.334	.0001
B.Ed Students n=50				
Extraversion	.136	.369	.416	.0090
Sensing	.294	-.397	.315	.0003
M.Ed Students n=83				
Extraversion	.104	.323	.363	.0028
Sensing	.226	-.360	.285	.0001
Perceiving	.299	-.301	.322	.0001

Conclusion

In all the regression equations completed, the beta values for intuition have been positive, and the beta values for introversion, sensing and perceiving have been negative. It should also be noted that the standard error of beta is large for the smaller sample sizes and for perceiving, whenever perceiving entered in the analyses for the whole sample. These results must be interpreted with caution.

It appears from the results of the regression analyses that the first hypothesis can be accepted, and the second hypothesis cannot be accepted. A discussion on the results of these analyses follows in the next chapter.

CHAPTER FIVE

DISCUSSION

Introduction

The purpose of this study was to determine if a relationship existed between personality type and self-directed learning. The final chapter has been structured to present: a) a discussion of the results in relation to theory and previous research, b) the practical implications of the study; and c) the implications of this study for future research.

Discussion of the Results

Means and Standard Deviations

It is apparent by the mean score for the whole sample (235.78) that a great percentage of the participants in this study are capable of being self-directed in their learning. Guglielmino set 214 as the point at which a learner will lean towards the ability to be self-directed in his/her learning. Closer scrutiny of the frequencies for SDLRS indicate that eighty-five of the participants, or 64%, scored in the above average range with scores over 227, while only 21 of the 132 participants, or approximately 15%, did not attain a score of 214 on the SDLRS. There is a fairly

even distribution of sensing (28.6%) and intuitive (33.8%) types, this offers further proof of the strong ability of this sample to be self-directed, regardless of their type. This was also confirmed in the lack of differences in the results of the group exercise.

Little variance in these scores was noted when the sample was studied in terms of gender and area of study. The greatest difference was noted in M.Ed students, where a mean score 7.55 points higher than the B.Ed students was found. This difference is in keeping with previous research, which found that SDLR did increase as level of education increased.

Guglielmino found the average standard deviation for the SDLRS to be 25.59. The standard deviation for the whole sample was 22.61, well within the ranged noted by Guglielmino. Also, standard deviations by gender and area of study were close to the specified range.

The only differences in mean scores which merit discussion are those found in the thinking and feeling scores. The mean for the whole sample was 11.33 for thinking and 9.86 for feeling. When measured by gender, the mean for the female sample is higher on the feeling scale (10.90) than the male sample (7.53), and

the mean for the male sample is higher on the thinking scale (15.09) than the female sample (9.65). This finding is congruent with previous research on the MBTI (Myers, 1985).

Similar results are found in M.Ed. and B.Ed. students. M.Ed. students indicate a mean of 12.49 on the thinking scale and 8.97 on the feeling scale, while B.Ed students show a mean of 9.40 on the thinking scale and 11.34 on the feeling scale. This is not as great a difference as is noted between males and females and could be due, in part, to the higher percentage of female students in the B.Ed sample (78%) than the M.Ed sample (63%). However, the possibility that further education could heighten thinking scores and diminish feeling scores should not be dismissed. Also, consideration should be given to the possibility that those who lean towards the thinking rather than the feeling function may be more inclined to pursue higher education.

Discussion of Results of Hypotheses

The variables which appear to be most highly correlated with self-directed learning readiness for the whole sample are the attitudes of extraversion and

introversion and the functions of sensing and intuition. Extraversion and intuition have positive correlations of .331 and .385 respectively; introversion and sensing have negative correlations of -.367 and -.398. These correlations are significant at the $p<.001$ level. Similar results were found when the correlations were conducted by gender and area of study. These correlations suggest that an individual who is an extraverted or an intuitive type according to the MBTI would be more likely to prefer self-directed learning than an individual who is an introverted or a sensing type.

A step-wise multiple regression analysis with intuition forced into the equation at the first step indicated that approximately 15% of the variance in SDLR could be accounted for by intuition.

These findings suggest that the first hypothesis was correct, in that intuition does positively predict the propensity to be self-directed. They are also supported by previous research, in that intuitives have been found to prefer autocratic decision making, self-paced learning, studying on their own initiative and exercising responsibility for their own learning. All

of these attributes are part of what makes up a self-directed learner.

