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Adult self-directedness and self-concept: an exploration of relationship

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Adult self-directedness and self-concept: An exploration of relationship

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CHAPTER I. INTRODUCTION

General Statement

Why self-directed learning? James McDonald (1967) points out three sources of concern for more independent learning. First, the American cultural value system ascribes high worth to the integrity of the individual, equality of opportunity, and the rights of life, liberty, and the pursuit of happiness. Secondly, the pragmatic philosophy of Dewey and Dewey (1915) which emphasizes the importance of problem solving, reflective thinking, and development of the whole individual, has grown in importance. And finally, recent findings in psychoanalysis and the mental health movement which show that the effect of emotional states on learning and the social conditions for mental health, indicate the advisability of more self-direction in learning.

Malcolm Knowles, in the opening chapter of Self-Directed Learning, declares his bias: "Self-directed learning is the best way to learn.... Every act of teaching should have built into it some provisions for helping the learner become more self-directing" (1975, p. 10). His reasons for this position summarize the advocacy of self-direction in learning which appear elsewhere in literature:

1. There is convincing evidence that people who take the initiative in learning... learn more things... and tend to retain and make use of what they learn better and longer than do the reactive learners.
2. Self-directed learning is more in tune with our natural processes of psychological development.... As we grow and mature, we develop an increasingly deep psychological need to be independent, first of parental control, and then later of control by teachers and other adults.
3. Many of the new developments in education... put a heavy responsibility on the learners to take a good deal of ini-

> tiative in their own learning. Students entering into these programs without having learned the skills of self-directed inquiry will experience anxiety, frustration, and often failure.
> 4. We are entering into a strange new world in which rapid change will be the only stable characteristic.... It is no longer realistic to define the purpose of education as transmitting what is known.... The main purpose of education must now be to develop the skills of inquiry (pp. 14-15).

Education in America has been changing rapidly in the past decade. Of the many trends, two relate especially to adults. The first is an expanding awareness among adult Americans (persons usually over the age of 25) of the value of continued learning throughout their lifetimes. The second is a new understanding among educators that learning should be planned by the learner and it can occur through a variety of "non-traditional" modes. The factors that have influenced these changes are summarized by Hiemstra (1976).

> Three major forces have acted in concert to help create the interest in, and need for, lifelong learning. The first of these can be described simply as the rapidity and constancy of change... societal and technological change.... Thus, continuous change requires continuous learning.
>
> A second major force, one certainly related to the first, is the continuous march by many adults toward occupational obsolescence.... Consequently, adults frequently must turn to learning activities just to maintain or regain competence.
>
> The third force... deals with the change in lifestyles or value systems affecting so many people.... However, to enhance the development of people's potential, it is suggested that many of the basic attitudes and skills possessed by educators toward learners and the learning process must change. The idea of dispensing preestablished knowledge to a vacuum in the form of a student will need to be supplemented by, and in many instances exchanged for, a cooperative relationship between the learner and teacher in a mutual process of problem solving, self-discovery, and just plain learning how to learn (pp. 7-9).

Recent research has focused on adults' efforts to learn on their

own. Tough's (1971) research on adults' self-planned learning activities increased our awareness of the numerous adults' self-directed learning projects. This investigation revealed that adults spend an average of 700-800 hours in deliberate learning projects per year, and that approximately two-thirds of these projects are self-directed.

Additional studies have been completed on different adult populations. These investigations reveal that the high level of involvement by adults in self-directed learning activity is fairly consistent across populations irrespective of such variables as sex, age, amount of education, occupation, and economic status. In most adult education literature, self-directedness in learning is identified as one of the most important characteristics of adult learners. The following are cited by Knowles (1975) as characteristics of adult learners: a) their self-concept moves from one of being a dependent personality toward one of being a self-directing human being; b) they accumulate a growing reservoir of experience that becomes an increasing resource for learning; and c) their readiness to learn becomes oriented increasingly to the developmental changes from one of postponed application of knowledge to immediacy of application and their orientation toward learning shifts from one of subject-centeredness to one of problem-centeredness.

Another characteristic of adult learners is their strong drive for self-improvement. Many adult learners have returned to college while still working full or part-time as well as assuming household responsibilities.

Adult educators, faced with the growing body of knowledge about the learning patterns of adults on one side, and demands for increased in-

stitutional programming on the other, must be able to identify the characteristics of adult learners, especially those of self-directed learners, in order to help them to be more effective in their learning efforts.

Statement of the Problem

As was mentioned earlier and as will be discussed later, the complexity of issues confronting educators has placed new importance on the development of self-directed learning. In fact, recent studies have revealed that most adults' learning efforts usually take place in non-traditional settings and outside the bureaucratic framework of traditional schools and institutions of higher education.

In spite of the development of so many studies about self-planned learning, little is known about the characteristics of self-directed learners and the relationship between self-concept of the individual and self-directed learning.

Therefore, this study is designed to describe and analyze characteristics of a selected sample of adults who are self-directed in learning versus those who are not. Specifically, the study identifies and describes the relationship of an individual's self-image and his/her self-directedness in learning. Also, a comparison of older and younger adults with different educational backgrounds is used.

Significance of the Study

The results of this study should be useful in a variety of ways. First, this study attempts to contribute to the growing body of research

based on the self-directed learning activities engaged in by various adult populations. In fact, it is believed that self-directed learning activities in various adult populations appear to be extensive (Zangari 1977). It also provides improved knowledge of parameters of successful learning among adults.

Secondly, this study provides more information about the Self-Directed Learning Readiness Scale. This is the first and only instrument presently developed to measure the degree of self-directedness in learning.

Thirdly, this study provides a comparison between older and younger adults. Little is known about the older adult as a self-directed learner. It is hoped that this comparison will identify information in terms of future educational planning and research.

Finally, this study investigates and describes self-image characteristics of a selected sample of adult learners. It is hoped that the findings will contribute to efforts of those involved in the development and delivery of continuing education and personal growth opportunities for adult learners.

Definition of Terms

Adult learning:

> Adult learning refers to the process of information acquisition during adulthood made by individuals depending on needs, interests, learning skills, and resource availability (Hiemstra 1978, p. 6).

Adult student:

> Adult students are described here as 'students over twenty-five years of age.' Twenty-five has become the chronological age used to separate adult students from students who enter and complete college immediately after graduating from high school (Eldred 1977, p. 1).

Learning episode:

> A relatively uninterrupted, well-defined, period of time where the learner's primary intention is to gain certain knowledge and skill and to retain it for at least two days (Tough 1971, p. 7).

Learning project:

> A series of clearly related deliberate learning episodes adding up to at least seven hours of effort within a six-month period. The projects are designed to obtain new information, to develop new skills, or to reexamine existing attitudes or beliefs (Tough 1971, p. 13).

Self:

> In modern psychology, the term 'self' has come to have two distinct meanings. On one hand, it has been defined as the self-as-object, denoting one's attitudes, feelings, perceptions, and evaluations about himself as an object. On the other hand, it is regarded as the self-as-process, denoting a group of psychological processes which govern behavior and adjustment (Weltha 1969, p. 8).
>
> In this study, self is referred to both meanings.

Self-directed learning:

> In its broadest meaning, self-directed learning describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles 1975, p. 18).

Assumptions

There are several assumptions about the design of this study. They are the following:

1. that the Self-Directed Learning Readiness Scale is valid and reliable to measure the degree of self-directedness in learning.
2. that the Tennessee Self-Concept Scale is a valid and reliable

instrument to determine the individual's self-image.

3. that the completed answer to these two instruments by each member of the sample population is sufficient to gather the required information concerning selected variables.

Limitations of the Study

The sample is limited to seventy-seven undergraduate adult students currently enrolled at Iowa State University. Limited facilities, time, and money did not allow for a larger sample.

Another limiting factor is the fact that the Self-Directed Learning Readiness Scale is the only instrument available to measure the degree of self-directedness in learning.

The final limitation stems from the generalization of the study. Because the subjects are selected from a population of adult students at Iowa State University, the results may not be generalizable beyond Iowa State University adult students, and subsequent researchers should take this into account.

Organization of the Study

This dissertation is organized into five chapters. Chapter I presents the general statement, statement of the problem, significance of the study, definition of terms, assumptions, and limitations of the study.

Chapter II contains a review of selected literature considered relevant to the purpose of the study. It is organized into three sections: self-directed learning research; adults' learning projects research; and self-image research.

Chapter III describes the methodology used in the study, including sample selection, instrumentation, hypotheses, data collection, and data analysis.

Chapter IV contains the presentation and the discussion of the findings.

Chapter V summarizes the findings, states conclusions and implications, and makes several recommendations pertinent to the field of adult education.

CHAPTER II. REVIEW OF RELATED LITERATURE

Introduction

The following areas are reviewed in order to study the self-image characteristics of self-directed learners: literature related to self-directed learning; literature related to adults' learning projects; and literature concerning self-image.

Self-Directed Learning Research

Considerable writing and research about adult education and self-directed learning has been carried out during the past several years. These studies have revealed that the majority of adult learnings are self-planned. Tough (1971) indicates that about 70 per cent of all learning projects are planned by the learners themselves, who seek help and subject matter from a variety of acquaintances, experts, and printed resources. He maintains that although the learner may seek and receive advice from various human and material resources, the key to remaining a self-directed learner is the acceptance of the responsibility for the day-to-day decision making associated with the learning activity. Moore (1972) also states:

> The autonomous learner turns to teachers when he needs help in formulating his problems, gathering information, judging his progress, and so on, surrendering temporarily some of his learner autonomy as he says, in effect, 'direct me in my learning task.' However, if he is truly an autonomous learner, he will not give up overall control of the learning processes. He, therefore, seeks a particular kind of teaching which is in Maslow's words, 'receptive rather than intrucive, doesn't condition, reinforce, or boss,' but helps him discover his own problems, his own aptitudes, and his own answers (p. 81).

Knowles (1975) describes the kind of help received in a self-directed

learning situation as "consultation." He further states that:

> Self-directed learning implies that learners take the initiative in making use of resources, rather than simply reacting to transmissions from the resources. They know what they want to get from a resource, and they probe the resource until they get what they want. They are pro-active rather than reactive learners (p. 105).

In today's society, with its rapid technological and social growth and change, occupational obsolescence, and changes in lifestyles and value systems, lifelong learning is required (Hiemstra 1976). As the need and demand for lifelong learning opportunities increase, skills and abilities to pursue learning must be developed. In spite of the value of self-direction in learning, most of the instruction in educational institutions is still authoritarian, fostering dependent and a habit of other-directed learning (Bivens, Campbell and Terry 1963).

Dill, Crowston and Elton (1965) argue that "the ultimate goal must be to shift to the individual the burden of pursuing his own education" (p. 120). Knowles agrees and states (1970):

> The important implication for the adult education practice of the fact that learning is an internal process is that those methods and techniques which involve the individual most deeply in self-directed inquiry will produce the greatest learning. This principle of ego-involvement lies at the heart of the adult educator's art. In fact, the main thrust of modern adult educational technology is in the direction of inventing techniques for involving adults in ever-deeper processes of self-diagnosis of their own needs for continued learning, in formulating their own objectives for learning, in sharing responsibility for designing and carrying out their learning activities, and in evaluating their progress toward their objectives. The truly artisitic teacher of adults perceives the locus of responsibility for learning to be in the learner; he conscientiously suppresses his own compulsion to teach what he knows his students ought to learn in favor of helping his students learn for themselves what they want to learn. I have described this faith in the ability of the individual to learn for himself as the 'theological foundation' of

> adult education, and I believe that without this faith, a teacher of adults is more likely to hinder than to facilitate learning. This is not to suggest that the teacher has less responsibility in the learning-teaching transaction, but only that his responsibility lies less in giving ready-made answers to predetermined questions and more in being ingenious in finding better ways to help his students discover the important questions and the answers to them themselves (p. 51).

Some evidence exists that a small minority of individuals cannot function effectively in situations requiring self-directed learning (Brown 1968). Carlow (1967) reports that students who are submissive and have low conceptual level scores do poorly under discovery approaches. Cronbach (1967) warns that "pupils who are anxiously dependent may be paralyzed by demands for self-reliance" (p. 90). However, for the majority of persons, greater self-direction in learning appears to enhance retention of knowledge, transfer of knowledge, and interest in continued learning, among other benefits (Bruner 1961, pp. 21-32).

Hiemstra (1978) identified "success" characteristics in self-directed adult learners. His results revealed that adults are heavily engaged in learning. The more educated, higher social class, younger, and urban located individuals appeared to be the most heavily engaged in learning. Most learning projects were self-planned, and there was a heavy preference for "self-fulfillment." The use of books or printed material was intense, and programmed materials and television were used fairly infrequently.

Bloom's theory of cognitive intellectual development is posited on a progression from one stage of intellectual ability to the next higher stage. His stages in sum, include memorization as the "lowest" level of intellectual ability, then application, analysis, synthesis, and evaluation as the "highest" intellectual level. According to Bloom, as a learner moves

through each stage, he/she becomes increasingly self-directed (1956).

Eldred (1977) summarizes the adult development theories by listing several characteristics of self-directed learners such as:

> ambitious, goal-directed, analytical, competent, autonomous, responsible.... Self-directed learners know themselves, their strengths and weaknesses; they are somewhat unsure of their academic ability, but fairly sure of their intellectual ability (p. 3).

Penland (1978) has investigated the self-learning patterns of adult individuals who employ a wide range of community resources and materials for independent learning. Among the major findings are the following:

> Self-initiated adult learners can be found at all social, economical, educational, and occupational levels; film, book, and magazine resources are largely associated with learning.... Self-initiated adult learners are highly goal-oriented and have very individualistic learning patterns.... Adult learners often feel a need to establish the pace and control the character of their learning experiences (p. 7).

Davidson (1976) has conducted research on learning patterns of educationally disadvantaged, low income young mothers who head households. "The low income mothers see themselves as self-directing, responding to respect... and can be helped to diagnose their needs and to plan, conduct, and evaluate their own learning" (p. 52).

Lehman (1976) questions about the type of students who are attracted individualized, contract learning type of program and why they seek such a program.

> Contract learning seems a particularly well-suited format for the older, working, married adult who may have attended several colleges some years ago.... Students differ at entry and throughout the degree program in their ability to handle independent study.... The role of mentor becomes crucial if the college is to foster self-learning. An experienced, resourceful, and mature group of faculty committed to the ideal of independent learning is needed

> to effectively work with students having different styles of learning (p. 105).

Neugarten's stages of adult development (1975) indicate that the chronological age of adults coincides with their moving from an outward direction to an inner-directedness. Adults in their twenties and early thirties are concerned with external developments, such as establishing marriage, family, career, and social status. Adults in their mid-thirties and beyond, once the "externals," are fairly secure, then turn inward and reexamine their achievements, goals, and future directions. According to Neugarten, as individuals grow older, they become more self-directed.

A number of futurists (Toffler 1970; Rosen 1976; McHale 1976) have predicted there will be increasingly more self-directed learning at all educational levels. Torrance and Mourad (1978) identify that self-directed learning strategies are common in the education of the gifted and talented students. For example, teachers involved in the University of Georgia Future Problem-Solving Program (Torrance and Torrance 1978), reported that 72 per cent of their students participating in this program had been involved in some other type of self-directed learning during the 1977-78 year.

As was mentioned earlier, some individuals do not have a readiness for self-directed learning and as a result, become casualties in special programs that emphasize self-directed learning. Such failures might be reduced if individuals were screened for their readiness for self-directed learning or if they were aware of a lack of readiness for self-directed learning and then develop such readiness. Therefore, there is a need for instruments which will help in such screening and diagnostic functions.

One recently developed instrument by Guglielmino (1977) offers

promise for serving such purposes. The Self-Directed Learning Readiness Scale is a self-report questionnaire with 58 Likert-type items. The content of the instrument was determined through a three-round Delphi survey of fourteen leading authorities on self-directed learning.

Griffith, Kolb and Winter (1968) discuss self-directedness in personal change. Their major emphasis is on the method of self-search. Individuals are given responsibility for diagnosing their own problems, setting personal goals, and accomplishing change by individual efforts. Change is related to the individual's commitment to his or her changed goal and the amount of feedback received from other group members.

On the other hand, Berzon, Reisel and Davis (1969) emphasize self-directed small groups through the use of pre-recorded audio tape recordings such as Planned Experiences for Effective Relating (PEER). To make the best use of resources that participants bring with them, PEER emphasizes:

1. personal strengths, rather than weakness, and potentialities rather than deficiencies;
2. learning through experience, the immediate shared experience of the group to which all members make meaningful contributions;
3. self-direction, in that the group can conduct its own sessions using the PEER guidelines, thereby making it unnecessary to have a professional leader.

Johnson (1972) investigated the success of pre-service social studies teachers in acquiring effective questioning skills through a self-directed learning experience. The study compared two instructional modes for teaching effective questioning strategies. One group identified in the study as "teacher-directed," received a conventional "in-class" treatment

of questioning behaviors. The experimental group, identified as "self-directed," operated outside the conventional classroom setting and proceeded to learn skills using a learning package. They functioned independently of teacher or group influence. However, the data analysis indicated no support for the hypothesis that individuals using a three-week, self-directed learning package could demonstrate significantly different questioning behavior when compared to a group who had experienced an "in-class," teacher-directed treatment.

Todd (1972) analyzed and evaluated a module in group problem solving for individualized self-directed instruction at the college level. Based on the analysis of data relating to the nine hypotheses developed to test the impact of the program by objective measure, it was concluded that students using the instructional module described in the study were able to achieve the objectives of the course in a manner different from their usual college instruction. In addition, the instructional module was found to be in many ways superior to the traditional method used in other classes.

Brodrick (1974) investigated the effects of self-directed learning practices on the English achievement and attitudes of community college students in Iowa and Nebraska. From a 79 per cent questionnaire response, 71 teachers were self-directed and 33 were conventional instructors. From 58 interviews, self-directed students spent a bigger percentage of their learning time on the problems of life which confronted them than did the conventional students. Efficiency of reported study time favored the self-directed students. The sex, age, year in college, and ability of the student had no differentiating effects on the academic achievement of the

students between self-directed and conventional community college English classes. Self-directed learning activities appeared to be as productive in achievement for freshmen as for sophomores. Whether academic potential, as established by ACT scores, was high, middle or low, students could be successful in self-directed study.

Reinhart (1976) investigated the effectiveness of the learning contract as a technique in independent study in continuing education for 62 practicing registered nurses in Kansas. They were divided into two groups. The experimental group used a learning contract during the completion of a specified program in self-directed study. The results of the data analysis showed that there was a significant difference in attitude toward the concept of self-discipline with a more positive attitude held by the experimental group. The data also showed that there was greater satisfaction with new skills attained by the experimental group and there was greater satisfaction with content of the independent study by those with higher level educational preparation. Another result was that there was greater satisfaction with new knowledge gained from the independent study by those with less experience in nursing. However, there was no significant different in cognitive gains between the experimental and the control group.