However, when introversion was entered at the first step of the regression analysis, no support for the second hypothesis was found. Introversion does account for approximately 13% of the variance, but in a negative manner. There has been no research directly relevant to these findings. The second hypothesis was based entirely on the writings of Jung, and most specifically on his statement in reference to the introverted type: "His (sic) best work is done with his (sic) own resources, on his (sic) own initiative, and in his (sic) own way" (Jung, 1936, p.551).

Two reasons could account for the failure of the second hypothesis. The first reason could be in the interpretation by this author of Jung's meaning in the above statement. The second could be in the structure of the extraversion and introversion scales of the MBTI.

The second reason has been suggested by reviewers of the MBTI. Mendelsohn (1965) stated:

> The E-I scale seems to measure extraversion-introversion in the popular senses rather than in

> the Jungian sense....This interpretation is supported by a pattern of correlations with such variables as social introversion, gregariousness, and talkativeness, and the lack of correlation with variables related to thinking, introversion and theoretical orientation. (p.147)

Also, Sundberg (1965) stated: "Stricker and Ross conclude that the SN and TF scales may reflect the dimensions they were theorized to represent but that the EI and JP are more questionable" (p.147).

Finally, Jung has warned of the difficulty of attempting to discover the attitude of an individual. He stated, "However simple and clear the fundamental principle of the two opposing attitudes may be, in actuality they are complicated and hard to make out, because every individual is an exception to the rule" (1953-1979, p.516).

While the second hypothesis of this study was not verified, the theory on which it is based is sound, though not easily amenable to research. This hypothesis should not be dismissed as invalid without further study.

One final area of the results merits discussion. The regression analyses for sensing and extraversion, though not part of the hypotheses, indicate that these variables also are a part of the prediction in SDLR. Sensing did enter the original regression equation at the first step, and accounted for almost 16% of the variance in self-directed learning, though in a negative manner. This finding is congruent with previous research, which indicated that sensing types preferred highly structured learning and reacted positively to the use of behavioural objectives.

Extraversion, when forced into the regression equation at the first step, accounted for almost 11% of the prediction for SDLR in a positive manner. This finding, as with the finding on introversion, must be viewed with caution. Extraversion may be subject to the same problems of interpretation that were previously indicated for introversion. The E-I scale of the MBTI, as was noted by Sundberg and Mendelsohn, may be measuring extraversion in the popular rather than the Jungian sense. Also, no research directly relevant to these findings was located.

The Practical Implications of the Study

Considering the learner. The most important outcome of the results of this study is the realization that learners will vary in their ability to be self-directed in their learning. As Brookfield (1985) stated: "...it is crucial that we do not blindly accept the orthodox view that self-direction is the preferred mode of learning in all cases for all adults" (p.67). Psychological type appears to account for 28% of the variance in the prediction for self-directed learning. The results of this study suggest that intuition alone accounts for 15% of the variance in readiness for self-directed learning. Conversely, the results also indicate that sensing will negatively account for almost 16% of the variance in readiness for self-directed learning. These results suggest that educators may have to spend more time guiding someone who prefers sensing towards self-directed learning than someone who is intuitive. One may also have to consider the possibility that an individual who is highly differentiated on the sensing scale may not be able to develop the ability to become a self-directed learner.

Considering the instructor. These results can also be considered from the perspective of the teacher. Lawrence (1989) suggests that instructors tend to teach in the way they prefer to learn. He states, " Sensing type teachers tend to keep things centralized, and focus activities on a narrow range of choices. Intuitive type teachers are more likely to give a wide range of choices to students" (p.79).

Therefore, educators who are intuitive types may prefer self-directed learning and may not understand why some of their students do not. Also, educators who are sensing types may not be as self-directed in their own learning and may not find it easy to promote self-directed learning in their students. Highly differentiated sensing instructors may find particular difficulty. This should not stop them from attempting to learn to be self-directed or to promote self-direction in their students.

Considering the findings of this research from the perspective of the instructor suggests the importance of instructional development on Psychological type and its relationship to individual teaching style. Instructors should be made aware of this facet of

planning instruction through workshops and other means of instructional development.

To promote the goal of self-direction in their learners, educators must be aware of their process. Learners who are being introduced to self-directed learning for the first time may find themselves uncomfortable. "Adults in a new learning situation or adults returning to 'school' after many years will be anxious or uncomfortable and will likely display dependent behaviors" (Cranton, 1989, p.17). This could be true of all learners, whether they are intuitive or sensing, but may be particularly true of the sensing type. Self-directed learning must be introduced slowly and gently. Learners who are being exposed to self-directed learning for the first time should always be guided from the position of dependent learners with care and responsibility on the part of the instructor. Two techniques most often suggested to promote self-directed learning are learning contracts and peer learning groups.

Also relevant to this discussion is that educators must avoid the pitfall of what Dewey (1928) referred to as the "Either - Or" philosophy of education. While

Dewey was referring to progressive versus traditional education, the warning is much the same. Educators should not abandon different ways of teaching. Even as their ultimate goal may be to produce self-directed learners, there are circumstances during which it is appropriate and responsible on the part of the educator to guide the learning of the students. Directed learning has its place. When entering into a new area of learning, such as learning to ride a bicycle or to scuba dive, directed learning may be the appropriate method. None of us wants to fly in a plane piloted by a person who has not been guided and directed in the process of learning to fly. The truly self-directed learner should be able to recognize the circumstances under which directed rather than self-directed learning is the more advantageous way to learn.

External constraints. Attempts by educators to promote self-directed learning are also subject to the constraints imposed on them by formal institutions. Grading policies are a reality, curricula must be adhered to and sceptical administrators are abundant. All of these provide another set of hurdles for the instructor.

Other than circumstances when certification is required or norm-referenced testing is strict policy, grading policies often leave room for negotiation between the learner and the instructor as to how evaluation may be conducted.

Also, latitude for change can be found in most curricula. "...The self-directed instructor and responsible adult learner can easily redesign any suggested or prescribed learning activities. Very rarely is the Great Curriculum Designer watching over the instructional situation" (Cranton, 1989, p.200). The concern of administration is more likely to be that objectives are met, not particularly how they are met.

The goal of education should remain the production of the self-directed learner. A truly self-directed learner is aware of the different ways there are to learn and is capable of making a responsible choice of the appropriate way to learn in any situation. Caffarella and O'Donnell (1987) consider self-directed learning to be a concept "...which motivates the individual to continue learning through any number of methodologies" (p.206). The ability to learn through any method extends to the ability to learn throughout

life. The circle of learning becomes the spiral of learning and the spiral of learning becomes the spiral of lifelong learning. When this occurs, education has succeeded.

Suggestions for Future Research

Extraversion and introversion. Future research into the area of self-directed learning and personality type may consider focusing on the extraverted or introverted attitude of the learner. The second hypothesis of this study was not supported but should not be dismissed without further study. An attempt should be made to determine if the E-I scale of the MBTI truly interprets the theory of Jung in terms of introversion and extraversion. If this scale is lacking in its ability to interpret Jung's theory, and as it is often accepted as the best measure of Jungian theory, other instruments should be developed to this end.

Instruments to measure self-directed learning. Much of the research into self-directed learning has been quantitative in nature, and the majority of these studies employed the SDLRS to measure self-directed learning. At the present time, the only other

instrument available measures self-directed learning as a personality construct. This scale, the Oddi Continuing Learning Inventory (OCLI), was developed in 1986 and while it shows promise as an alternative measure of self-directed learning, it requires further validation studies (Six & Hiemstra, 1987, p.248).

The SLDRS has been shown in Chapter 3 to be a promising instrument which requires further research in order to be deemed valid and reliable. Further studies, possibly experimental or quasi-experimental in nature, need to be conducted using both these instruments, but developing alternative ways to measure self-directed learning should not be neglected.

This author identified fifteen competencies necessary for self-directed learning. The SDLRS is based on eight factors for self-directed learning. It is possible that the SDLRS is not presenting a complete picture of the self-directed learner.

Qualitative research. There appears to be little qualitative research into self-directed learning. This type of research is necessary to provide a deeper understanding of the character and personality of learners.

Other variables. Psychological type has been shown to account for approximately 28% of the variance in the prediction of self-directed learning. Research is required to determine which other variables in conjunction with type predict self-directed learning.

Besides personality variables, the role of society and the family should also be considered. Growth towards self-direction may also find some resistance in the structure of the family and society. Kohn, 1956, found; "Middle class parents are more likely to emphasize children's self-direction, and working class parents to emphasize their conformity to external authority....Class differences in parental values and child rearing practices influence the development of capacities that children will someday need" (p.146).