Moore (1976) attempted to measure the cognitive style of field independence in adult learners who use correspondence independent study and self-directed independent study. It was found that:

1. Field independence did not predict participation in the program of high autonomy, but did predict participation in the program of high distance.
2. Learners in the program of high autonomy had unfavorable attitudes to all dependent learning concepts,

while learners in the program of high distance were not unfavorable towards all dependent learning concepts.

3. Learners in the more autonomous program held more positive attitudes to independent study than learners in the more distant program.
4. In each of the types of independent study program selected for study, there was no personality X treatment interaction where the personality characteristic was field independence and the dependent variable was attitude to independent study in general (p. 3344A).

Powell (1976) studied the relationship of cognitive style, achievement, and self-concept to an indicated preference for self-directed study. It was concluded that:

1. Individuals should be given preference options in using self-directed study and perhaps other instructional methods and should not be forced to conform to the choice of the majority. Since attitude is a factor in instructional effectiveness and there is generally no significant achievement difference attributable to instructional method, self-directed study should not be prescribed without consideration of the student's preference.
2. The teacher's perception of the student's ability to engage in self-directed study is not a good predictor of the student's preference for self-directed study.
3. Cognitive style, achievement, and self-concept do not predispose a student to select a particular self-directed study option and are not good predictors of the amount of structure students desire.
4. Curriculum, materials, and/or the teacher's cognitive style may inadvertently build in success for field-independent students while predisposing the field-dependent student to be less successful in his performance.
5. The field-independent/field-dependent cognitive style dimension facilitates or hampers the student's efforts in academic activities. The field-independent cognitive style predisposes an individual to achieve in mathematics and English.
6. A personal value judgment must be made regarding whether to accommodate the student's learning style or to modify his learning style, since research is inconclusive.
7. Report card grades are significantly related to the students' self-concept, but achievement test scores are not. This suggests that the report card, as it is now structured and used, is not the most appropriate method of reporting student achievement for the middle school student (p. 3383A).

Adults' Learning Projects Research

Much research has been done about adults' learning projects. By interviewing persons about their learning activity, Tough (1971) noticed adults structured their description of learning activities into periods of time or episodes. He focused on those learning episodes which consisted of "a relatively uninterrupted, well-defined period of time where the learners primary intention is to gain and retain certain definite knowledge and skill" (p. 7).

Tough (1971) investigated the learning projects of a sample of 66 adults from a specific adult population, including beginning teachers, college professors, upper middle class women with children, blue collar factory workers, lower level white collar workers, and municipal politicians. He concluded that the typical person conducts about eight learning projects in one year. Less than one per cent of all the learning projects were undertaken for credit.

Penland (1978) also states:

> Four out of five American adults are involved in a learning project each year.... Time devoted to a learning project can range from 1 to 900 hours, the average being 156.... Adult independent learners prefer to study at home; and the learning episode is the basic unit around which a learning project is constructed (p. 7).

Allerton (1974) conducted a study to investigate selected characteristics of the learning projects pursued by parish ministers in the Louisville Metropolitan Area. The research instrument used to collect data was a learn-in-activities diary. Each subject maintained a detailed record of all learning episodes conducted during the six month period. The average projects conducted during the six months was 9.6 per person. The mean number of hours for each project was 52.6. None of the reported

projects were conducted for credit as part of formal degree programs.

Benson (1974) investigated learning projects of 50 administrators in colleges and universities in Tennessee. Administrators conducted an average of 4.6 learning projects in the twelve month period preceding the date of the interviews. Of all projects, 84 per cent were job related and 65 per cent of them were related to the "decision making" and "coordinating" functions of the administrators' jobs. Of the administrators' learning projects, ten per cent were self-directed and 28 per cent were group planned. Lack of time was the most frequently occurring obstacle for administrators in their attempt to learn.

Johnson (1973) studied the learning projects of 40 adults who had completed their senior high school examinations in Ft. Lauderdale, Florida. Self-planned adult learning projects represented 50 per cent of the total projects. The average number of the adults' learning projects was 14.4. The range was from 6 to 29 projects. The adults spent an average of 876.8 hours on the learning projects.

Hiemstra (1975) investigated the learning projects of 214 older adults (age 55 and older) residing in the state of Nebraska. Average hours spent on learning projects per person per year was 324.56. About 55 per cent of the projects were self-planned. The results revealed that there was a significant preference for instrumental forms of learning as opposed to expressive forms. Significant differences revealed that males, rural residents, minority group individuals, and married people preferred instrumental types of courses. The average number of learning projects per person each year was 3.3. "Enjoyment" was the most popular reason for undertaking the learning.

Field (1977) studied the learning projects of 85 adults of low literacy attainment in the Brownstown area of Jamaica. He found that 20 per cent of the projects were self-planned. More than 50 per cent of the planning was conducted by the group. The average number of learning projects for adults was 4.2, and they spent a mean of 504.3 hours per person in their learning activities during a one year period.

Fair (1973) investigated beginning elementary school teachers to determine the learning projects related to their jobs. A six month period of time was used. The average number of projects per teacher was 8.8, with 67 per cent of the projects self-planned.

Peters and Gordon (1974) studied the learning characteristics of 466 rural and urban adults in Tennessee. About 91 per cent of the adults conducted at least one learning project during a year. The mean was 3.9 projects. Job and recreational needs were the major objectives expressed for conducting learning projects. Of the total number of projects, 76 per cent were self-planned, and over one-half of the sample reported needing outside help at some point in their learning projects.

Johns (1973) identified the learning projects of practicing pharmacists in Atlanta, Georgia. He found that the pharmacists undertook an average of 8.4 learning projects, with a mean of 12.4 hours per project. Job related learning activities were the most frequently selected projects, and 95 per cent of the total projects were under taken on a noncredit basis.

Zangari (1977) investigated the learning projects conducted over a one year period by 45 adult educators in post-secondary institutions in Nebraska. He found that adult educators undertook an average of 7.19

projects, with a mean of 583.20 hours on those projects. About 72 per cent of the learning projects were self-planned, 15 per cent were group planned, and the remaining 13 per cent were implemented through use of tutors or programmed materials.

Denys (1973) explored the learning characteristics of a group of teachers and store managers in the African country of Ghana. The group reported participating in an average of 4.8 learning projects, with the majority of the projects vacationally oriented. About 75 per cent of the projects were self-planned, with only 7 per cent of the projects reported as credit oriented.

Houle (1961) summarized the characteristics of participants in adult education programs. These are based on the various investigations on adult populations.

> In general, high income groups are more likely to take part in educational activities than low income groups. Participation is also positively related to the size of the community, the length of residence in it, and the number of different kinds of educational activity available. People with certain nationalities or religious backgrounds are more active than those with other backgrounds. Age is important; the very young adult seldom takes part, but there is a sharp upturn in the late twenties, a fairly constant level of activity until the age of fifty, and a decline afterward. Married people participate more than single people. And families with school-age children more than families without them. Many more professional, managerial, and technical people take part relative to their number in the population than do people from other occupational groups; next in significance are white collar and clerical workers, then skilled laborers; and lastly unskilled laborers. But the more universally important factor is schooling. The higher the formal education of the adult, the more likely it is that he will take part in continuing education. The amount of schooling, in fact, is so significant that it underlies or reinforces many of the other determinants, such as occupation, size of community, length of stay in it, and nationality and religious background (pp. 6-7).

Poulton (1975) examined the continuing educational activities engaged in by 210 adults residing in Jackson County, Michigan, and determined the extent to which patterns of participation were related to certain demographic-positional and social-psychological variables. Specifically, the demographic-positional characteristics of age, sex, marital status, occupation, income, level of formal schooling and parental responsibility, and the social-psychological characteristics of orientation toward learning and orientation toward continuing education institutions were analyzed as they related to differences in adults' patterns of participation in continuing education activities. Comparisons of participation were based on a categorization of continuing education activity into three types: 1) participation in organized activities sponsored by school related institutions; 2) participation in organized activities sponsored by nonschool institutions; and 3) participation in activities that essentially are self-directed, and conducted independently from any institution. The following results were obtained.

> Of the demographic and positional characteristics considered, sex, occupation, and income showed the strongest relationship to learning orientation. Respondents grouped by these characteristics demonstrated statistically significant differences when compared with respect to learning orientation. Age also showed a strong, but statistically less significant relationship. Marital status and parental responsibility showed a slight relationship, while level of formal schooling showed almost no relationship to learning orientation.
>
> Parental responsibility was strongly related to institutional orientation. Respondents grouped according to this characteristic demonstrated statistically significant differences in their orientations toward continuing education institutions. Age and sex were other characteristics which showed some, if less significant, relationship to institutional orientation. Marital status, income and level of formal schooling were not shown to be related to institutional orientation.

> The demographic and positional characteristics most strongly related to participation in continuing education were occupation, level of formal schooling and age. Respondents grouped by these characteristics demonstrated statistically significant differences in the patterns of their participation in continuing education activities. A similar statistically less significant relationship was found between sex and participation. Characteristics showing little or no relationship to differences in patterns of participation included marital status, income, and parental responsibility.
>
> A strong relationship between orientation towards learning and patterns of participation was demonstrated. Respondents grouped according to their orientation towards learning demonstrated significant differences in the patterns of their participation in continuing education activities. These differences appeared to be centered primarily in the independent learning mode of continuing education activity (p. 3336A).

An investigation of the learning projects of various professional persons (medicine, law, architecture, engineering, education, and science) in Ontario, Canada, was undertaken by McCatty (1973). The average professional person conducted 11.1 learning projects per year, and all of them had participated in at least one learning project. About 99 per cent of the projects were carried out on a noncredit basis, and 76 per cent were self-planned. Job related learning projects were most often selected by this sample.

Miller and Botsman (1975) investigated the learning activity of cooperative extension agents. The results showed that the average number of learning projects per person was twelve. While 40 per cent of their learning projects were self-planned, more than half of their learning was planned by experts and through workshops.

Umoren (1977) studied the learning characteristics of 50 adults in a selected socioeconomic group in Lincoln, Nebraska. Of the total number of adults in this sample, twenty-two were identified as middle or high

income people and thirty-eight were low income people. The adults conducted an average of 4.7 projects with a mean of 554.4 hours on those projects. Higher income persons in the sample conducted more learning projects than lower income persons, and the home was preferred as a place for conducting learning activities. Approximately 40 per cent of the learning projects were self-planned, and 32.75 per cent of the projects were undertaken on a one-to-one tutorial basis. Reading material and the broadcast media were identified as the major resources for learning. Lack of time, cost and job related responsibilities were identified as the most frequently occurring obstacles when conducting learning activities.

Baghi (1979) studied the learning projects undertaken by 46 adult basic education students in a one year period. It was found that adults conducted a mean of 6.59 learning projects and 393.91 hours per person. Cost was the most frequent obstacle to learning.

Kelley (1976) investigated the learning efforts of two groups of secondary teachers in Corland County, New York. The first group consisted of twenty experienced teachers (10 to 15 years of experience), and the second group also consisted of twenty teachers, but with one or two years of experience. The total number of learning projects conducted by the teachers ranged from 2 to 17, and the average was 7.9 projects. The results revealed that 68 per cent of the learning projects were self-planned; 17 per cent were planned by a group; 0.3 per cent were material resources planned; and 7.9 per cent were mixed in planning.

Coolican (1973) studied the learning activities of young mothers of pre-school age children to determine the extent of their participation. It was determined that young mothers carried out an average of 5.8 learn-

ing projects, with a mean of 43 hours per project. Approximately 66 per cent of the projects were learner planned, and 99 per cent of the projects were undertaken on a noncredit basis. Home and family related projects were the most often selected by the sample.

Coolican (1975) has summarized the studies undertaken to that date and has concluded:

1. Although the degree of participation varies, almost every adult undertakes learning activities in any given year.
2. Learning for credit constitutes only a minor proportion of the education behavior of adults.
3. Most learning activities are initiated for practical reasons - to acquire knowledge and skill related to one's job, home, family, sport, or hobby.
4. Some clear differences exist among populations in the amount of time spent in learning activities and the number of learning projects undertaken. These differences also exist within the same population.
5. The major planner of adult learning activities is the learner himself. Self-planned learning accounts for approximately two-thirds of the total learning efforts of adults.
6. Group planned learning activities only account for 10 to 20 per cent of the total learning efforts of adults (p. 11).

The results of all these studies show that the differences among several populations are not great.

Self-Image Research

Philosophical and theoretical attempts to conceptualize certain observed phenomena of human behavior have resulted in a large body of literature dealing with speculations about the self. Until the 1940's, these were speculations largely unsubstantiated by empirical data. One reason which seems to account for this is that useful operational definitions of the self were not available (Wylie 1961). The phenomenologists have been especially influential in constructing a concept of the self as

a learned perceptual system (Hall and Lindzey 1957). Their orientation to the study of the self is outlined by Wylie:

> One cannot understand and predict human behavior without knowledge of the subject's conscious perceptions of his environment, and of his self as he sees it in relation to the environment (p. 6).

Many theories regarding the self have been advanced in recent years. Hilgard (1949) relates the self to the study of Freudian defense mechanisms. He states that to understand these defenses, "we must know something about the person's image of himself" (p. 350).

Sarbin (1972) defines the self as a cognitive structure including various aspects such as the somatic self and the social self. Anderson (1952) states that every person has both a physical and a psychological self-concept and that the "pattern of life of every individual is a living out of his self-image" (p. 236).

Although the concepts, self and self-image in actual experience are not separable, in terms of improved understanding, they are sometimes analytically separated. Stagner (1961), for example, perceives the self as the sum total of the individual's awareness of his experiences. The self-image is an evaluation of these experiences.

Lecky (1951) offers the theory that as an individual grows, he tends to assimilate from others ideas about the self which are consistent with past experience. Appraisals which are inconsistent with the self are rejected.

It appears that the development of the self-concept is a gradual process extending over many years. Allport (1961) outlines the slow evolvement of various aspects of the self. These are as follows: sense of bodily self, sense of continuing identity, self-esteem, extension of self,

self-image, and rational self.

Armstrong (1971) investigated the self-concepts, social backgrounds and nature of learning activities of high and average learning adults of low educational attainment. The results showed that high learners tended to be raised in stimulating environments, to have parents interested in education, and to feel personally isolated during childhood. The study, in focusing on the relationship between self-concept and educative behavior, found that high learners had a higher self-regard, a greater self-ideal discrepancy, and a much clearer conception of themselves as "learners," in comparison to low learners. While there were certain common elements in the self-concept of both groups, two distinct personality profiles emerged from the analysis of data. High learners saw themselves as being reliable, tenacious, independent, with broad interests, high achievement motivation, and openness to new experiences. Low learners, on the other hand, perceived themselves as warm and friendly, conformist, and either complacently satisfied with or angrily resigned to their current life situation.

Maxwell (1967) investigated the relationship of family adjustment to the self-concept of 732 lower class males in Florida. The following results were obtained.

1. Family adjustment was significantly related to self-concept. Subjects who perceived their own family relations to be warm and accepting had more positive self-concepts than those who experienced hostility and rejection in their intra-family relations.
2. Self-concept was not significantly related to attitude toward father, toward mother, or preference for one parent.

3. Subjects who were extremely homeless tended to report an unusually high self-concept.
4. Blacks had poorer family adjustment than whites, but more positive self-concepts.
5. Older subjects tended to have a more positive self-concept than younger ones.
6. As size of family increased, family adjustment tended to decrease while self-concept tended to be more positive.
7. Family adjustment and self-concept tended to be more positive as the level of parents' education increased.
8. Family adjustment tended to increase and self-concept tended to decrease as father's occupational status rose.

McIntosh (1966) investigated the self-concept of gifted, honors, and average college students. The results showed that the gifted did not have significantly higher self-concepts than the honors or the average, nor did the honors have significantly higher self-concepts than the average students.

Redmond (1966) studied the growth and development of the self-concept of students in grades five, eight and eleven in school districts in Portage, Ohio. The following general conclusions were reached.

1. There is a difference in the growth of the self-concept between the sexes.
2. There is a pattern of growth for the self-concept which can be identified.
3. There is little difference in the reported self-concept due to socio-economic living circumstances.

Maslow (1961) studied the relationships between social conformity and

self-perception in 316 fifth and sixth grade boys. The evidence suggested that the relationship between conformity and low self-esteem, which has been consistently found with adults, is not present in pre-adolescent boys.

A study of differences in sex, home background, educational background, work experience, extra-curricular participation, and self-actualization attainment of 250 college students at Northern Illinois University was done by Gibb (1966). In summarizing the most significant findings, it was identified that the following students were more highly self-actualized:

1. female;
2. from homes whose parents had finished high school and had some additional formal education;
3. from families with 1-2 children;
4. from families whose mothers had worked fulltime;
5. from families providing little or no formal religious training;
6. from a large state university for the first two years of their collegiate experience;
7. enrolled in the college of liberal arts;
8. involved in high school extra-curricular activities nine or more hours a week.

Lewis (1966) conducted a descriptive study of self-concept and general creativity of 91 southern and northern undergraduate students. The total sample consisted of four groups obtained from universities in Pennsylvania and Florida. They were designated throughout the study as Northern White (NW), Northern Negro (NN), Southern White (SW), and Southern Negro (SN). The conclusions were summarized as follows:

1. In regard to total sample, there is insufficient evidence to warrant an overall generalization about the relationship between the self-concept and general creativity.
2. There are significant differences in scores on specific measures of the self-concept among the groups. A hierarchy reflecting the direction and frequency of dominance in paired comparisons at a significant level of confidence (.05) shows that SW>NN>NW>SN.

Sherwood (1963) conducted a research study regarding self-identity and self-actualization of a random sample of 68 subjects at the National Training Laboratories in Human Relations Training. The method for testing the primary hypotheses of the study was by testing the significance of the absolute differences between the self-identity, subjective public identity, and objective public identity profiles across 22 dimensions of person perception for each subject. The study tested and provided support for the following central hypotheses.

1. Self-identity and self-evaluation changed in the direction of subjective public identity and evaluation.
2. Self-identity and self-evaluation changed in the direction of objective public identity and evaluation.
3. Self-development and self-evaluation were positively correlated.
4. The greater the self-involvement in the group, the more self-identity changed in the direction of subjective public identity.

Smith (1972) investigated the relationship between self-concept of academic ability, locus of control of the environment, and academic achievement of 148 black students specially admitted to the University of Pittsburgh. Independent variables were as follows: a) self-concept of academic

ability; b) locus of control of the environment on the dimension of control ideology, personal control, individual-system blame, and race ideology. Dependent variables were as follows: a) Scholstic Aptitude Test scores (SAT); and b) Academic Achievement (QPA). Research findings indicated the following:

1. a significant relationship between self-concept academic ability and QPA;
2. a significant negative relationship between internality on personal control and QPA; and
3. no significant relationships between control ideology, individual-system blame, race ideology, and QPA.

It was concluded that self-concept of academic ability might be a valid predictor of academic achievement.

Williams (1972) studied job satisfaction and self-concept of 87 black female paraprofessional trainees. Self-concept scores were significantly related to job security, supervision (human relation aspect) and working conditions.