To what extent does the family influence the ability to be a self-directed learner? If the self-directed learner becomes the goal and product of formal education, as we have been told is necessary in our world today, what effects will this have on the family, formal institutions of learning and society as a whole?

Self-direction in children. This study, as is the majority of research on self-directed learning,

focusses on the adult learner. Optimally, self-direction should be encouraged at least from the time a child enters school. Much research needs to be done to discover the extent to which a child can and should be self-directed.

Understanding the mechanics. The results of the SDLRS scores indicated that the graduate and undergraduate samples in this study were quite high in their readiness for self-directed learning. We understand the competencies necessary for self-directed learning, but there is a need to focus on how adult learners actually acquire and increase their efficiency in self-directed learning. Which factors influence increased proficiency? Qualitative research may provide a way to discover these factors.

The role of the instructor provides another area within understanding the mechanics which could be explored. How can or does the instructor influence increased proficiency? At what point is it proper or necessary to influence the direction the learner has chosen to take in terms of quality of learning or societal versus individual needs?

The area of self-directed learning has just begun to be explored. There are a multitude of studies which could be undertaken involving self-directed learning. The above suggestions are but a few.

Summary

This study began in an attempt to discover why some learners more than others find self-directed learning a comfortable and beneficial learning strategy. Chapter 1 introduced the problem and provided a rationale for its further investigation.

Chapter 2 traced the philosophical foundations of self-directed learning and the personality theory of Carl Jung. A review of the literature included conceptual and empirical studies of type differences and self-directed learning. From these investigations two hypotheses were proposed for testing.

Chapter 3 described the methodology of the present study in terms of research design, pilot study, sample, instruments, data collection procedures and analyses of data. A correlational study using a sample of graduate and undergraduate students was described. The data collected by means of the MBTI and the SDLRS were

subjected to regression analyses. Limitations of the study were discussed.

Chapter 4 presented the results of the statistical analyses. Results were recorded in terms of descriptive statistics, that is the means, standard deviations and Pearson correlations, and hypotheses testing by regression analyses.

This final chapter discussed these results and their implications for educators, education and learning. It is hoped that educators may become once more aware of the vast number of factors which may affect the learning of their students and reflect on their practice in light of these findings.

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Appendix 1

Myers-Briggs Type Indicator®

Form G — Self-Scorable Question Booklet

Katharine C. Briggs
Isabel Briggs Myers

Directions

There are no "right" or "wrong" answers to these questions. Your answers will help show how you like to look at things and how you like to go about deciding things. Knowing your own preferences and learning about other people's can help you understand where your special strengths are, what kinds of work you might enjoy, and how people with different preferences can relate to each other and be valuable to society.

Read each question carefully and mark your answer on the separate answer booklet. *Make no marks on this question booklet.* Do not think too long about any question. If you cannot decide how to answer a question, skip it and return to it later.

When reading the questions, be sure to follow the question numbers and work ACROSS the page from left to right. When you mark your answers on the separate answer booklet, you will also work across the page.

There are two parts to this question booklet. Part I is above the shaded line; the instructions for this part are at the top of the page. Part II is below the shaded line; the instructions for this part are at the bottom of the page. Be sure to read and follow the separate directions for each part.

Read the directions on the front of the answer booklet. After reading each question, mark your answer by making an "X" in the appropriate box.

When you finish answering all the questions, read the directions at the bottom of your answer booklet for how to score your MBTI™. Be sure to turn in your question booklet when you have finished with it.

Consulting Psychologists Press, Inc.
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PART I (above the shaded line). Which Answer Comes Closer to Telling How You Usually Feel or Act?

WORK ACROSS ⟶

1. Are you usually
   (A) a "good mixer," or
   (B) rather quiet and reserved?

2. If you were a teacher, would you rather teach
   (A) fact courses, or
   (B) courses involving theory?

3. Do you more often let
   (A) your heart rule your head, or
   (B) your head rule your heart?

4. When you go somewhere for the day, would you rather
   (A) plan what you will do and when, or
   (B) just go?

5. When you are with a group of people, would you usually rather
   (A) join in the talk of the group, or
   (B) talk with one person at a time?