Lund (1972) investigated the self-concept, curricular selection, and academic achievement of 437 college engineering students from a large, private, midwestern university. On the basis of obtained results, it appears that engineering students regardless of curricular choice, have similar measured self-concept scores and initial cognitive levels. To determine the extent to which measured self-concept, when combined with cognitive ability measures and high school rank, predict academic success for students grouped by curricular choice, multiple regression analysis was performed. The results of the analysis showed the high school rank

percentiles and college entrance examination scores were generally the most significant predictor variables.

Mynatt (1972) examined the effects of a developmental education program in a comprehensive community college upon self-concept, grade point average, and attrition. A sample of 520 college students at South Campus, Tarrant County Junior College, Forth Worth, Texas was used. The results of this research effort indicated that the developmental education program under investigation did not have a statistically significant effect on its enrollees' self-concept. Significant differences were found between different groups in regard to grade point averages. Significant differences among different groups were found in regard to the attrition factor.

Minkevich (1973) investigated the differences in self-concept and other selected variables between 361 transfer and occupational students in a comprehensive community college. The Tennessee Self-Concept Scale was used.

> Results of the data indicated that there were no significant differences between transfer and occupational students on the following: self-concept; mean age; socioeconomic status; father's or mother's educational achievement; high school and college grade point averages; and mean hours of weekly employment.
>
> Significant differences between transfer and occupational students were found in their distribution according to sex, highest level of planned educational attainment, participation in extra-curricular activities, and the amount of parental financial support. Significant differences were also found in the following two factors influencing college attendance: parents; and possibility of a better job after graduation (p. 3300A).

Tillerson (1973) studied the effects of a learning center method versus lecture method of teaching as related to achievement, self-concept,

and attitude of college freshmen. The basic design of the study was a pretest-posttest control group design. College A, from which the experimental group was chosen, opened one of the largest and most modern remote access information storage and retrieval systems in 1969-1970. College B, from which the control group was chosen, was selected from a group of colleges in the Southwest which most closely resembled College A. Findings in the study indicated that:

> achievement in English was significantly higher for the experimental group than for the control group. The study indicated there was no significant difference between the two methods of teaching biology. Neither method of instruction seemed superior with respect to a positive change in self-concept. The control group demonstrated a significantly greater positive change than the experimental group in attitude toward college. The experimental group demonstrated a significant decline in attitude toward the learning center (p. 6142A).

Napps (1972) determined the relationship of self-concept and internal-external control to the academic achievement of learners in Adult Basic Education programs. It was concluded that self-concept, intelligence, and age are effective predictors of net gain in arithmetic computation. ABE learners with lower self-concept attained a higher net gain in arithmetic computation than learners with higher self-concepts. ABE learners who scored higher on the intelligence test attained a higher net gain in arithmetic computation than those with lower scores. Older ABE learners attained a higher net gain in arithmetic computation than younger learners.

Tuttle (1973) investigated the effects of videotape self-analysis on teacher self-concept, effectiveness, and perceptions of students. A total of twenty-four intern teachers enrolled in the fifth year program of the University of North Carolina were rated by their university supervisors

on The Illinois Rating of Teacher Effectiveness (IRTE). Each subject was administered the Tennessee Self-Concept Scale. The subjects were divided into high and low teaching effectiveness groups, based on the ratings. These two groups were divided into experimental and control groups. Each of the experimental subjects was videotaped four times while teaching his class. The effects of the videotape self-analysis treatment were as follows.

1. The more effective teachers became significantly more positive in their perceptions of their own identity.
2. Both the effective and ineffective interns decreased in their physical self-concepts.
3. Perceptions of personal self became significantly more positive for the more effective teachers.
4. The effective interns became significantly stronger in their certainty about their perceptions of themselves.
5. The less effective intern teachers became significantly more likely to focus on what they were rather than on what they were not in achieving their self-description.
6. The less effective interns became significantly more subtly defensive.
7. There was no significant change in the teaching effectiveness of the intern teachers as rated by their students.
8. The more effective intern teachers became significantly less able to assess their students' perceptions of their effectiveness.
9. For the less effective teachers, there was no significant gains made in their abilities to accurately assess their students' perceptions of their teaching effectiveness (p. 1577A).

Esser (1969) appraised the relationship of teacher self-concept and their evaluations as administered by their principals. The subjects of this study were forty-five teachers who had been given high ratings by their administrators and thirty-eight teachers who had been given low ratings. Self-concept and administrative evaluations were found to be related. This seems to bear out the conclusions of other writers who agreed that the teacher with a strong concept of self would be evaluated in a

positive manner. However, no significant relationships were found between self-concept or evaluations when both were related to sex, age, marital status, experience, or grade taught.

Davis (1969) compared openness and self-concept of sixty beginning teachers who had graduated from the University of Southern Mississippi since 1964 and were teaching within the primary grades of the rural and urban schools in the State of Mississippi. An analysis of the data of the Bills Teacher Problem Q-Sort and the Self-Report Inventory indicated differences in openness and self-concept between the groups of teachers tested.

> A study of the results, measured by the Bills Teacher Problem Q-Sort indicated a difference in openness between the teachers employed in rural schools and teachers employed in urban schools at the .01 level of significance.
>
> A nonsignificant difference in self-concept between teachers employed in rural schools and teachers employed in urban schools was slightly less than the critical ratio for the .05 level of significance.
>
> Since the Self-Report Inventory is a multifactor measure of self-concept and is composed of eight areas, an analysis of variance was applied to the difference score in each area.
>
> In the area of work, a difference was indicated at the .05 level of significance between the teachers employed in rural schools and the teachers employed in urban schools. Teachers employed in urban schools, as measured by the Self-Report Inventory, express a valuing of work or an accomplishment in terms of intrinsic or self-enhancing satisfaction more than do teachers employed in rural schools.
>
> When analyzing the area of children, a difference was indicated at the .05 level of significance between the teachers employed in rural schools and the teachers employed in urban schools. Teachers employed in urban schools express acceptance, liking or valuing of children or the satisfaction derived by the teacher in relationships with children more than teachers employed in rural schools, as measured by the Self-Report Inventory (p. 2878A).

Fekrat (1969) investigated the correlation between self-concept and academic achievement of college freshmen and seniors. The study submitted the proposition that in order for self-concept to be useful, it

must be stable; it must be positively and significantly related to a behavioral correlate under a variety of changing circumstances. The behavioral correlate selected against which stability of self-concept could be determined as an index of academic achievement. The subjects of the study were composed of fifty seniors and forty-seven freshmen randomly selected from senior and freshman classes of a four-year college. The findings confirmed the hypothesis of positive and significant correlation between measures of self-concept and GPA when measures of self-concept preceded measures of GPA, indicating at least, a short-range predictive power of self-concept. But the hypothesis of significant and positive correlation between measures of self-concept and measure of GPA, when measures of GPA preceded measures of self-concept, was not confirmed, although the relationship was significantly different from zero. The hypothesis that self-concept would be correlated positively and significantly with measures of GPA of nondemonstrated (freshmen, in this study) as well as demonstrated (seniors, in this study) was confirmed. Also, the hypothesis that self-concept would remain positively and significantly correlated with measures of GPA even when the variable attributable to IQ is partialled out was confirmed.

Palermo (1976) implemented and tested a Movement Communication Program on self-concept, autonomy, and social reaction of 114 adult learners. The Movement Communication Program based on the "purpose-process curriculum framework" was designed to enable the adult learner to acquire a more positive self-concept, greater autonomy, and social control in relation to his personal fulfillment, personal/physical space orientation, and personal social communication. Adult learners were randomly assigned into

three groups. Group One received treatment all eighteen weeks; Group Two received treatment the first nine weeks only; and Group Three received treatment the last nine weeks only. All three groups were pre, mid, and posttested using the Self-concept, Autonomy, and Social Reaction Inventory Scales. The results revealed that age was negatively correlated with Self-concept, Autonomy, and Personal Orientation Inventory Scores. Education correlated significantly with age. Self-concept, Autonomy, and Personal Orientation Inventory Scales correlated significantly with each other. The results across three groups and within each group revealed that the treatment imparted in the Movement Communication Program had a significant effect on Self-concept, Autonomy, and Social Reaction Scores of the adult learners.

McGavern (1977) investigated the effects of cognitive self-instruction on the creative performance and self-concept of 52 senior and graduate student women at the University of Texas at Austin. Each subject received a total of six hours of instruction in cognitive behavior therapy that emphasized the formulation and use of positive, directive self-statements. Results of an analysis of variance of all subjects showed they were thinking more creatively and positively and had gained more confidence in their ability to create. The results also revealed that the training had been effective in a cognitive sense and that increases in creative performance were accompanied by a low self-concept initially, but after two months, both performance and cognitive orientation were at comparably higher levels.

Hill (1978) studied the effects of a group counseling experience on self-concept, personality, and academic achievement of entering specially admitted college freshmen. The results of the study indicated:

a) there was a statistically significant difference in self-concept between the experimental group and the two control groups;
b) there was a statistically significant difference in personality between the experimental group and the two control groups; and
c) there was no statistically significant difference in academic achievement between the experimental group and the two control groups at the end of one academic quarter (p. 4685A).

Summary

Research has shown that much of the adults' learning activities reported are self-directed, indicating that learners have accepted responsibility for the day-to-day direction of their learning processes. A large proportion of adults are engaged in highly deliberate learning efforts outside of educational institutions.

Adults spend a significant amount of time and energy to improve their knowledge and skills by conducting various learning projects. Job enrichment, personal growth, and leisure time projects are often identified as important reasons for individuals to view learning as a lifelong process.

Significant differences in race, sex, educational level, family background, and age are recorded in terms of self-concept. Self-concept can be changed positively and significantly as a result of education and training.

Finally, literature has shown that persons with higher self-directedness in learning have higher and better improved self-images. Education and training will help to improve both self-image and self-directedness of an individual.

CHAPTER III. METHODOLOGY

Introduction

The review of literature suggests that self-directed learning projects form a significant part of an adult's learning experience, that adult participation in learning activities is extensive, and that there is a need to understand the self-concept characteristics of adult learners in order to help them to be more effective in their learning efforts.

The primary purpose of this study is to investigate relationships between the self-directedness and self-concepts of adult learners. This chapter presents and discusses the procedural steps which are necessary to collect and analyze the data gathered in this study relating to the self-concept and self-directedness of adult students. The following are described in this chapter: the population and sample; the instruments; the hypotheses; the data collection techniques; and the data analysis procedures.

Population and Sample

The universe for this study included all adult undergraduate students who were enrolled at Iowa State University during the spring quarter of 1979. The only exclusion criterion was the stipulation that such students must have been born before September, 1954. The list of adult undergraduate students was obtained from the registration office at Iowa State University. Information such as sex, age, educational status, and address were also provided for each individual.

The universe was distributed into 16 cells according to sex, age, and educational status characteristics. Regarding age, students were

categorized into two groups: young adults (age 25 to 35), and older adults (age 35 and over). Table 1 illustrates this distribution.

Table 1. The distribution of population according to sex, age, and year of education.

Males								Females							
Young				Old				Young				Old			
Fr.	So.	Jr.	Sr.	Fr.	So.	Jr.	Sr.	Fr.	So.	Jr.	Sr.	Fr.	So.	Jr.	Sr.
42	79	184	397	6	2	11	18	30	55	95	137	10	15	39	43

Total Males - 739
Total Females - 425
Total Students - 1,164

The subjects for this study were chosen according to the random stratified selection. Although the intent of the researcher was to select randomly five individuals from each group, there were only two "Old" male sophomore adults. In order to secure a representative sample, each member of the population in each cell was assigned a number. The numbers were utilized as input for the Iowa State University computer, and the computer selected randomly five individuals from each cell, except for the "Old" male sophomore cell, in which case both available individuals were selected. As a result, a total of 77 adult students were selected for this investigation.

The average age in the sample population was 34.39 years. The range of ages was from 25 years to 60 years. Table 2 illustrates the age distribution.

Table 2. Age in years of adult students at Iowa State University

Age in Years	Number	Per cent	Accumulative per cent
25-29	30	38.96	38.96
30-34	10	12.98	51.94
35-39	18	23.38	75.32
40-44	7	9.09	84.41
45-49	8	10.38	94.79
50-54	3	3.90	98.69
55-59	0	0.00	98.69
60-64	1	1.30	99.99
Total	77	99.99[a]	
Mean 34.39			
Median 34			
Range 25-60			

[a]Rounding error.

Instruments

Two instruments were used to collect the necessary data in this study. One was the Self-Directed Learning Readiness Scale (see Appendix A), and the other one was the Tennessee Self-Concept Scale (see Appendix B).

The Self-Directed Learning Readiness Scale

This instrument was originally developed in 1977 by L. M. Guglielmino (1977) to measure the degree of adults' self-directedness in learning. It is a self-report questionnaire with 58 Likert-type items and is described to subjects as "a questionnaire designed to gather data on learning preferences and attitudes toward learning" (p. 1). The content of the instrument was determined through a three-round Delphi survey of 14 leading authorities on self-directed learning. The survey involved the listing

and rating of characteristics considered by these authorities as important for self-directed in learning. A reliability coefficient of .87 was reported and a factor analysis indicated the presence of the following eight factors: love of learning; self-concept as an effective, independent learner; tolerance of risk, ambiguity, and complexity in learning; creativity; view of learning as a lifelong, beneficial process; initiative in learning; self-understanding; and acceptance of responsibility for one's own learning.

Torrance and Mourad (1978) studied the validity of the Self-Directed Learning Readiness Scale. Correlation coefficients between this scale and several other scales were obtained. Pearson Product-Moment Coefficients of Correlation were computed between the total score on the Self-Directed Learning Readiness Scale and each of the eleven measures derived from the criterion instruments. These are reported in Table 3.

As it is shown, all three of the measures of originality correlate with scores on the Self-Directed Learning Readiness Scale at rather high levels of significance, so do both of the personality measures. The relationship between the autobiographical measures (SAM) of .71 is especially encouraging insofar as construct validity is concerned, suggesting that creative experiences and achievements are associated with self-directed readiness for learning.

Guglielmino, the author of the Self-Directed Learning Readiness Scale, suggested that total self-directed scores of 209 and below should be considered as low self-directedness in learning, and scores of 239 and above as high self-directedness in learning. The range between these two scores was considered as average self-directedness in learning.

Table 3. Product-Moment Correlations between The Self-Directed Learning Readiness Scale scores and selected creativity and style of learning and thinking measures[a]

Measures	r	p
Originality (Sounds and Images)	.52	.001
Fluency (Thinking Creatively about the Future)	.29	.06
Originality (Thinking Creatively about the Future)	.38	.01
Similes Originality (Schaefer)	.52	.001
Photoanalogies (Templeton)	.48	.001
Possible Jobs (Gershon and Guilford)	.29	.06
Creative Personality (What Kind of Person are you?)	.38	.01
Creative Achievements (Something about Myself)	.71	.001
Right Hemisphere Specialization (Style of Learning and Thinking)	.43	.01
Left Hemisphere Specialization (Style of Learning and Thinking)	-.34	.03
Integrated Style of Learning and Thinking	-.05	

[a]Torrance and Mourad (1978, p. 1170).
"Item analysis data were used to select items for revision and to estimate the parameters of the test. A reliability of .87 was estimated" (Guglielmino 1977, p. 2).

The Tennessee Self-Concept Scale

The Tennessee Self-Concept Scale (W. H. Fitts 1965) consists of 100 self-descriptive items, of which 90 assess the self-concept and 10 assess self-criticism. For each items, the respondent chooses one of five Likert-type response options labeled from "completely false" to "completely true." Twelve scores are derived from these items in the counseling form of the scale. The same items are also utilized in the clinical and research form, but this version provides twenty-nine scores. In this study, only

the counseling form is used.

The developer of the Tennessee Self-Concept Scale has demonstrated its appropriateness for ages twelve and over. The standardization group from which the norms were developed was a broad sample of 626 people. The sample included people from various parts of the country whose ages ranged from 12 to 68. There were approximately equal numbers of both sexes, representatives of all social, economic, intellectual, and educational levels, with college students somewhat over-represented.

Items for the scale were written according to a type of two dimensional design, involving the following factors related to individual self: identity; self-satisfaction; behavior; physical self; moral-ethical self; personal self; family self; and social self. Each of these factors received a subscore based on relevant items. In addition, major additional scores were derived. These were the following: Total Positive Score, reflecting the overall level of self-esteem; Variability Score, reflecting the amount of consistency from one area of self-perception to another; and Distribution Scores, a measure of the way individuals distribute their answers across the five available choices in responding to the items. The Scale yielded a vast amount of information from only 100 test items. It takes 10 to 20 minutes to complete.

The test-retest reliability coefficients of all major scores were considerably high. They range from .68 to .91. The validation procedures used were of four kinds: (I) content validity - the process of evaluating how adequately the test samples the relevant domain; (II) discrimination between groups - statistical analyses have been performed in which a large group (369) of psychiatric patients have been compared with the

626 nonpatients of the norm group. These demonstrate highly significant (mostly at the .001 level) differences between patients and nonpatients for almost every score that was utilized on this scale; (III) correlation with other personality measures - another way to assess validity is to determine the correspondence between scores on the Scale and other measures for which correlations should be predicted; and (IV) personality changes under particular conditions - certain life experiences would have consequences for the way in which a person sees himself or herself.

Many studies have been completed or are underway by the developer of the Scale which deal with the self-concept as a criterion of change. These cannot be reported here. Nevertheless, there is considerable evidence that people's concepts do change as a result of significant experiences. The Tennessee Self-Concept Scale reflects these changes in predicted ways, thus constituting additional evidence for the validity of the instrument.

Several scores from the scale have remarkably high correlations with other measures of personality functioning. For example, the Taylor Anxiety Scale correlates .70 with the Tennessee Scale's total positive scores. Correlations from .50 to .90 are common with the Cornell Medical Index. Correlations with various MMPI scales are frequently in the .50's and .60's.[1]

Main Hypotheses

Hypothesis I:

Existing self-directed learning theory suggests that self-image and self-directedness in learning are related to each other (Carlow 1967;

[1]Buros (1972, vol. 1, test 151).

Eldred 1977; Guglielmino 1977). Thus, it is suggested that as adults become more self-directed in learning, i.e., they are able to plan and direct the majority of their learning projects themselves and when they can retain personal control over the day to day progress of their learning efforts, they will have better and more complete self-concepts, and will regard themselves as worthy persons.

H_0: There is no significant relationship between self-concept and self-directed learning.

In order to understand the relationship between adults' self-concepts and their self-directedness in learning more completely and accurately, each variable of the Self-Directed Learning Readiness Scale was used as a subhypothesis for the first main hypothesis. As was mentioned earlier, this scale has eight factors. The following subhypotheses are based on these factors.

A: There is no significant relationship between self-concept and love of learning.

B: There is no significant relationship between self-concept as measured by the Tennessee Self-Concept Scale and self-concept as an effective learner, as measured by the Self-Directed Learning Readiness Scale.

C: There is no significant relationship between self-concept and tolerance of risk, ambiguity and complexity in learning.

D: There is no significant relationship between self-concept and creativity.

E: There is no significant relationship between self-concept and view of learning as a lifelong, beneficial process.

F: There is no significant relationship between self-concept and initiative in learning.

G: There is no significant relationship between self-concept and self-understanding.

H: There is no significant relationship between self-concept and acceptance of responsibility for one's own learning.

Hypothesis II:

As was mentioned in the review of literature, theory regarding self-image and self-directed learning identifies different characteristics for individuals who are at different levels of self-directedness in learning (Armstrong 1971; Eldred 1977; Guglielmino 1977). This theory suggests that highly self-directed adults regard themselves as worthy persons, have higher self-esteem, are more efficient in their personal and family life, and are more satisfied with their social interactions than low self-directed individuals. On the other hand, adults who are not very successful in planning, organizing, and directing their own learning activities have low self-acceptance, low self-esteem, and regard themselves as unworthy persons in different aspects of life.

H_0: There is no significant difference between self-image characteristics of individuals who are self-directed in learning and those who are not.

As was noted earlier, Guglielmino (1977), the developer of the Self-Directed Learning Readiness Scale, identified a total self-directed score of 209 or below as low self-directedness in learning and a score of 239 or above as high self-directedness in learning. For the purpose of Hypothesis II, these criteria will be used to distinguish those who are self-directed (high) from those who are not (low).

Hypothesis III:

Literature regarding self-directed learning shows that the more educated a person is, the more self-directed he or she is in his or her learning efforts (Guglielmino 1977; Hiemstra 1978; Lehman 1976). The existing theory also suggests that adults with higher educational status

are more able to plan, organize, and direct their own learning efforts. On the other hand, less educated adults often turn to somebody else for planning and directing their learning activities, and are less willing to accept responsibility for their own learning. In addition, more educated adults often do not need teachers and instructors. Whenever they have a problem, they seem able to identify the facilitators and learning resources they need, while less educated adults turn to teachers and instructors more often.

H_0: There is no significant difference within educational years in terms of self-directed learning.

Exploratory Hypotheses

Several exploratory hypotheses are offered. They are related to the researcher's curiosity and desire to discover new learnings as a result of this investigation. These hypotheses will be tested to provide better understanding of the differences in self-image and self-directed learning that may exist between adults of different age groups and sex.

The review of literature revealed that some differences in race, sex, educational level, family background, and age are recorded in terms of self-concept and/or self-directed learning (Gibb 1966; Hiemstra 1978; Maxwell 1967; Redmond 1966). The literature suggests that female, younger, higher social class, and more educated adults are highly self-actualized. Adults with greater involvement in groups also appear to have more self-identity and higher self-concepts. More educated and higher social class individuals more readily accept the responsibility for diagnosing their own problems, setting personal goals and accomplishing change by individual

learning efforts.

Hypothesis IV:

H_0: There is no significant difference between males and females sampled in terms of self-directed learning.

Hypothesis V:

H_0: There is no significant difference within the age categories in terms of self-directed learning.

Hypothesis VI:

H_0: There is no significant difference within the age categories in terms of self-concept scores.

Hypothesis VII:

H_0: There is no significant difference between males and females sampled in terms of self-concept scores.

All of the above hypotheses will be tested and discussed in the following chapter. In addition, future hypotheses that need testing or refinements required in any of the above hypotheses will be described in the final chapter.

Data Collection

As was mentioned earlier in this chapter, two instruments were used to collect the data. One was the Self-Directed Learning Readiness Scale used to measure the degree of self-directedness of adult students; the other one was the Tennessee Self-Concept Scale, which measures the self-image of adult students. The data used in this study were drawn from

these two instruments.

Materials mailed to each subject included an explanatory cover letter, two instruments, and an addressed, postage paid return envelope. The cover letter (see Appendix C) emphasized the purpose of the study, the importance of each individual's response, and assured respondents that their answers would be kept confidential. At the end, participants were thanked and informed that a summary of the study findings would be provided to them upon request. Although responses were to be kept confidential, each instrument had a number on the back so follow-up materials could be sent to nonrespondents.

The Self-Directed Learning Readiness Scale is four pages long and respondents were asked to circle one of five options for each separate statement. Response choices were: 1) "Almost never true of me; I hardly ever feel this way"; 2) "Not often true of me; I feel this way less than half the time"; 3) "Sometimes true of me; I feel this way about half the time"; 4) "Usually true of me; I feel this way more than half the time"; or 5) "Almost always true of me; there are very few times when I don't feel this way."

The Tennessee Self-Concept Scale is six pages long and respondents were asked to choose one of five options for each separate statement. Response choices were: 1) "Completely false"; 2) "Mostly false"; 3) "Partly false and partly true"; 4) "Mostly true"; or 5) "Completely true."

Two weeks after the initial set of materials was mailed, a follow-up phone call was made to the individuals who had not responded. Response rate by that time was 66 per cent. All of the nonrespondents, except three individuals, agreed to complete the instruments if they could be

given another set of materials. Personal contact was made and another set of materials given to nonrespondents; an appointment also was made to pick them up. Three individuals were selected randomly from the population to replace those who refused to complete the instrument.

Data Analysis

Analysis of the data was completed by using the Statistical Package for Social Science (SPSS) (Nie, Hull, Jenkins, Steinbrenner, and Brent 1975), and the Iowa State University computer facilities.

Pearson Product-Moment Correlation Coefficients were calculated to test the first hypothesis to study the relationship of adults' self-directedness and their self-concepts. Eight factors of adults' self-directedness were also correlated to their self-concept scores by using the same correlation analysis. Appendix D describes each of the eight factors and lists the statements making up each factor.

The second hypothesis was treated by a t-test to investigate the differences in self-image characteristics of highly self-directed adults versus those individuals who were low self-directed in learning.

Other hypotheses were treated by several three-way analyses of variances. These analyses of variance tests were used to study the effects of sex, age, and educational year on adults' self-directedness and their self-concepts. Multiple classification analysis of variance with unequal cell frequencies and default (classical approach analysis of variance) and option nine (regression approach analysis of variance) procedures were used to compare the self-directedness and self-concepts of all sixteen groups of adult students.

One-way analysis of variance was used to assess the single effects of educational years (independent variable) upon the self-directed and self-concept scores (dependent variables). The models used for analysis of variance designs were the following:

Self-directed scores: $Yijkl = \mu + Si + Aj + Rk + (SA)ij + (SR)ik + (AR)jk + (SAR)ijk + Eijkl$

Self-concept scores: $Yijkl = \mu + Si + Aj + Rk + (SA)ij + (SR)ik + (AR)jk + (SAR)ijk + Eijkl$

Self-directed scores: $Yij = \mu + Ri + Eij$

where: Y = the observed test scores of an adult student classified in one of the sex, age, and year groups

μ = overall mean

S = sex effect

A = age effect

R = educational year effect

SA = sex by age interaction

SR = sex by year interaction

AR = age by year interaction

SAR = sex by age by year interaction

E = error (random deviation of an adult student from the mean)

The criterion for rejecting the null hypotheses was the significance of at least two-thirds of the variables beyond the .05 level.

Summary

The purpose of this study was to analyze and describe the relationships between adults' self-directedness and their self-concepts. This

chapter described the methodology used, including the population, the selection of the sample, and the instruments used. The hypotheses for this research were also discussed. Methods of collecting the data and procedures for data analysis were discussed in the final sections.

CHAPTER IV. PRESENTATION AND DISCUSSION OF DATA

Introduction

The main purpose of the study is to investigate the relationship of adults' self-directedness in learning and their self-concept. This chapter presents and discusses the findings of this investigation.

To present the data obtained in an effective manner, this chapter will be organized around the seven specific hypotheses of the study. Each of the hypotheses is tested, and the findings related to its testing are presented. In addition, before presenting the hypotheses, the results of the two instruments used in this study will be examined.

Self-Directed Learning Readiness Scale (SDLRS)

As was mentioned in the first chapter, the second objective of this investigation is to provide further information on the Self-Directed Learning Readiness Scale. As was indicated earlier, this instrument measures the degree of adults' self-directedness in learning. The scale has eight factors: 1) love of learning; 2) self-concept as an effective, independent learner; 3) tolerance of risk, ambiguity, and complexity in learning; 4) creativity; 5) view of learning as a lifelong, beneficial process; 6) initiative in learning; 7) self-understanding; and 8) acceptance of responsibility for one's own learning. It provides eight scores for these eight factors plus one total score. These eight factor headings are used throughout this chapter as descriptions in discussing findings for the various hypotheses. Table 4a presents the results of these scores based on the sample of 77 adult students used in this study.

Table 4a. Total Self-Directed Learning Readiness score and its eight factors

Variables	Number of items	Mean	Standard Deviation	Range	Minimum	Maximum
Total self-directed learning	58	229.07	24.10	119.00	157.00	276.00
Love of learning	17	71.88	8.57	37.00	48.00	85.00
Self-concept as an effective, independent learner	12	44.01	6.63	33.00	26.00	59.00
Tolerance of risk, ambiguity, and complexity in learning	17	65.94	9.25	55.00	28.00	83.00
Creativity	10	38.68	5.38	26.00	24.00	50.00
View of learning as a lifelong, beneficial process	8	34.88	4.25	19.00	21.00	40.00
Initiative in learning	5	18.66	3.18	15.00	10.00	25.00
Self-understanding	9	36.84	4.10	21.00	24.00	45.00
Acceptance of responsibility for one's own learning	2	8.26	1.61	6.00	4.00	10.00

Comparing the mean scores of total self-directed learning of the 77 adult students used in this study with the mean scores of a sample of graduate students and college of education faculty at the University of Georgia used by Guglielmino (1977), shows that the undergraduate adult students at Iowa State University have slightly lower self-directed learning scores than both the faculty of college of education and graduate students at the University of Georgia. Table 4b illustrates the comparison between Iowa State University undergraduate adult students used in this investigation and the various populations used by Guglielmino.

Table 4b. Means and standard deviations for select groups of children and adults on the Self-Directed Learning Readiness Scale

Group	Number	Mean	Standard Deviation	Range
Undergraduate adult students at I.S.U.	77	229.1	24.1	157-276
Graduate students at U.G.A.	91	247.5	20.0	189-285
College of education faculty at U.G.A.	185	246.8	17.2	184-284
Grade 12 gifted	16	239.2	23.2	205-280
Grade 11 gifted	34	232.6	20.0	185-267
Grade 10 gifted	34	218.0	22.7	161-256
Grade 9 gifted	39	231.2	26.7	177-272
Grade 8 gifted	95	211.6	27.1	128-281
Grade 7 gifted	111	218.8	23.3	162-278
Grade 6 gifted	177	219.0	24.2	163-282
Grade 5 gifted	178	217.5	26.9	130-281
Grade 4 gifted	28	219.2	21.4	178-261
Grade 3 gifted	12	167.2	37.8	67-211

A comparison of percentile ranks of the 77 undergraduate adult students at Iowa State University used in this investigation with 307 high school students and adults in Georgia, Canada, and Virginia used by Guglielmino also shows a slight difference, but in the other direction. Table 5 presents the comparison between percentiles of self-directed learning scores for subjects used in this study with percentiles of high school students and adults used by Guglielmino. Thus, undergraduate adult students at Iowa State University have higher self-directed learning scores than high school students and adults in Georgia, Canada, and Virginia.

Table 5. A comparison of percentiles of self-directed learning scores for high school students and adults in Georgia, Canada, and Virginia with undergraduate adult students at I.S.U.

High school students and adults in Georgia, Canada, and Virginia		Undergraduate adult students at Iowa State University	
Percentile	Self-directed learning score	Percentile	Self-directed learning score
10	191	10	195
20	203	20	208
30	209	30	217
40	214	40	224
50	223	50	233
60	231	60	238
70	239	70	243
80	248	80	251
90	255	90	260

In order to examine the validity of the Self-Directed Learning Readiness Scale, each factor of this scale is correlated with the total self-directed learning scores of the 77 adult students used in this in-

vestigation. Table 6 illustrates the correlation coefficients between total self-directed learning and its eight factors.

Table 6. Correlation coefficients between total self-directed learning and its eight factors

Factors	Total self-directed learning
Love of learning	0.901**
Self-concept as an effective, independent learner	0.807**
Tolerance of risk, ambiguity, and complexity in learning	0.766**
Creativity	0.870**
View of learning as a lifelong, beneficial process	0.807**
Initiative in learning	0.804**
Self-understanding	0.831**
Acceptance of responsibility for one's own learning	0.158

**Significance $<.001$.

As Table 6 shows, highly significant relationships exist between total self-directed learning and all factors except for the factor of acceptance of responsibility for one's own learning. Using the Self-Directed Learning Readiness Scale to identify the degree of adult's self-directedness in learning, one can talk about the adults' love of learning, self-concept as an effective, independent learner, tolerance of risk, ambiguity, and complexity in learning, creativity, view of learning as a lifelong, beneficial process, initiative in learning, and self-understanding. However, because a nonsignificant relationship is obtained between total self-directed learning and adults' acceptance of responsibility for one's own learning, this factor should be approached with caution.

The second factor of the Self-Directed Learning Readiness Scale is the person's self-concept as an effective, independent learner. Thus, as one means of further examining the validity of the Self-Directed Learning Readiness Scale, this factor was correlated with the Tennessee Self-Concept scores. A highly significant relationship of .431 was obtained, supporting the validity information provided in the third chapter.

Tennessee Self-Concept Scale

This instrument determines adults' self-concept, and identifies adults' characteristics as self-perceived. As was mentioned in the previous chapter, this instrument has two forms. One is a counseling form and the other is a clinical and research form. Both forms use exactly the same booklet and test items. The differences between the forms center in the scoring and profiling system. The counseling form provides twelve scores, but the clinical and research form provides twenty-nine scores. In this study, the counseling scores are used plus some variables in the clinical and research form which are related to the purpose of this investigation. The self-concept variables used in the present study are as follows:

1. Total positive self-concept: This score reflects the overall level of self-esteem. Persons with high scores tend to like themselves, feel that they are persons of value and worth, have confidence in themselves, and act accordingly. People with low scores are doubtful about their own worth, see themselves as undesirable, often feel anxious and unhappy, and have little faith or confidence in themselves.
2. Identity: These are the "what I am" items. Here adults describe

what they are as they see themselves.

3. Self-satisfaction: This score reflects the level of self-satisfaction or self-acceptance.
4. Behavior: This score measures the adults' perception of their own behavior, or the way they function.
5. Physical self: Here adults present their view of their body, state of health, physical appearance, skills, and sexuality.
6. Moral-ethical self: This score describes the self from a moral-ethical frame of reference, moral worth, relationship to God, feelings of being a "good" or a "bad" person, and satisfaction with one's religion or lack of it.
7. Personal self: This score reflects the individual's sense of personal worth, feeling of adequacy and evaluation of personality apart from body or relationships to others.
8. Family self: This score reflects one's feelings of adequacy, worth, and value as a family member.
9. Social self: This reflects the person's sense of adequacy and worth in social interactions with other people in general.
10. Variability score: This score provides a measure of the amount of variability, or inconsistency, from one area of self-perception to another.
11. Distribution score: This score is a summary score of the way adults distribute their answers across the five available choices in responding to the items. High scores indicate that adults are very definite and certain in what they say about themselves, while low scores mean the opposite.

12. Self-criticism (SC): This scale is composed of ten items. These are all mildly derogatory statements that most people admit as being true of themselves. Individuals who deny most of these statements most often are being defensive and trying to present a favorable picture of themselves. High scores generally indicate a normal, healthy openness and capacity for self-criticism. Extremely high scores (above the 99th percentile) indicate that the individual may be lacking in defenses. Low scores indicate defensiveness.

13. Defensive positive (DP) score: This is a more subtle measure of defensiveness than the self-criticism score. One might think of SC as an obvious defensiveness score and DP as a subtle defensiveness score.

14. Number of deviant signs (NDS) score: This score is a purely empirical measure, and is simply a count of the number of deviant features on all other scores. The NDS score is the scale's best index of psychological disturbance. This score identifies deviant individuals with about 80 per cent accuracy.

15. The true/false ratio (T/F): This is a measure of response bias, an indication of whether the individual's approach to the task involves any strong tendency to agree or disagree regardless of item content. High T/F scores indicate the individual is achieving self-definition by focusing on what he or she is and is relatively unable to accomplish the same thing by eliminating or rejecting what he or she is not. Low T/F scores would mean the opposite, and scores in the middle ranges would indicate that the individual achieves self-definition by a more balanced employment of both

tendencies, accepting what is self and eliminating what is not self.

16. Net conflict score: This score is highly correlated with the T/F score. It measures the extent to which an individual's responses to positive items conflict with responses to negative items in the same area of self-perception.

17. Total conflict: The foregoing net conflict score is concerned only with directional trends in positive-negative measures of conflict. Total conflict scores determine the total amount of conflict in individuals' self-concepts. High scores indicate confusion, contradiction, and general conflict in self-perception. Low scores have the opposite interpretation.

Table 7 presents the results of the Tennessee Self-Concept scores based on a sample of 77 adult students used in this investigation. The same headings are used throughout this chapter as description in the examination of the hypotheses.

As was mentioned earlier, the counseling form of the Tennessee Self-Concept Scale was used in this investigation. However, five variables of the clinical form which were related to the purposes of this study were also used. These variables which were identified as significant variables for patients are: defensive positive; the number of deviant signs; true/false ratio; net conflict; and total conflict.

W. H. Fitts (1965), the author of the Tennessee Self-Concept Scale,, has used this instrument for various populations. The results of the present investigation are compared with the scores of a norm group of 626 and with a group of 300 psychiatric patients. Table 8 compares the self-concepts of 77 adult students at Iowa State University with the self-

Table 7. Total positive self-concept scores and the other 16 variables related to adults- self-concepts

Variables	Number of items	Mean	Standard Deviation	Range	Minimum	Maximum
Total positive self-concept	90	352.31	34.45	156.00	263.00	419.00
Identity	30	125.25	11.98	54.00	93.00	147.00
Self-satisfaction	30	111.95	13.70	61.00	83.00	144.00
Behavior	30	115.21	12.20	64.00	79.00	143.00
Physical self	18	69.02	8.55	36.00	50.00	86.00
Moral-ethical self	18	73.29	7.32	36.00	51.00	87.00
Personal self	18	67.69	8.21	39.00	46.00	85.00
Family self	18	72.86	8.96	37.00	51.00	88.00
Social self	18	69.51	7.72	38.00	49.00	87.00
Variability	16	39.43	10.21	51.00	20.00	71.00
Distribution		112.143	28.92	125.00	44.00	169.00
Self-criticism	10	33.99	5.46	23.00	23.00	46.00
True/False ratio		0.971	0.25	1.32	0.57	1.89
Net conflict	90	- 9.00	13.27	71.00	- 49.00	22.00
Total conflict	90	28.40	7.93	42.00	9.00	51.00
Defensive positive		57.97	9.12	44.00	39.00	83.00
Number of deviant signs		9.96	10.14	56.00	0.00	56.00

Table 8. Means and standard deviations of the Tennessee Self-Concept Scale variables for the three groups

Variables	Undergraduate adults students at I.S.U. (n=77)		Norm group (n=626)		Patient group (n=300)	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Total positive self-concept	352.31	34.45	345.57	30.70	323.00	44.50
Identity	125.25	11.98	127.10	9.96	116.20	15.70
Self-satisfaction	111.95	13.70	103.69	13.76	99.10	17.70
Behavior	115.21	12.20	115.01	11.22	108.00	15.40
Physical self	69.02	8.55	71.78	7.67	67.30	11.10
Moral-ethical self	73.29	7.32	70.33	8.70	65.20	11.00
Personal self	67.69	8.21	64.55	7.41	60.90	11.50
Family self	72.86	8.96	70.83	8.43	64.80	10.80
Social self	69.51	7.72	68.14	7.86	65.00	10.60
Variability	39.43	10.21	48.53	12.42	51.60	14.20
Distribution	112.143	27.92	120.44	24.19	121.40	31.10
Self-criticism	33.99	5.46	35.54	6.70	36.00	6.80
True/False ratio	0.971	0.25	1.03	.29	1.17	.40
Net conflict	- 9.00	13.27	- 4.91	13.01	3.00	18.20
Total conflict	28.40	7.93	30.10	8.21	35.10	11.30
Defensive positive	57.97	9.12	54.40	12.38	51.20	14.60
Number of deviant signs	9.96	10.14	4.37		22.90	

concepts of the norm group of 626 and the 300 psychiatric patients.