6. Do you usually get along better with
   (A) imaginative people, or
   (B) realistic people?

7. Is it a higher compliment to be called
   (A) a person of real feeling, or
   (B) a consistently reasonable person?

8. Do you prefer to
   (A) arrange dates, parties, etc., well in advance, or
   (B) be free to do whatever looks like fun when the time comes?

9. In a large group, do you more often
   (A) introduce others, or
   (B) get introduced?

10. Would you rather be considered
    (A) a practical person, or
    (B) an ingenious person?

11. Do you usually
    (A) value sentiment more than logic, or
    (B) value logic more than sentiment?

12. Are you more successful
    (A) at dealing with the unexpected and seeing quickly what should be done, or
    (B) at following a carefully worked out plan?

13. Do you tend to have
    (A) deep friendships with a very few people, or
    (B) broad friendships with many different people?

14. Do you admire more the people who are
    (A) conventional enough never to make themselves conspicuous, or
    (B) too original and individual to care whether they are conspicuous or not?

15. Do you feel it is a worse fault to be
    (A) unsympathetic, or
    (B) unreasonable?

16. Does following a schedule
    (A) appeal to you, or
    (B) cramp you?

17. Among your friends, are you
    (A) one of the last to hear what is going on, or
    (B) full of news about everybody?

18. Would you rather have as a friend
    (A) someone who is always coming up with new ideas, or
    (B) someone who has both feet on the ground?

19. Would you rather work under someone who is
    (A) always kind, or
    (B) always fair?

20. Does the idea of making a list of what you should get done over a weekend
    (A) appeal to you, or
    (B) leave you cold, or
    (C) positively depress you?

21. Do you
    (A) talk easily to almost anyone for as long as you have to, or
    (B) find a lot to say only to certain people or under certain conditions?

22. In reading for pleasure, do you
    (A) enjoy odd or original ways of saying things, or
    (B) like writers to say exactly what they mean?

23. Do you feel it is a worse fault
    (A) to show too much warmth, or
    (B) not to have warmth enough?

[On this next question *only*, if two answers are true, mark both.]

24. In your daily work, do you
    (A) rather enjoy an emergency that makes you work against time, or
    (B) hate to work under pressure, or
    (C) usually plan your work so you won't *need* to work under pressure?

25. Can the new people you meet tell what you are interested in
    (A) right away, or
    (B) only after they really get to know you?

26. In doing something that many other people do, does it appeal to you more to
    (A) do it in the accepted way, or
    (B) invent a way of your own?

27. Are you more careful about
    (A) people's feelings, or
    (B) their rights?

28. When you have a special job to do, do you like to
    (A) organize it carefully before you start, or
    (B) find out what is necessary as you go along?

PART II (see instructions below).

29. Do you usually
    (A) show your feelings freely, or
    (B) keep your feelings to yourself?

30. In your way of living, do you prefer to be
    (A) original, or

31. (A) gentle
    (B) firm

32. When it is settled well in advance that you will do a certain thing at a certain time, do you find it

	(B) conventional?		(A) nice to be able to plan accordingly, or (B) a little unpleasant to be tied down?
33. Would you say you (A) get more enthusiastic about things than the average person, or (B) get less excited about things than the average person?	34. Is it higher praise to say someone has (A) vision, or (B) common sense?	35. (A) thinking (B) feeling	36. Do you (A) rather prefer to do things at the last minute, or (B) find doing things at the last minute hard on the nerves?
37. At parties, do you (A) sometimes get bored, or (B) always have fun?	38. Do you think it more important to be able (A) to see the possibilities in a situation, or (B) to adjust to the facts as they are?	39. (A) convincing (B) touching	40. Do you think that having a daily routine is (A) a comfortable way to get things done, or (B) painful even when necessary?
41. When something new starts to be the fashion, are you usually (A) one of the first to try it, or (B) not much interested?	42. Would you rather (A) support the established methods of doing good, or (B) analyze what is still wrong and attack unsolved problems?	43. (A) analyze (B) sympathize	44. When you think of some little thing you should do or buy, do you (A) often forget it till much later, or (B) usually get it down on paper to remind yourself, or (C) always carry through on it without reminders?
45. Are you (A) easy to get to know, or (B) hard to get to know?	46. (A) facts (B) ideas	47. (A) justice (B) mercy	48. Is it harder for you to adapt to (A) routine, or (B) constant change?
49. When you are in an embarrassing spot, do you usually (A) change the subject, or (B) turn it into a joke, or (C) days later, think of what you should have said?	50. (A) statement (B) concept	51. (A) compassion (B) foresight	52. When you start a big project that is due in a week, do you (A) take time to list the separate things to be done and the order of doing them, or (B) plunge in?
53. Do you think the people close to you know how you feel (A) about most things, or (B) only when you have had some special reason to tell them?	54. (A) theory (B) certainty	55. (A) benefits (B) blessings	56. In getting a job done, do you depend on (A) starting early, so as to finish with time to spare, or (B) the extra speed you develop at the last minute?
57. When you are at a party, do you like to (A) help get things going, or (B) let the others have fun in their own way?	58. (A) literal (B) figurative	59. (A) determined (B) devoted	60. If you were asked on a Saturday morning what you were going to do that day, would you (A) be able to tell pretty well, or (B) list twice too many things, or (C) have to wait and see?
61. (A) hearty (B) quiet	62. (A) imaginative (B) matter-of-fact	63. (A) firm-minded (B) warm-hearted	64. Do you find the more routine parts of your day (A) restful, or (B) boring?