As Table 8 demonstrates, adult students at Iowa State University have higher self-concepts, are more satisfied with the way they act, their relationship to God and their feelings of being good persons, have higher senses of personal worth, feelings of adequacy and value as family members, and are more adequate in their social interactions than both the general population and the psychiatric patients. Undergraduate adult students at Iowa State University are less variable from one area of self to another area, have lower self-criticism, distribution, true/false ratio, net conflict, and total conflict scores than the general population and the psychiatric patients. Patients have the highest scores on these variables.

Hypothesis I

H_0: There is no significant relationship between self-concept and self-directed learning.

To examine this hypothesis, the total Self-Directed Learning Readiness scores of the 77 adult students are correlated with their total positive Tennessee Self-Concept scores. A highly significant correlation coefficient of 0.558 is obtained. The probability level of this coefficient is beyond 0.001. So there is a highly significant positive relationship between adults' self-directedness in learning and their self-concept. Therefore, it is suggested that as adults' self-directedness in learning grows, their levels of self-concept grow, too.

To obtain a better understanding of this relationship, all sixteen variables of the Tennessee Self-Concept Scale are correlated with the total self-directed learning scores and their eight factors. Table 9 presents

Table 9. Correlation coefficients between self-directed learning factors and self-concept variables.

Self-concept variables	Total self-directed learning	Self-directed Learning Factors							
		Love of learning	Self-concept as an effective learner	Tolerance of risk, ambiguity, and complexity in learning	Creativity	View of learning as a lifelong, beneficial process	Initiative in learning	Self-understanding	Acceptand of responsibility for one's own learning
Total positive self-concept	0.558**	0.362**	0.431**	0.572**	0.441**	0.434**	0.566**	0.571**	0.251*
Identity	0.508**	0.360**	0.425**	0.449**	0.412**	0.478**	0.521**	0.528**	0.195
Self-satisfaction	0.452**	0.271*	0.311**	0.526**	0.344**	0.283*	0.456**	0.466**	0.232*
Behavior	0.570**	0.363**	0.460**	0.580**	0.459**	0.442**	0.582**	0.567**	0.238*
Physical self	0.427**	0.224	0.296*	0.595**	0.244*	0.278*	0.430**	0.410**	0.074
Moral-ethical self	0.409**	0.286*	0.278*	0.427**	0.295**	0.323**	0.360**	0.424**	0.297**
Personal self	0.563**	0.365**	0.519**	0.518**	0.516**	0.432**	0.605**	0.548**	0.208
Family self	0.453**	0.269*	0.312**	0.450**	0.316**	0.324**	0.487**	0.566**	0.284*
Social self	0.499**	0.393**	0.408**	0.410**	0.495**	0.480**	0.491**	0.442**	0.120

Variability	-0.307**	-0.166	-0.235*	-0.432**	-0.209	-0.064	-0.284*	-0.321**	-0.005
Distribution	0.4418**	0.30**	0.279*	0.421**	0.353**	0.438**	0.438**	0.488**	0.325**
Self-criticism	-0.079	-0.065	-0.077	-0.158	-0.038	-0.010	-0.046	-0.009	0.329**
True/False ratio	-0.283*	-0.218	-0.142	-0.512**	-0.076	-0.162	-0.095	-0.154	0.059
Net conflict	-0.256*	-0.191	-0.066	-0.476**	-0.069	-0.212	-0.097	-0.121	0.126
Total conflict	0.006	0.079	-0.182	0.035	-0.007	0.153	-0.082	-0.012	-0.045
Defensive positive	0.453**	0.328**	0.383**	0.395**	0.451**	0.362**	0.469**	0.423**	0.146
Number of deviant signs	-0.367**	-0.215	-0.301**	-0.363**	-0.263*	-0.299**	-0.404**	-0.332**	-0.249*

*Significance $< .05$.

**Significance $< .01$.

these correlation coefficients. The relationships between self-concept as measured by the Tennessee Self-Concept Scale and all eight factors of self-directedness in learning are significant beyond .01, except for the "acceptance of responsibility for learning" factor; its significant level is .02. Also, the relationships between self-directed learning and the sixteen variables of self-concept are significant beyond .05 except for "self-criticism" (-.079) and "total conflict" (.006).

As was mentioned in the third chapter, the first hypothesis has eight subhypotheses related to the eight factors in the Self-Directed Learning Readiness Scale. Table 9 also presents the correlation coefficients of these subhypotheses, with their significant levels indicated by asterisks.

A: There is no significant relationship between self-concept and love of learning.

The results indicate that there is a positive significant relationship between the factor heading of love of learning and total self-concept, and the self-concept sub-scores known as identity, self-satisfaction, behavior, moral self, personal self, family self, social self, distribution, and defensive positive variables. However, there is not a significant relationship between love of learning and self-criticism, true/false ratio, net conflict, total conflict, physical self, and number of deviant signs variables. Considering that the true/false ratio, net conflict, total conflict, and number of deviant signs variables are identified as patient variables and the researcher's criteria for rejecting the null hypothesis is that at least two-thirds of the variables be significant beyond the .05 level, this null hypothesis will be rejected, identifying that there is a

significant relationship between love of learning and self-concept.

B: There is no significant relationship between self-concept as measured by the Tennessee Self-Concept Scale and self-concept as an effective learner, as measured by the Self-Directed Learning Readiness Scale.

Inspection of Table 9 shows that there is a significant relationship between self-concept as an effective learner and total Tennessee self-concept, identity, self-satisfaction, behavior, physical self, moral-ethical self, personal self, family self, social self, variability, distribution, defensive positive, and number of deviant signs variables. All of these variables have strong positive relationships with adults' self-concept as effective learners, except for the variability and the number of deviant signs variables which have strong negative relationships, suggesting that when adults' self-concepts as effective learners grow, their total self-concept, identity, distribution, satisfaction, behavior defensiveness, physical, moral-ethical, personal, family, and social selves will increase also, but their number of deviant signs and their variability from one area of self-perception to another area tend to decrease.

However, there is not a significant relationship between self-concept as an effective learner and self-criticism, true/false ratio, net conflict, and total conflict. As was mentioned earlier, these nonsignificant variables are among variables considered for psychological patients; so this null hypothesis will be rejected, suggesting that there is a significant relationship between self-concept as an effective learner as measured by the Self-Directed Learning Readiness Scale and self-concept as measured by the Tennessee Self-Concept Scale.

C: There is no significant relationship between self-concept and tolerance of risk, ambiguity, and complexity in learning.

The results show that there are significant positive correlation coefficients between adults' tolerance of risk, ambiguity, and complexity in learning and their total self-concept, identity, satisfaction, behavior, physical, moral, personal, family, and social selves, distribution, and defensiveness.

Inspection of Table 9 indicates a significant negative relationship between adults' tolerance of risk, ambiguity, and complexity in learning and their true/false ratio, net conflict, variability, and number of deviant signs, suggesting that as adults' tolerance of risk, ambiguity, and complexity in learning increase, their true/false ratio, net conflict, number of deviant signs, and their variability from one area of self-perception to another area tend to decrease, while their total self-concept, self-satisfaction, identity, behavior, distribution, and defensiveness increase and they tend to have a greater sense of personal worth in their social interactions, as family members, their state of health, and their feelings of being good persons. However, there is not a strong coefficient of correlation between adults' tolerance of risk, ambiguity, and complexity in learning and their self-criticism and total conflict. As was mentioned earlier, the researcher's criteria for rejecting the null hypothesis is the significance of at least two-thirds of the variables beyond the .05 level. Thus, this null hypothesis is also rejected because all the variables except two of them are significant beyond the .05 level.

D: There is no significant relationship between self-concept and creativity.

The statistical analysis (refer to Table 9) indicates that strong positive relationships exist between adult students' creativity and their total self-concept, identity, satisfaction, behavior, physical self, moral-ethical self, personal self, family self, social self, distribution scores, and their defensiveness. A significant negative relationship exists between adults' creativity and their number of deviant signs, suggesting that as adults' creativity grows, their self-concept, identity, satisfaction, behavior, physical, moral, personal, family, and social selves, distribution scores, and their defensiveness increase, while their number of deviant signs decreases. On the other hand, there is not a significant relationship between their creativity and their self-criticism, true/false ratio, net conflict, total conflict, and variability scores.

The results support the alternative hypothesis and reject the null hypothesis. Because most of the nonsignificant variables are among the patient variables, this indicates that there is a strong positive relationship between adults' self-concepts as measured by the Tennessee Self-Concept Scale and their creativity.

E: There is no significant relationship between self-concept and view of learning as a lifelong, beneficial process.

Inspection of Table 9 shown earlier, also identifies a strong $\underline{r}$ between the view of learning as a lifelong, beneficial process and total self-concept, identity, satisfaction, behavior, physical, moral, personal, family and social selves, distribution, defensiveness, and number of deviant signs. Nonsignificant negative relationships do exist between adults' view of

learning as a lifelong, beneficial process and their self-criticism, true/false ratio, net conflict, and variability scores, suggesting that as adults' self-directedness in learning grows, their self-criticism, true/false ratio, net conflict and their variability from one area of self to another decline. Therefore, the findings tend to support the alternative hypothesis, confirming that there is significant positive relationships between adults' self-concepts and their view of learning as a lifelong, beneficial process.

F: There is no significant relationship between self-concept and initiative in learning.

Data analysis indicates that highly significant positive correlations exist between adults' initiatives in learning scores and their total self-concept, identity, satisfaction, behavior, physical, moral, personal, family, and social selves, distribution, and defensiveness scores. Significant negative relationships exist between adults' initiative in learning scores and their variability and number of deviant signs scores. Other related self-concept scores of adult students, such as self-criticism, true/false ratio, net conflict and total conflict, have nonsignificant negative relationships with their initiative in learning, suggesting that when adults' initiative in learning increase, their self-criticism, true/false ratio, net conflict, total conflict, number of deviant signs, and their variability from one area of self-perception to another decrease, while their total self-concept, identity, satisfaction, behavior, physical, moral, personal, family, and social selves, distribution, and defensiveness increase.

The null hypothesis is rejected, specifying that there is a strong

relationship between adult students' initiative in learning and their self-concepts.

G: There is no significant relationship between self-concept and self-understanding.

Statistical analysis also identifies that the relationship between self-understanding and all self-concept variables is positive and significant beyond the .01 level, except for the self-criticism, true/false ratio, net conflict, and total conflict scores, which have non-significant negative relationships with self-understanding. Adults' variability from one area of self to another area and their number of deviant signs have highly significant relationships with their self-understanding; however, the kind of relationship is negative, suggesting that as the adult's self-understanding increases, his or her variability decreases. The null hypothesis is rejected by the results obtained, specifying that there is a highly significant relationship between adults' self-understanding and their self-image variables.

H: There is no significant relationship between self-concept and acceptance of responsibility for one's own learning.

Table 9 shows that there is a significant correlation coefficient between adults' total self-concept scores and their acceptance of responsibility for their own learning. Also, the relationship between adults' acceptance of responsibility for their own learning and their self-criticism, satisfaction, behavior, moral self, family self, distribution, and number of deviant signs is strong. However, nonsignificant correlation coefficients exist between their defensiveness, variability, social self, personal self, physical self,

identity, net conflict, total conflict, true/false ratio, and their acceptance of responsibility for their learning. This null hypothesis fails to be rejected, because half of the self-concept variables are not significant beyond the .05 level.

In summary, as Table 9 shows and the analysis and discussion of data identifies, the first main null hypothesis and its subhypotheses, except the acceptance of responsibility for one's own learning, are rejected, confirming the existence of a strong positive relationship between adult students' self-concept and their self-directedness in learning, love of learning, self-concept as an effective, independent learner, tolerance of risk, ambiguity, and complexity in learning, creativity, view of learning as a lifelong, beneficial process, initiative in learning, and self-understanding.

Hypothesis II

H_0: There is no significant difference between self-image characteristics of individuals who are self-directed in learning and those who are not.

In order to test this hypothesis, adult students who were judged as low self-directed in learning and those who were highly self-directed in learning were chosen. As was mentioned in a previous chapter, the author of the Self-Directed Learning Readiness Scale, L. M. Guglielmino (1977), identified the total self-directed scores of 209 and below as "low" and total self-directed scores of 239 and above as "high." The range between these two scores was considered as average in self-directedness. For the purpose of this study, the same criteria were used to select adult students who were highly self-directed in learning versus those who were low. Adult

students with average self-directed scores in learning were excluded in this comparison.

Table 10 illustrates the mean, standard deviation, range, minimum, and maximum scores of the first group who were highly self-directed in learning. Thirty adult students had total scores of 239 or above. On the other hand, fifteen out of the 77 adult students had total scores of 209 or below. The remaining 32 adult students had average scores and were excluded.

Table 11 illustrates the mean, standard deviation, range, minimum, and maximum scores of low self-directed adult students.

The second hypothesis was treated by a t-test analysis to determine whether the highly self-directed learners were any different from low self-directed adult students in terms of self-concept and their personal images. As Table 12 shows, a t value of 4.90 is obtained for total self-concept scores. The t table value at the .05 level of significance is 2.021, and at the .01 level of significance is 2.704. Thus, the obtained t value even exceeds the .01 level of significance, indicating that there is a highly significant difference between high and low self-directed adult students in terms of their self-images. To obtain a better understanding of this difference, adult students' scores on sixteen variables of the Tennessee Self-Concept Scale of high and low self-directed groups are compared to each other, and are also included in Table 12.

Analysis of data indicates that there is a highly significant difference between the identity of highly self-directed and low self-directed groups. The highly self-directed adults have higher identity

Table 10. Mean, standard deviation, range, minimum, and maximum scores of highly self-directed adult students (n=30)

Variables	Mean	Standard Deviation	Range	Minimum	Maximum
Total self-directed learning	251.90	9.89	37.00	239.00	276.00
Love of learning	79.10	3.40	14.00	71.00	85.00
Self-concept as an effective, independent learner	49.07	4.86	20.00	39.00	59.00
Tolerance of risk, ambiguity, and complexity in learning	72.83	4.40	20.00	63.00	83.00
Creativity	42.77	3.18	13.00	37.00	50.00
View of learning as a lifelong, beneficial process	37.77	2.18	8.00	32.00	40.00
Initiative in learning	21.10	2.31	9.00	16.00	25.00
Self-understanding	40.03	2.43	9.00	36.00	45.00
Acceptance of responsibility for one's own learning	8.70	1.47	6.00	4.00	10.00

Table 11. Mean, standard deviation, range, minimum, and maximum scores of low self-directed adult students (n=15)

Variables	Mean	Standard Deviation	Range	Minimum	Maximum
Total self-directed learning	192.27	13.23	51.00	157.00	208.00
Love of learning	59.60	7.31	23.00	48.00	71.00
Self-concept as an effective, independent learner	36.27	5.27	19.00	26.00	45.00
Tolerance of risk, ambiguity, and complexity in learning	54.07	9.22	36.00	28.00	64.00
Creativity	31.53	4.75	18.00	24.00	42.00
View of learning as a life-long, beneficial process	29.13	4.29	17.00	21.00	38.00
Initiative in learning	15.07	2.02	8.00	10.00	18.00
Self-understanding	31.73	3.31	14.00	24.00	38.00
Acceptance of responsibility for one's own learning	8.20	1.61	4.00	6.00	10.00

Table 12. Mean, standard deviation, and t value of self-concept variables of the Tennessee Self-Concept Scale of high and low self-directed adult students

Variables	High Self-directed Adult Learners (n=30)		Statistics		Low Self-Directed Adult Learners (n=15)	
	Mean	Standard Deviation	t value	proba-bility	Mean	Standard Deviation
Total self-concept	370.29	27.66	4.90**	0.00	322.87	35.87
Identity	130.97	9.36	3.55**	0.002	115.67	15.35
Satisfaction	117.07	12.68	3.47**	0.001	103.00	13.16
Behavior	122.23	9.16	5.72**	0.00	104.27	11.37
Physical self	72.0667	7.67	3.26**	0.002	63.60	9.21
Moral-ethical self	76.30	6.06	3.47**	0.001	69.13	7.43
Personal self	71.70	6.19	5.21**	0.00	60.27	8.29
Family self	77.50	6.59	4.07**	0.00	67.40	9.98
Social self	72.70	6.29	4.26**	0.00	62.73	9.27
Variability	36.47	8.44	-2.17*	0.036	42.33	8.83
Distribution	124.23	26.55	3.56**	0.001	94.27	26.69
Self-criticism	34.30	5.95	-.30	0.769	34.80	3.78

True/False ratio	0.915	0.165	-2.32*	0.033	1.14	0.358
Net conflict	-12.533	11.50	-2.76**	0.008	-2.00	13.12
Total conflict	28.40	8.37	0.90	0.373	26.00	8.59
Defensive positive	60.57	8.28	3.81**	0.00	51.00	7.22
Number of deviant signs	6.47	7.13	-2.44*	0.02	17.47	16.69

*Significance $< .05$.

**Significance $< .01$.

scores than the low self-directed adults, and have a better understanding of what they are as they saw themselves.

The t value obtained for self-satisfaction is 3.47 with a probability level of .001. As was mentioned earlier, the t table value with 43 degrees of freedom at the .05 level of significance is 2.021 and at the .01 level of significance is 2.704. The obtained value exceeds both these levels of significance and indicates very strong differences between high and low self-directed adult students. Inspection of mean scores shows that the highly self-directed adults have higher self-satisfaction scores and more self-acceptance than low self-directed adult students.

As Table 12 also indicates, the two groups are significantly different in terms of their behaviors. A t value of 5.72 with a probability level of .000 and differences in behavior mean scores show that high self-directed adult students have higher behavior scores than low self-directed adult students.

Data analysis indicates that there is an important difference between the high and low self-directed adult students in terms of their physical self scores. The t value obtained is 3.26 with a probability level of .002. The highly self-directed adult students were more satisfied with their physical conditions than low self-directed adult students.

Almost the same result is obtained for moral-ethical self. The t value is 3.47 and the probability level is .001 with 7 points difference in the two groups' mean scores. The results indicate a significant difference in moral-ethical selves of high and low self-directed adult students. The highly self-directed adult students have greater feelings of being good persons, are more satisfied with their relationship to God

and their religion or lack of it than low self-directed adult students.

The t value obtained for personal self is 5.21 and its probability level is .000. This value exceeds both the t table values of .05 and .01 levels of significance, and indicates a highly significant difference between the personal selves of high and low self-directed adult students. Thus, highly self-directed adult students appear to be more satisfied with their personality, their feelings of adequacy and their senses of personal worth than low self-directed adult students.

Data analysis confirmed the significant differences between the high and low self-directed adult students in terms of their family selves. The obtained t value is 4.07 with a probability level of .000. Highly self-directed adult students have more feelings of adequacy, worth, and value as members of their families than low self-directed adult students.

As Table 12 indicates, there is a highly significant difference between the social self of high and low self-directed adult students. The t value is 4.26 and its probability level is .000. The results suggest that the highly self-directed adult learners have more sense of adequacy and worth in their social interactions with other people than low self-directed adult learners.

Inspection of Table 12 also shows an interesting result for variability scores. The t value of -2.17 is significant beyond the .05 level. The probability of t value is .036. The results indicate that there is a significant difference between high and low self-directed adults' variabilities. The difference in mean scores and the negative sign of t value confirms that highly self-directed adult students have less inconsistency from one area of self-perception to another in comparison

with the lower self-directed adult students.

The t value obtained for distribution scores is 3.56 with a probability level of .001. This value exceeds the t table value and provides a very strong difference between the high and low self-directed adult groups in terms of the distribution of their answers. Highly self-directed adult learners most often choose options 4 and 5 of the Tennessee Self-Concept Scale items, while low self-directed adult learners choose options 1 and 2 most often.

Inspection of Table 12 shows that highly self-directed adult students are not very much different from low self-directed adult students in terms of self-criticism. The obtained t value is -0.30, which is not statistically significant.

In spite of self-criticism, the true/false ratio is significant. A t value of -2.32 is obtained. The probability level is 0.03. The negative sign indicates that the low self-directed adults have more response bias, and stronger tendencies to agree or disagree regardless of item content in comparison to highly self-directed adults.

Net conflict scores are also significant. The obtained t value is -2.76. The negative sign shows that low self-directed adults' responses to positive items have more conflict with their responses to negative items in the same area of self-perception than highly self-directed individuals. However, there is not an important difference between these two groups considering the total amount of conflict.

Statistical analysis of the data also shows a highly significant t value of 3.81 with a probability level of .000 for defensive positive scores of adult students sampled. The results specify that the two groups

of high and low self-directed adult student are significantly different from each other in terms of this variable. The highly self-directed adult students are more defensive and have more positive self-descriptions than low self-directed adult learners.

As Table 12 indicates, there is a significant difference between the two groups on their number of deviant signs scores. A t value of -2.44 with a probability level of .02 is obtained. The negative sign and the differences in mean scores confirm that the low self-directed adult learners are more deviant from the norm group than are the high self-directed adults.

In summary, as the presentation and discussion of the data show, there are significant differences between high and low self-directed adult groups. The highly self-directed adult students have more self-esteem, are more aware of what they are, have more self-acceptance, are more satisfied with their behavior, their health and physical conditions, their morals, religion, and relationship to God, their relationship to their family and others, are more consistent from one area of self to another, and are more consistent with the norm group than the low self-directed adult students. As a result, the second null hypothesis is rejected, specifying that there are significant differences between high and low self-directed adult groups.

Hypothesis III

H_0: There is no significant difference within educational years in terms of self-directed learning.

A three-way analysis of variance is used to test the third, fourth, and fifth hypotheses. Table 13 illustrates a part of the three-way analysis of variance displayed on adults' total self-directed learning

as it relates to the main effect of educational years.

Analysis of the data indicates a significant F value of 2.97 for educational year as a main effect. The null hypothesis is rejected, confirming that there is a difference among the total self-directed mean scores of adult students of various educational years. Table 14 illustrates the total self-directed mean scores and standard deviations of freshmen, sophomore, junior, and senior adult students. To find out which year is greatly different from others, a Duncan Test is used. The results (Table 14) indicate that seniors have significantly higher total self-directed scores than freshmen, and are more self-directed in learning.

Table 13. A part of the three-way analysis of variance for total self-directed learning related to the main effect of educational year

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Educational year	3	3,832.35	1,277.45	2.97*
Error	61	26,205.98	429.61	

*Significance $<.05$.

Table 14. Mean, standard deviation and Duncan Test of Significance for total self-directed learning of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	219.85	19.87	Freshman Junior Sophomore
Sophomore	17	233.88	23.44	
Junior	20	225.55	29.48	Junior Sophomore Senior
Senior	20	237.50	19.85	
Total	77	229.06	24.09	

[a]Those groups not shown on the same line are significantly different.

A three-way analysis of variance is used on each factor of the Self-Directed Learning Readiness Scale, in order to better understand the differences among the four college years' adult students in terms of their self-directedness in learning. The summary tables of these analyses of variances are presented in Appendix E. The results of the three-way analyses of variances for the factor headings of love of learning, self-concept as an effective, independent learner, creativity, view of learning as a lifelong, beneficial process, initiative in learning, and self-understanding indicate a significant difference among the four college years' adult students. Duncan Test of Significance on each of these factors indicates that freshman adult students have lower scores in love of learning, while seniors have the highest scores. Senior adult students are more eager to learn than other groups. Sophomores and juniors also have more love of learning than freshmen.

The second factor of the Self-Directed Learning Readiness Scale is adults' self-concept as effective, independent learners. To provide additional evidence of the validity of the SDLRS, this factor is presented in Table 15 rather than in Appendix E.

As Table 15 shows, no significant F value exists for year as a main effect. However, significant F values do exist when the two variables of sex and year or when the three variables of sex, age, and year are working together. Table 16 illustrates the mean scores of adults' self-concept as effective, independent learners for sex by year variables. Figure 1 shows the shape of their interactions.

Table 15. A part of the three-way analysis of variance for self-concept as an effective, independent learner related to the main effect and interactions of year.

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Year	3	279.57	93.19	2.57
Two-way interactions				
Sex by year	3	404.66	134.88	3.73*
Age by year	3	113.23	37.74	1.04
Three-way interactions				
Year by sex by age	3	522.46	174.15	4.81**
Error	61	2,209.193	36.22	

*Significance $<.05$.

**Significance $<.01$.

Table 16. Mean scores of adults' self-concept as effective, independent learners for sex by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	43.80	46.43	40.80	44.60
	Female	39.30	45.10	47.70	45.10

As Figure 1 shows, freshman females have lower mean scores of self-concept as effective, independent learners than freshman male adults; but junior and senior females have higher mean scores than males. The self-concepts of female adult students increase as their years of education increase, but this is not the case with male adult students.

Statistical analysis of the Tennessee Self-Concept Scale suggests

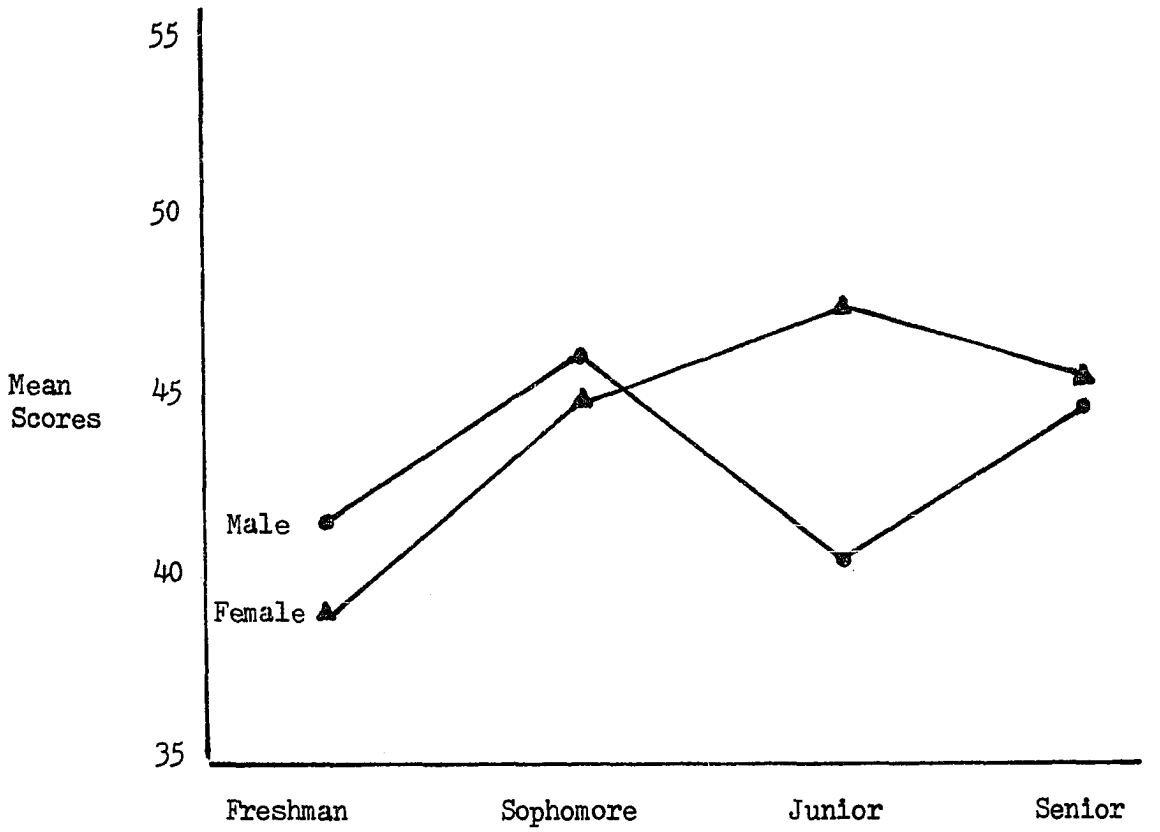

Figure 1. Mean scores of adults' self-concept as effective, independent learners for sex by year interaction

approximately the same results. Table 17 illustrates a part of the three-way analysis of variance on adults' total self-concept of the Tennessee Self-Concept Scale. Table 18 presents the mean scores of the four educational years. Significant F values are shown for the main effect of year. Thus, freshman adults have lower self-concepts than other groups.

Each variable of the Tennessee Self-Concept Scale is used separately to see whether there is any difference among the four college years' adult students in terms of their self-concepts. The results (shown in Appendix F) indicate that freshman adult students have lower identity, moral self, personal self, and social self scores, but higher true/false ratio and

Table 17. A part of the three-way analysis of variance on adults' total self-concept of the Tennessee Self-Concept Scale.

Source of variance	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Year	3	9,926.48	3,308.83	3.02*
Two-way interactions				
Sex by year	3	5,380.07	1,793.36	0.19
Age by year	3	3,117.58	1,039.19	0.42
Three-way interactions				
Sex by age by year	3	1,585.14	528.38	0.70

*Significance $< .05$.

Table 18. Mean scores of adults' total self-concept of four college years.

Group	N	Mean
Freshman	20	340.60
Sophomore	17	368.18
Junior	20	343.50
Senior	20	359.35

number of deviant signs scores than other groups. Seniors have higher scores in this continuum. The results suggest that the Self-Directed Learning Readiness Scale is valid, especially in terms of its second factor.

No significant difference is found among the four educational years considering tolerance of risk, ambiguity, and complexity in learning. However, a three-way analysis of variance and a Duncan Test of Significance on adults' creativity in learning (Appendix E) confirms a significant difference among adult students in the four college years. The results indicate that

freshmen have lower creativity in learning than other groups and seniors have the highest scores in creativity. In examining learning as a lifelong, beneficial process, freshman females have lower scores than freshman males regarding this factor, while sophomore, junior, and senior females have higher scores than males. Considering the adults' initiative in learning, a significant difference is found among adult students of different college years. Freshman adult students are less initiative in learning than other groups. The results indicate that adults' initiatives in learning increase as they continue their education. Almost the same result is obtained regarding adults' self-understanding. Seniors are different from freshman and have a higher self-understanding. The findings suggest that adults' self-understanding grows as they continue their education through the college years. However, there is not a significant difference among freshman, sophomore, junior, and senior adult students considering their acceptance of responsibility for their own learning.

In summary, the data analyses indicate that there are significant differences in adults' readiness for self-directed learning among the four college years. The third null hypothesis is rejected because the total self-directed learning and six out of its eight factors are significant, identifying that there are strong differences in total self-directed learning, love of learning, self-concept as effective, independent learners, creativity, initiative in learning, and self-understanding among freshman, sophomore, junior, and senior adult students. The findings indicate that education has a significant impact on adults' self-directedness in learning.

Inspection of the results shows that senior adult students are more self-directed in learning, more eager to learn, have higher self-concepts as effective and independent learners, have greater creativity and initiative in learning, and have higher self-understanding than freshmen, sophomores, and juniors. The freshman adult students have the lowest scores in this continuum.

Hypothesis IV

H_0: There is no significant difference between males and females sampled in terms of self-directed learning.

As was mentioned earlier, a three-way analysis of variance is used on adults' total self-directed learning to examine the third, fourth, and fifth hypotheses. Table 19 illustrates a part of this analysis related to the main effect of sex and its two-way interactions.

Table 19. A part of the three-way analysis of variance for total self-directed learning related to the main effect of sex and its two-way interactions

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Sex	1	684.00	684.00	1.59
Two-way interactions				
Sex by age	1	233.74	233.74	0.54
Sex by year	3	5,580.84	1,860.28	4.33**
Error	61	26,205.98	429.61	

**Significance $<$ .01.

Table 19 summarizes the analysis of variance data to test the dif-

ferences in adults' total self-directed learning between males and females. The results indicate a nonsignificant F value of 1.59 for sex as a main effect. This nonsignificant F identifies that if adults' sex is considered alone, ignoring their other characteristics like age and year of education, there is not a strong difference between males and females in terms of their self-directed learning. However, because adults' sexes are not separated from their characteristics of age and level of education, one should look at the interaction between these variables, especially when three-way analysis of variance is used.

Table 19 shows that the two-way interaction of sex by age is not significant, but the interaction of sex by year is highly significant. An F value of 4.33 is obtained for sex and year variables when they are considered together. Table 20 illustrates the mean scores of adults' total self-directed learning when their sex and year of education are considered at the same time. The shape of the interaction between sex and year variables is shown in Figure 2.

Table 20. Mean scores of total self-directed learning for sex by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	227.00	234.14	210.00	233.90
	Female	212.70	233.70	241.10	241.50

As Figure 2 illustrates, the self-directed learning readiness of female adult students increases as their level of education increases; however, this is not the case with male adult students. The self-directed

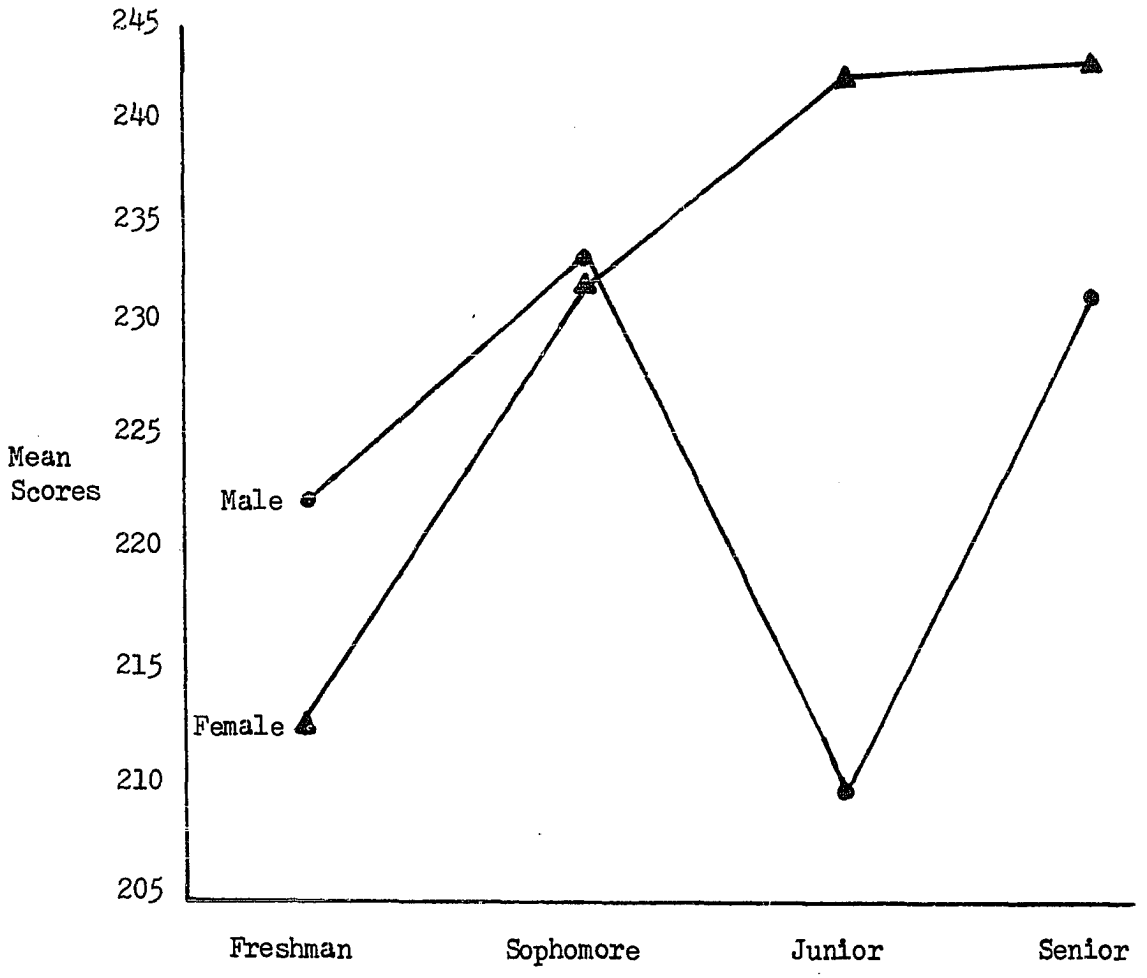

Figure 2. Mean scores for sex by year interaction for adults' total self-directed learning

learning readiness of male adult students increases from freshman to sophomore, but decreases in junior year and increases again in their senior year. The results indicate that when considering two variables together, like sex and year of education, there is a significant difference between self-directed learning of male and female adult students. Freshman females have lower self-directed learning than males, but junior and senior female adult students have significantly higher self-directed learning than males. To understand better the differences in self-

directed learning of male and female adults, each variable of the Self-Directed Learning Readiness Scale is analyzed separately. As was mentioned earlier, the results of these three-way analyses of variances and the differences in adults' mean scores are presented in Appendix E.

Analysis of data shows a strong difference between male and female adult students, considering their love of learning scores. Freshman females are less eager to learn than freshman males; but sophomore, junior, and senior females have significantly higher scores in love of learning than males. Females' love of learning increases as their level of education increases, but this is not the case with male adult students. Almost the same results are obtained regarding adults' self-concept as effective, independent learners. The interaction of sex by year is significant, suggesting that freshman females have lower self-concept scores than freshman males, but junior and senior females have higher self-concept scores as effective learners than male adult students.