(continued)

PART II (below the shaded line). Which Word in Each Pair Appeals to You More?

Think what the words mean, not how they look or how they sound.

PART II (continued). Which Word in Each Pair Appeals to You More?

Think what the words mean, not how they look or how they sound.

WORK ACROSS ⟶

65. (A) reserved (B) talkative	66. (A) make (B) create	67. (A) peacemaker (B) judge	68. (A) scheduled (B) unplanned
69. (A) calm (B) lively	70. (A) sensible (B) fascinating	71. (A) soft (B) hard	72. (A) systematic (B) spontaneous
73. (A) speak (B) write	74. (A) production (B) design	75. (A) forgive (B) tolerate	76. (A) systematic (B) casual
77. (A) sociable (B) detached	78. (A) concrete (B) abstract	79. (A) who (B) what	80. (A) impulse (B) decision
81. (A) party (B) theater	82. (A) build (B) invent	83. (A) uncritical (B) critical	84. (A) punctual (B) leisurely
	85. (A) foundation (B) spire	86. (A) wary (B) trustful	87. (A) changing (B) permanent
	88. (A) theory (B) experience	89. (A) agree (B) discuss	90. (A) orderly (B) easygoing
	91. (A) sign (B) symbol		92. (A) quick (B) careful
	93. (A) accept (B) change		
	94. (A) known (B) unknown		

Appendix 2

SDLRS-A

Name _____ Sex _____ Birthdate _____

Date of Testing _____ Location of Testing _____

QUESTIONNAIRE

INSTRUCTIONS: This is a questionnaire designed to gather data on learning preferences and attitudes towards learning. After reading each item, please indicate the degree to which you feel that statement is true of you. Please read each choice carefully and circle the number of the response which best expresses your feeling.

There is no time limit for the questionnaire. Try not to spend too much time on any one item, however. Your first reaction to the question will usually be the most accurate.

ITEMS:	RESPONSES				
	Almost never true of me; I hardly ever feel this way.	*Not often true of me; I feel this way less than half the time.*	*Sometimes true of me; I feel this way about half the time.*	*Usually true of me; I feel this way more than half the time.*	*Almost always true of me; there are very few times when I don't feel this way.*
1. I'm looking forward to learning as long as I'm living.	1	2	3	4	5
2. I know what I want to learn.	1	2	3	4	5
3. When I see something that I don't understand, I stay away from it.	1	2	3	4	5
4. If there is something I want to learn, I can figure out a way to learn it.	1	2	3	4	5
5. I love to learn.	1	2	3	4	5
6. It takes me a while to get started on new projects.	1	2	3	4	5
7. In a classroom, I expect the teacher to tell all class members exactly what to do at all times.	1	2	3	4	5
8. I believe that thinking about who you are, where you are, and where you are going should be a major part of every person's education.	1	2	3	4	5
9. I don't work very well on my own.	1	2	3	4	5

	Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usually true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way
10. If I discover a need for information that I don't have, I know where to go to get it.	1	2	3	4	5
11. I can learn things on my own better than most people.	1	2	3	4	5
12. Even if I have a great idea, I can't seem to develop a plan for making it work.	1	2	3	4	5
13. In a learning experience, I prefer to take part in deciding what will be learned and how.	1	2	3	4	5
14. Difficult study doesn't bother me if I'm interested in something.	1	2	3	4	5
15. No one but me is truly responsible for what I learn.	1	2	3	4	5
16. I can tell whether I'm learning something well or not.	1	2	3	4	5
17. There are so many things I want to learn that I wish that there were more hours in a day.	1	2	3	4	5
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.	1	2	3	4	5
19. Understanding what I read is a problem for me.	1	2	3	4	5
20. If I don't learn, it's not my fault.	1	2	3	4	5
21. I know when I need to learn more about something.	1	2	3	4	5
22. If I can understand something well enough to get a good grade on a test, it doesn't bother me if I still have questions about it.	1	2	3	4	5
23. I think libraries are boring places.	1	2	3	4	5
24. The people I admire most are always learning new things.	1	2	3	4	5

		Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usualy true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way
25.	I can think of many different ways to learn about a new topic.	1	2	3	4	5
26.	I try to relate what I am learning to my long-term goals.	1	2	3	4	5
27.	I am capable of learning for myself almost anything I might need to know.	1	2	3	4	5
28.	I really enjoy tracking down the answer to a question.	1	2	3	4	5
29.	I don't like dealing with questions where there is not one right answer.	1	2	3	4	5
30.	I have a lot of curiosity about things.	1	2	3	4	5
31.	I'll be glad when I'm finished learning.	1	2	3	4	5
32.	I'm not as interested in learning as some other people seem to be.	1	2	3	4	5
33.	I don't have any problem with basic study skills.	1	2	3	4	5
34.	I like to try new things, even if I'm not sure how they will turn out.	1	2	3	4	5
35.	I don't like it when people who really know what they're doing point out mistakes that I am making.	1	2	3	4	5
36.	I'm good at thinking of unusual ways to do things.	1	2	3	4	5
37.	I like to think about the future.	1	2	3	4	5
38.	I'm better than most people are at trying to find out the things I need to know.	1	2	3	4	5
39.	I think of problems as challenges, not stopsigns.	1	2	3	4	5
40.	I can make myself do what I think I should.	1	2	3	4	5

		Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usually true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way.
41.	I'm happy with the way I investigate problems.	1	2	3	4	5
42.	I become a leader in group learning situations.	1	2	3	4	5
43.	I enjoy discussing ideas.	1	2	3	4	5
44.	I don't like challenging learning situations.	1	2	3	4	5
45.	I have a strong desire to learn new things.	1	2	3	4	5
46.	The more I learn, the more exciting the world becomes.	1	2	3	4	5
47.	Learning is fun.	1	2	3	4	5
48.	It's better to stick with the learning methods that we know will work instead of always trying new ones.	1	2	3	4	5
49.	I want to learn more so that I can keep growing as a person.	1	2	3	4	5
50.	I am responsible for my learning — no one else is.	1	2	3	4	5
51.	Learning how to learn is important to me.	1	2	3	4	5
52.	I will never be too old to learn new things.	1	2	3	4	5
53.	Constant learning is a bore.	1	2	3	4	5
54.	Learning is a tool for life.	1	2	3	4	5
55.	I learn several new things on my own each year.	1	2	3	4	5
56.	Learning doesn't make any difference in my life.	1	2	3	4	5
57.	I am an effective learner in the classroom and on my own.	1	2	3	4	5
58.	Learners are leaders.	1	2	3	4	5

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Appendix 3

PLEASE : 1) RECORD YOUR SCORES FROM THE MBTI AND THE SDLRS.
2) RESPOND TO THE REMAINING QUESTIONS AS THEY ARE NECESSARY FOR DETERMINING CORRELATIONS IN THE DATA.

MBTI SCORE: (letters and number value)

E____ I____ S ____ N ____

T ____ F_____ J____ P____

SDRLS SCORE: _____

GENDER: Male _____ Female _____

EDUCATIONAL BACKGROUND:

Level Attained _____

Most recent or current area of study :

_____

POSITION HELD IN MOST RECENT PLACE OF EMPLOYMENT:

_____

I thank you for allowing me to participate in your class and for your co-operation in completing the MBTI and the SDLRS. You have helped me a great deal in my research. I hope I have been able to make this a pleasant and educational experience for you.

Sincerely,

L Verbeson