Inspection of the data in Appendix E also identifies no significant F value for tolerance of risk, ambiguity, and complexity in learning, initiative in learning, self-understanding, and acceptance of responsibility for one's own learning factors when sex is considered alone or when two variables of sex and age or sex and year are used together. The results indicate that both male and female adult students have the same level of self-understanding, tolerance of risk, ambiguity, and complexity in learning, initiative in learning, and acceptance of responsibility for their own learning. The obtained F value for adults' creativity in learning and their view of learning as a lifelong, beneficial process are nonsignificant for sex as a main effect; however, strong F values are recorded for sex and

year interaction when these two variables are considered together. Findings of this investigation specify that females' creativity in learning and their views of learning as a lifelong and beneficial process increase as their education increases, but that is not the case with males.

In summary, data analysis indicates that there are significant differences in adults' readiness for self-directed learning between the male and female students. The third null hypothesis is rejected because total self-directed learning, love of learning, self-concept as an effective, independent learner, creativity, and view of learning as a lifelong, beneficial process are significant. Freshman females are less self-directed in learning, less eager to learn, have lower self-concepts and creativity, and consider learning as beneficial and lifelong less than freshman males. However, females have greater growth in all of these variables as their levels of education increase with males' growth in the opposite direction.

Hypothesis V

H_0: There is no significant difference within the age categories in terms of self-directed learning.

A three-way analysis of variance is used on adults' total self-directed learning to examine this hypothesis. Table 21 illustrates a part of this analysis related to the main effect of age and its two-way and three-way interactions.

As Table 21 indicates, there is not a significant difference between old and young adult students, when age is considered as a separate variable, and sex and year are kept constant. The same result is reached when age and sex or age and year are working together. Neither of the F values

Table 21. A part of the three-way analysis of variance for total self-directed learning related to the main effect and interactions of age

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Age	1	796.63	796.63	1.85
Two-way interactions				
Age by year	3	1,536.19	512.06	1.19
Age by sex	1	233.74	233.74	0.54
Three-way interactions				
Age by sex by year	3	5,184.26	1,728.09	4.02**
Error	61	26,205.98	429.61	

**Significance $<.01$.

are strong. However, with three-way interaction, when none of the variables are constant, and all of the three variables are considered together, a significant F value of 4.02 is obtained. Table 22 illustrates the total self-directed learning mean scores for sex by age by year variables. Figure 3 shows the shape of this interaction and illustrates how three variables work together.

Table 22. Mean scores of total self-directed learning for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	226.00	215.40	228.00	210.00
Sophomore	222.40	230.20	263.50	237.20
Junior	225.60	227.40	194.40	254.80
Senior	226.80	234.40	241.00	248.60

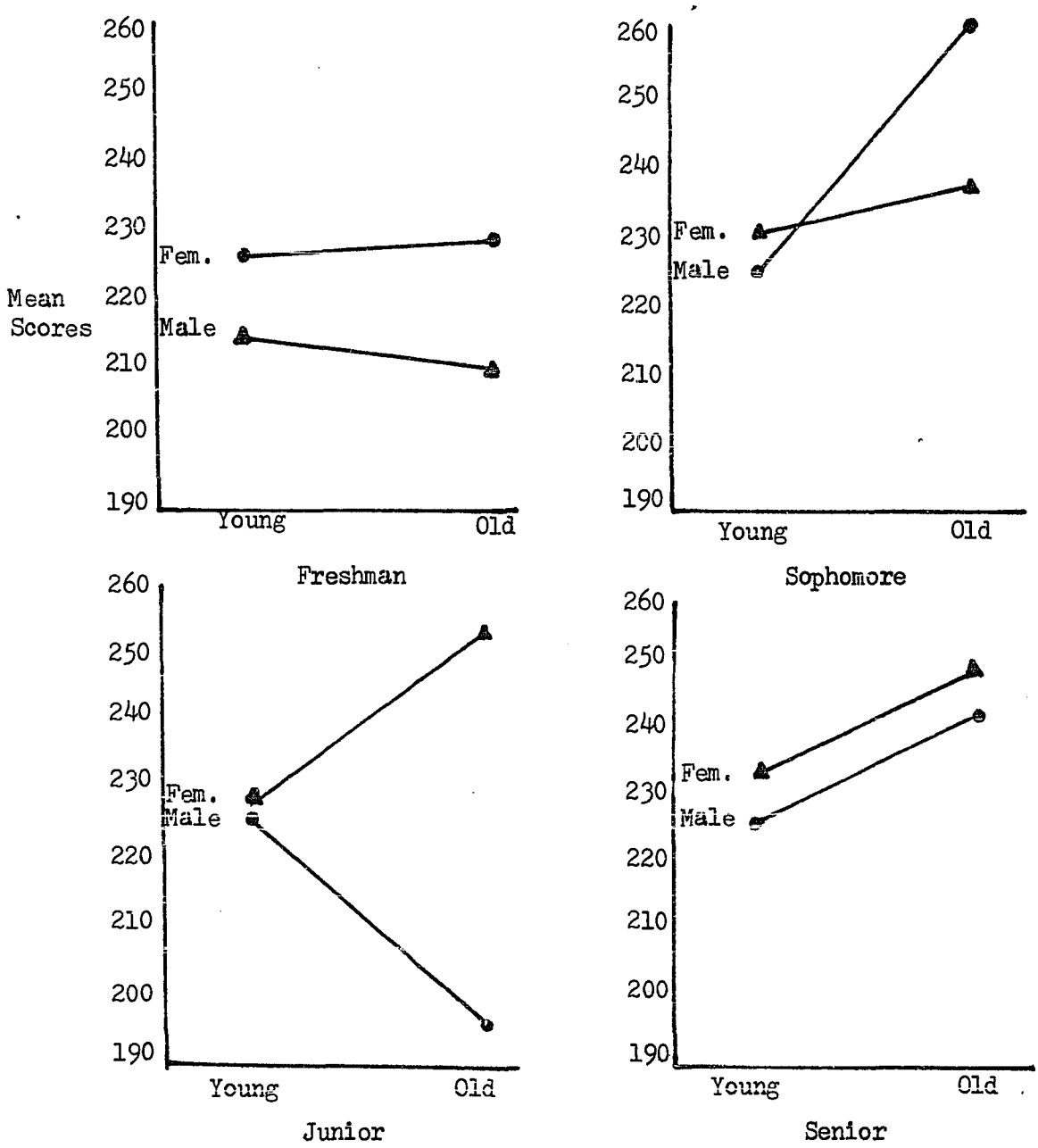

Figure 3. Mean scores for total self-directed learning for sex by age by year interaction

As was mentioned in the third chapter, "young adults" are defined as those between the age of 25 to 35 years, and "old adults" are students of the age of 35 and older.

Inspection of Table 22 and Figure 3 shows that in the first year of college, young females have higher total self-directed mean scores than older females, but young males have lower total self-directed mean scores than older males. In the second year of college, young females have lower self-directed scores than older females. Also, young males have significantly lower self-directed learning scores than older males. In the third year of college, young males and females obtain similar self-directed mean scores, but older males have significantly lower scores than older females. In the fourth year of college, both young males and young females obtain significantly lower total self-directed learning scores than older males and older females.

Three-way analyses of variances are performed on each factor of the Self-Directed Learning Readiness Scale to better understand the differences in self-directed learning of old and young adult students. The results also are presented in Appendix E. These data suggest that there are not significant differences in tolerance of risk, ambiguity, and complexity in learning, and acceptance of responsibility for one's own learning between old and young adult students. Regarding the other six factors of the Self-Directed Learning Readiness Scale, no significant F value is obtained when age is considered separate from sex and year of education. However, when either the variable of age and the variable of year or all three variables of age, sex, and year are working together, significant F values are obtained for the factor headings of love of

learning, self-concept as an effective, independent learner, creativity, view of learning as a lifelong, beneficial process, initiative in learning, and self-understanding. Data analysis suggests that freshman old and young adult students are not significantly different from each other. Sophomore and senior older adults have higher self-directed learning than younger ones. In the third year of college, young females have lower self-directed learning than older females, but young males have higher scores than older males.

Thus, the fifth null hypothesis is rejected, because significant differences are obtained between the younger and older adult students regarding their total self-directed learning and its six out of eight factors. A complete table of the three-way analysis of variance for total self-directed learning which is used to test the third, fourth, and fifth hypotheses is presented in Appendix E.

Hypothesis VI

H_0: There is no significant difference within the age categories in terms of self-concept scores.

To test the sixth and seventh hypotheses, the scores of the 77 adult students on the Tennessee Self-Concept Scale are used. A three-way analysis of variance is performed on adults' total self-concept scores, to identify the effects of age, sex, and year. Table 23 illustrates the result of a part of this analysis of variance on adults' total self-concept, related to the main effect and interactions of age variables.

As Table 23 presents, no significant difference is found between the total self-concept of young and old adult students when age is considered

Table 23. A part of the three-way analysis of variance for adults' total self-concept related to the main effect and interactions of age

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Age	1	1,795.54	1,795.54	1.64
Two-way interactions				
Age by sex	1	1,252.36	1,252.35	1.14
Age by year	3	3,117.58	1,039.19	0.95
Three-way interactions				
Age by sex by year	3	1,585.14	528.38	0.48
Error	61	66,870.94	1,096.25	

alone or when age and sex, age and year, or age, sex, and year are working together. However, for each of the sixteen variables of the Tennessee Self-Concept Scale, a three-way analysis of variance is used to specify whether there is any difference between young and old adults' self-concepts.

The results indicate a significant F value for self-criticism. Although the main effect of age is not strong, the effect of sex and age is significant when they work together. Table 24 illustrates a part of the three-way analysis of variance on self-criticism for the main effect and interactions of age.

Table 24. A part of the three-way analysis of variance for self-criticism

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Age	1	27.88	27.88	0.92
Two-way interactions				
Age by sex	1	154.89	154.89	5.09*
Age by year	3	70.43	23.48	0.77
Three-way interactions				
Age by sex by year	3	42.05	14.02	0.46
Error	61	1,858.09	30.46	

*Significance $< .05$.

As the results show, differences in self-criticism of young and old adults appear when they are grouped on the basis of both their sex and age. Table 25 illustrates the mean scores of adults' self-criticism for sex by age variables. Figure 4 shows the shape of this interaction.

As Table 25 and Figure 4 show, old males have greater capacities for self-criticism than young males, but the result is opposite for females. Old females have less capacity for self-criticism than young females.

The other fifteen variables of the Tennessee Self-Concept Scale are not significant for age. Young and old adult students are not greatly different from each other in terms of their net conflict, total conflict, identity, self-satisfaction, behavior, physical, moral, personal, family, and social selves, distribution scores, defensiveness, and number of deviant signs. A summary of the analysis of variance tables on each of these

Table 25. Mean scores of adults' self-criticism for sex by age variables

		Age	
		Young	Old
Sex	Male	31.40	35.41
	Female	35.40	33.95

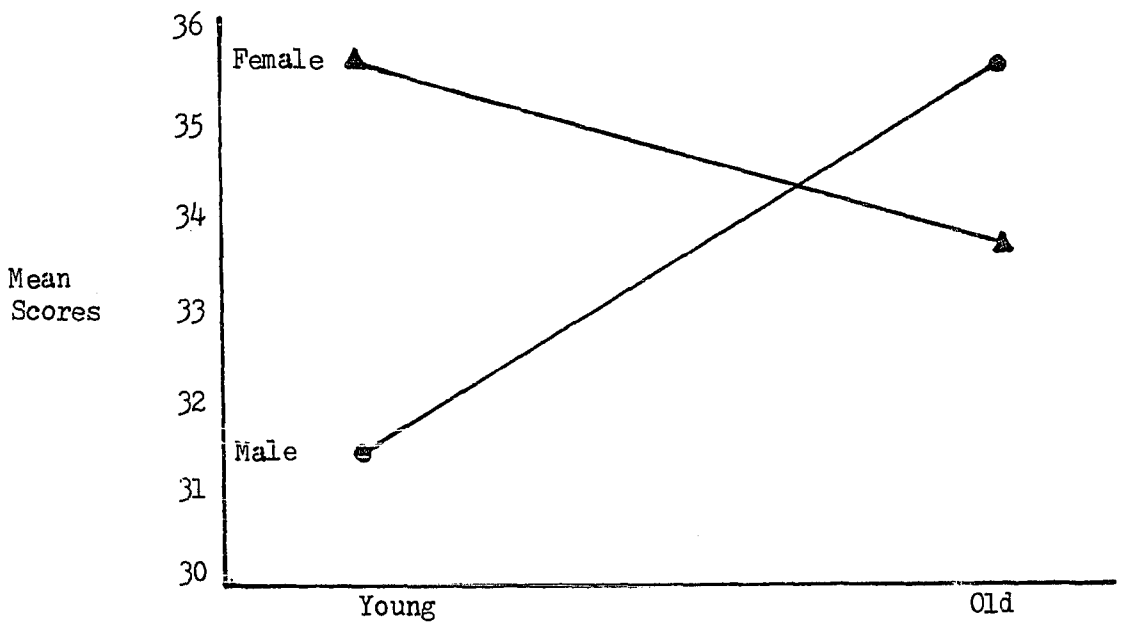

Figure 4. Mean scores of adults' self-criticism for sex by age variables

variances is presented in Appendix F.

The researcher fails to reject the sixth null hypothesis, because there is no significant difference between old and young adult students considering their total self-concept and its 15 out of 16 variables.

Hypothesis VII

H_0: There is no significant difference between males and females sampled in terms of self-concept scores.

The same three-way analysis of variance is used to test this hypothesis. The results of a part of the analysis of variance for adults' total self-concept regarding the main effect of sex and its interactions are presented in Table 26.

Table 26. A part of the three-way analysis of variance for adults' total self-concept.

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Sex	1	15.39	15.39	0.01
Two-way interactions				
Sex by age	1	1,252.36	1,252.36	1.14
Sex by year	3	5,380.07	1,793.36	1.64
Three-way interactions				
Sex by age by year	3	1,585.14	528.38	0.48
Error	61	66,870.94	1,096.25	

Inspection of Table 26 shows that there is no significant difference between self-concepts of male and female adult students. Neither the main effect of sex nor the effects of sex and age, sex and year, or sex, age,

and year are strong. However, as was mentioned earlier, each variable of the Tennessee Self-Concept Scale is used separately to be sure that there is no strong difference between males and females (Appendix F).

As was mentioned earlier, a significant F value is obtained for self-concept when sex and age are working together (Tables 24 and 25, and Figure 4). The results indicate that young females are significantly open to self-criticism more than young males, but old females have less capacity for self-criticism than old males.

A three-way analysis of variance for personal self identifies an important difference between male and female adult students. A part of this analysis of variance regarding the effect of sex is presented in Table 27.

Table 27. A part of the three-way analysis of variance for personal self regarding the main effect of sex and its interactions

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effect				
Sex	1	28.85	28.85	0.49
Two-way interactions				
Sex by age	1	46.55	46.55	0.80
Sex by year	3	626.26	208.75	3.59*
Three-way interaction				
Sex by age by year	3	137.63	45.88	0.79
Error	61	3,550.76	58.21	

*Significance $< .05$.

As the table indicates, there is not a strong difference between males' and females' personal selves, when adult students are grouped only on the basis of their sex. However, when both their sex and level of

education are considered together, a significant F value of 3.59 is obtained. Table 28 illustrates the mean scores of adults' personal selves for sex and year variables. Figure 5 presents the shape of their interactions.

Table 28. Mean scores of adults' personal self for sex and year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	68.00	73.57	63.40	69.20
	Female	60.20	68.90	70.40	69.60

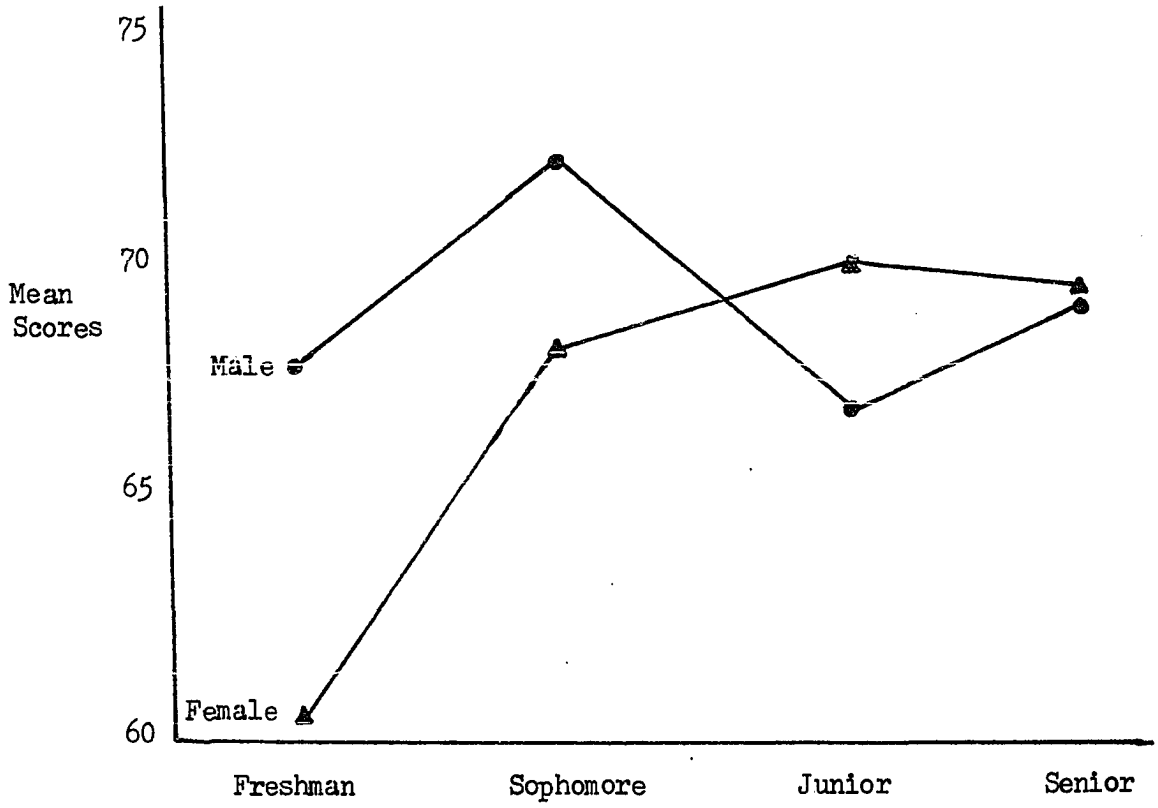

Figure 5. Mean scores of adults' personal self for sex by year interaction

The findings suggest that freshman and sophomore males have a greater sense of personal worth, feelings of adequacy as persons, and a higher evaluation of their personality than freshman and sophomore females. The result is quite opposite for junior adult students. Junior males have lower senses of personal worth than junior females. Senior males and females have almost the same level of personal worth and feelings of adequacy.

The results of the three-factor analysis of variances for the true/false ratio, net conflict, total conflict, identity, self-satisfaction, behavior, physical self, moral-ethical self, family self, social self, variability, distribution score, defensiveness, and number of deviant signs identify no significant difference between male and female adult students (Appendix F). Because strong differences appear between male and female adult students only when their self-criticism and personal self are considered, but male and female adults are not significantly different in their total self-concepts and other related variables, the researcher fails to reject the last hypothesis. As a result, it is concluded that male and female adult students are not significantly different in terms of their self-concepts.

The complete table of the three-way analysis of variance for adults' total self-concept which is used for both the sixth and seventh hypotheses is presented in Appendix F.

Summary

This chapter has presented and discussed the data which were collected in the study. The data analyzed and described the relationship of adults'

self-directedness in learning and their self-concept. Also, adults' differences in age groups, sex, and educational levels were discussed. The organization was based on the seven hypotheses of the study, which were discussed in the third chapter. A summary of the findings of the investigation, and conclusions drawn from the data collected, are included in Chapter V. Implications and recommendations that the data hold for research and practice are also cited.

CHAPTER V. SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to summarize the study, offer conclusions, suggest implications, and present recommendations for further research. In the first section, the purpose and procedure of the study is presented; the second section summarizes the major findings of the study; the third section offers conclusions relative to those findings; the fourth section suggests implications; and the final section offers recommendations.

Purpose and Procedure

The purpose of this study was to analyze and describe the relationship of adults' self-directedness in learning and their self-concepts. It is expected that the results of this study will contribute to a growing body of research and theory relative to self-directed learning, will provide more information about the Self-Directed Learning Readiness Scale, will identify additional information concerning participation patterns of adult learners, will provide a comparison between older and younger adults, males and females, and adult students within four different grade levels of college, and will contribute additional information to those involved in the development and delivery of continuing education and personal growth opportunities for adult learners.

Relevant literature and research related to self-directed learning, adults' learning projects, and self-concept were reviewed to support the need and overall rationale of the study.

Two instruments were used to collect data for the study. One was the Self-Directed Learning Readiness Scale developed and tested by L. M. Guglielmino (1977). This instrument was used to determine the following: 1) the degree of adults' total self-directedness in learning; 2) love of learning; 3) self-concept as an effective, independent learner; 4) tolerance of risk, ambiguity, and complexity in learning; 5) creativity; 6) view of learning as a lifelong, beneficial process; 7) initiative in learning; 8) self-understanding; and 9) acceptance of responsibility for one's own learning.

The second instrument was the Tennessee Self-Concept Scale. It was developed and tested by W. H. Fitts (1965). This instrument was used to provide necessary information regarding adults' self-concept. Sixteen variables were provided from the Tennessee Self-Concept Scale (see Chapter III). They and the total self-concept score were used in hypotheses testing.

Utilizing a table of random numbers, 77 adult students were selected from the total population of Iowa State University adult students for inclusion in the study. The two instruments, an explanatory cover letter, and an addressed, postage paid return envelope were distributed to each subject. Two weeks after the initial set of materials was mailed, a follow-up telephone call was made to the individuals who had not responded. All of these nonrespondents, except three individuals, agreed to complete the instruments if provided another set of materials. Three individuals were randomly selected from the population to substitute for the three refusals.

Findings

The following represents a summary of the study's major findings. The investigation has three major hypotheses and four exploratory ones. The findings are organized around these hypotheses.

The first null hypothesis for this study was:

H_0: There is no significant relationship between self-concept and self-directed learning.

The results indicated a close positive relationship between adults' self-directedness in learning and their self-concepts. The obtained correlation coefficient was 0.558 with a significance level of 0.000. Subsequently, it was suggested that based on just the overall scores, the null hypothesis could be rejected.

The first hypothesis had eight subhypotheses related to the eight factors of the Self-Directed Learning Readiness Scale described in Chapter III.

A: There is no significant relationship between self-concept and love of learning.

A highly significant correlation of 0.362 and a significance level of 0.001 was found between adults' total self-concept and their love of learning. Thus, it was suggested that the null hypothesis could be rejected for this factor, indicating the existence of a close relationship between adults' love of learning and their overall self-concept. Further examination also revealed a close relationship between love of learning and self-identity, self-satisfaction, personal behavior, moral, personal, family, and social selves, distribution, and defensiveness.

B: There is no significant relationship between self-concept as measured by the Tennessee Self-Concept Scale and self-concept as an effective learner, as measured by the Self-Directed Learning Readiness Scale.

A significant positive relationship of 0.431 with a significance level of 0.000 was obtained between self-concept as an effective learner and the Tennessee total self-concept plus the variables of identity, self-satisfaction, behavior, physical, moral, personal, family, and social selves, variability, distribution, defensiveness, and number of deviant signs variables. As a result, the null hypothesis was rejected.

C: There is no significant relationship between self-concept and tolerance of risk, ambiguity, and complexity in learning.

The results identified a strong correlation coefficient of 0.572 and a significant level of 0.000 existed between adults' tolerance of risk, ambiguity, and complexity in learning and their total self-concept, true/false ratio, net conflict, identity, satisfaction, behavior, physical, moral, personal, family, and social selves, variability, defensiveness, and number of deviant signs. This null hypothesis was also rejected.

D: There is no significant relationship between self-concept and creativity.

A strong relationship of 0.441 with a significance level of 0.000 was found between adults' creativity and their total self-concept plus the variables of identity, satisfaction, behavior, physical, moral, personal, family, and social selves, distribution, defensiveness, and number of deviant signs. As a result, the null hypothesis was rejected.

E: There is no significant relationship between self-concept and view of learning as a lifelong, beneficial process.

The findings confirmed the rejection of this null hypothesis, identifying a close relationship of 0.434 and a significance level of 0.000 between adults' view of learning as a lifelong, beneficial process and their total self-concept plus the variables of identity, satisfaction,

behavior, physical, moral, personal, family, and social selves, distribution, defensiveness, and number of deviant signs.

F: There is no significant relationship between self-concept and initiative in learning.

This null hypothesis was also rejected, because a highly strong positive correlation of 0.566 with a significance level of 0.000 was found between adults' initiative in learning and their total self-concept. Some related variables such as identity, satisfaction, behavior, physical, moral, personal, family, and social selves, variability, distribution, defensiveness, and number of deviant signs were also significant.

G: There is no significant relationship between self-concept and self-understanding.

A strong relationship of 0.571 and a significance level of 0.000 existed between adults' self-understanding and their total self-concept scores, suggesting the rejection of this hypothesis, too. Some of the self-image variables such as identity, satisfaction, behavior, physical, moral, personal, family, and social selves, variability, distribution, defensiveness, and number of deviant signs were also significant.

H: There is no significant relationship between self-concept and acceptance of responsibility for one's own learning.

A strong coefficient of 0.251 with a significance level of 0.014 was found between adults' total self-concept scores and their acceptance of responsibility for their learning. However, because nonsignificant relationships were found for most of their self-concept variables, the researcher failed to reject this null hypothesis. See Chapter IV for more specific data.

The second null hypothesis for this study was:

H_0: There is no significant difference between self-image characteristics of individuals who are self-directed in learning and those who are not.

This hypothesis was treated by a t-test analysis to find out whether the highly self-directed learners were any different from low self-directed adult students in terms of their self-concepts. Data analysis indicated a significant t value of 4.90 for total self-concept scores. The obtained t value exceeded the .01 level of significance, indicating that there was a highly significant difference in the self-concept scores of high and low self-directed adult students. Each variable of the Tennessee Self-Concept Scale of high and low self-directed groups was also compared to each other. The results indicated strong differences in true/false ratio, net conflict, total conflict, identity, self-satisfaction, behavior, physical self, moral-ethical self, personal self, family self, social self, variability, distribution, defensiveness, and number of deviant signs of high and low self-directed adult students. As a result, the second null hypothesis was rejected.

The third null hypothesis for this study was:

H_0: There is no significant difference within educational years in terms of self-directed learning.

Three-way analyses of variances were used on the adults' total self-directed learning scores and the eight related factors to test this hypothesis. Analysis of the data indicated a strong F value of 2.97 with a significance level of 0.039 for educational year effect. The null hypothesis was rejected, confirming that there was a great difference among the total self-directed mean scores of adult students of various educational years. Also, three-way analyses of variances were used on

each factor of the Self-Directed Learning Readiness Scale. The findings identified significant differences among freshman, sophomore, junior, and senior adult students in terms of their love of learning, creativity, initiative in learning, and self-understanding.

The fourth null hypothesis for this study was:

H_0: There is no significant difference between males and females sampled in terms of self-directed learning.

Several three-way analyses of variances were used on adults' total self-directed learning scores and the eight factors to examine this hypothesis. A strong F value of 4.33 with a significance level of 0.008 was found for sex by year effect related to the total self-concept scores. Results identified that there were significant differences between male and female adult students regarding their overall self-directedness in learning, love of learning, self-concept as effective, independent learners, creativity, and their view of learning as a lifelong and beneficial process. Thus, the null hypothesis was rejected.

The fifth null hypothesis for this study was:

H_0: There is no significant difference within the age categories in terms of self-directed learning.

The results of three-way analyses of variances identified a nonsignificant F value for age when it was considered as a separate variable and sex and year were kept constant. However, when all three variables of age, sex, and year were working together, a strong F value of 4.02 of 4.02 with a significance level of 0.011 was found between old and young adult students in terms of their total self-directed learning. Also, the factors of love of learning, self-concept as effective, independent learners, creativity, view of learning as a lifelong, beneficial process, initiative in learning, and self-understanding were significant. As a result, the fifth null

hypothesis was rejected.

The sixth null hypothesis for this study was:

H_0: There is no significant difference within the age categories in terms of self-concept scores.

To test this hypothesis, three-way analyses of variances were performed on the adults' total self-concept scores and the other sixteen related variables. The results identified no significant difference between the self-concept of young and old adult students. The researcher failed to reject this null hypothesis.

The last null hypothesis for this study was:

H_0: There is no significant difference between males and females sampled in terms of self-concept scores.

Several three-way analyses of variances were used to test this hypothesis. Insepction of the findings indicated no strong differences between the self-concepts of male and female adult students. This null hypothesis was not rejected.

Conclusions

The following are major conclusions drawn from the findings of the investigation. They are limited to the sample studied; however, the reader may be able to draw some generalizations applicable to other groups.

1. There is a strong positive relationship between the self-image of adult students and their self-directedness in learning. As adults gain the ability to direct and organize their own learning, they consider themselves more and more as worthy persons in every aspect of life. Adult students with higher self-concepts appear to be more interested in learning, have higher self-images as effective

and independent learners, are more creative, consider learning as a lifelong and beneficial process, have higher self-understanding and a greater tolerance for risk, ambiguity, and complexity in learning, and are more likely to be able to plan and direct the majority of their learning projects themselves than adult students with lower self-concepts.

2. Highly self-directed adult students appear greatly different from adults with lower self-directedness in terms of their characteristics. Adult students with greater ability to plan and direct their own learning activities have more self-esteem, are more aware of what they are and what they are not, have higher self-acceptance, are more satisfied with their behavior, their health and their physical conditions, their moral and their religious selves, are more consistent from one area of self to another, are more satisfied with their social interaction, their relationship to their family and their relationship to God, and have less deviant signs than lower self-directed adult students.

3. Adult students with a higher level of education appear to be more able to plan, organize, and direct their own learning activities than students with a lower level of education. More educated adult students seem to have a greater love of learning, are more creative, have a higher initiative in learning, and have greater understanding of self than less education individuals. Educational status also appears to have a significant impact on an adult's self-directedness in learning. Adult students with "senior" status seem more eager to learn, have greater creativity and initiative in

learning, are more self-directed in learning, and have higher self-understanding than freshmen, sophomores, and juniors. The freshman adult students have the lowest scores.

4. Male and female adult students also appear to be quite different in their ability to plan and direct their own learning, their love of learning, their self-image as effective, independent learners, their degree of creativity, and their view of learning as a life-long and beneficial process. Females have linear growth in their ability for self-directed learning as their levels of education increase, but it does not appear to be so for male adult students. Females who are going to finish college programs soon have greater ability to organize and direct their learning activities, are more eager to learn, look at learning as a lifelong and useful process, are more creative, and have higher self-concepts as effective and independent learners than females who are just starting college studies. On the other hand, college education does not appear to help males very much to grow and become more self-directed in learning. Males have approximately the same level of creativity, self-understanding, self-image as effective learners, and self-directedness in learning when they begin to take college courses as when they finish college education.
5. There also appear to be great differences in the ability levels of older and younger adult students to direct their own learning. In the second and fourth years of college, older adults seem more eager to learn, have higher self-images as effective and independent learners, have greater creativity and initiative in learning, are

more self-directed in learning, and have greater view of learning as a lifelong and beneficial process than younger adult students. In the first year of college, older males are more self-directed in learning than younger males, but older females are less able to plan and direct their learning activities than younger females. In the third year, the relationships appear to reverse. Older females have greater ability for self-directedness in learning than younger females, but older males have less ability than younger males for organizing and directing their learning.

6. Older and younger adult students appear to have approximately the same level of self-concepts except for self-criticism. Older males have greater capacities for self-criticism than younger males, but older females have less capacity for self-criticism than younger females.

7. There does not appear to be a great difference between male and female adult students in terms of their self-image, except for their personal self and self-criticism. The difference in self-criticism of male and female adult students is mentioned above. In terms of personal self, freshman and sophomore males have a greater sense of personal worth, greater feelings of adequacy as persons, and a higher evaluation of their personalities than freshman and sophomore females. Senior males and females have almost the same level of personal worth and feelings of adequacy. Opposite relationships appear to exist for juniors. Females have a linear growth in the evaluation of their personalities as they become more educated, but males have more fluctuation in the

evaluation of their personal self as college education does not appear to help males much in gaining a greater sense of personal worth and feelings of adequacy.

8. The number of highly self-directed college adult students is twice the number of low self-directed adult students. The results of this investigation identifies thirty highly self-directed adults, while only fifteen low self-directed adult students are identified.

Implications

The close relationships of adults' self-directed in learning and their self-image suggests the great responsibility educators must assume in helping students in areas of personal growth. In college courses, especially in undergraduate programs, emphasis is usually on the cognitive domain; however, in helping adult students regarding their feelings and understanding of self, more emphasis should be on the affective domain. For example, as the findings of this study indicate, when adults have clear images of self and higher self-understanding, and when they know who they are and who they are not, they will be able to plan and direct their own learning and as a result, organize and direct their own lives more effectively.

The results of this study and previous investigations also have indicated that adults with higher self-concepts are not dependent on teachers. Thus, it is the responsibility of adult students to find out what they want to learn and how they are going to approach their learning experiences. Educators' roles become more facilitative in nature rather than telling learners what is "best" for them.

M. Knowles (1970) has suggested that when students are responsible for their own learning and when they have to plan and direct their learning activities, they gain knowledge more easily and retain it for a longer period of time. On the other hand, teacher-directed learning assumes that students are motivated to learn in response to external rewards and punishments such as awards, grades, and fear of failure; whereas self-directed learning assumes that learners are motivated by internal incentives, such as the need for self-esteem, the desire to achieve and grow, the satisfaction of accomplishment, the need to know something specific or the curiosity of the adult. As this study and previous investigations indicated, most adult students, including those at college levels, are self-directed in learning. Unfortunately, methodologically in most courses, much emphasis is still on lectures and teacher-directed methods. Thus, paying attention to the self-directed learning phenomenon may mean that teacher methods that optimize learner involvement may need to be developed.

Various patterns of adults' learnings require that the learning resources be designed and packaged to fit individual adult students and to overcome the obstacles which interfere with learning efforts. Those responsible for planning educational programs for adult students should develop and deliver a wider range of opportunities. Programmed learning materials on a variety of subjects, improved correspondence courses, the broadcast media, available resource people throughout a community, intensive weekend seminars, and specialized services are some of the possibilities.

This study has shown that highly self-directed adult students are

different from adults with lower self-directedness in terms of their characteristics. Self-directed adults have more self-esteem, have higher self-acceptance, are more satisfied with their behavior, and in general, are more satisfied with their lives than lower self-directed adults. This result is very important to many instructors and counsellors. Facilitators in learning experiences and adults' counsellors need to pay more attention to the psychological characteristics of adult students in helping them to grow. Counsellors and facilitators should also help adult students to become more self-directed in various aspects of life, because it will in turn help adults to be more productive citizens and to be more satisfied with their lives.

The findings regarding the number of high and low self-directed adult students showed that highly self-directed adult students are twice the number of lower self-directed adults. This result indicates that both lifelong learning and self-directed learning are more than just a catchword. College students, like numerous other adult populations studied, are investing significant amount of time and energy in deliberate and self-directed learning activities. The high percentage of self-directed adult students lends strong support to the notion that adults have both a need and interest in planning and directing their own learning projects. The nature of adults' participation in learning projects provides mounting evidence that program planning must be approached in new ways. As was mentioned earlier, adult learning is primarily self-directed; adult learners plan and maintain day-to-day responsibility for their own learning. Program planning should be conducted in a manner that puts the adult learner in the primary position of organizing and directing his or her

learning activities.

Recommendations for Further Research

The following are suggested recommendations for additional research.

1. Additional research with different populations should be conducted on the relationship of adults' self-directedness in learning and their self-concepts. Larger samples should be studied to allow for comparisons of such variables as sex, age, educational background and training, family background, learning styles, urban-rural populations, and race.
2. Further research is needed to study the reliability and validity of the Self-Directed Learning Readiness Scale.
3. Research should be undertaken to identify how educational programs can be established to prepare the academic staff of a university to present effective teaching methods to adults instead of regular college students. Adult educators should be instructed and prepared to accept the role of facilitators rather than teachers and treat adults as grown up individuals with different needs and abilities.
4. A study should be made to identify the structures and processes through which self-directed learning opportunities are provided or facilitated. Various self-directed learning situations can be studied and compared to analyze the processes and to suggest the best structures for facilitating self-directed learning.
5. Educational programs, both pre-service and in-service, should be designed to help adult educators determine the nature of their

involvement in facilitating the efforts of the self-directed learners.

6. Longitudal research is needed to identify the degree and direction of change in adults' self-directedness in learning and their self-concept as they continue their learning throughout the college programs from freshman to sophomore, junior, and senior levels.

7. Research is needed to study the quality of learning undertaken in self-directed learning experiences. So far, most research related to adults' self-directed learning has been concerned with quantity rather than quality of self-planned learnings.

8. Research is needed to define the relationship between adult educators' effectiveness and their self-concept. The present study identified that adult students with higher self-concepts are more effective and more satisfied in their lives than lower self-concept students. Similar research is needed to determine whether the same relationship exists with adult educators.

9. Research should be undertaken to determine the self-image characteristics of adult students compared to students under 25 years of age, in order to understand whether teaching style differences may be required for different age groups.

10. Research is needed to determine the academic success of highly self-directed adult students compared to low self-directed adults to specify whether the highly self-directed adult learners are significantly able to gain and retain the knowledge more effectively than low self-directed adults.

Recommendations for Educational Practice

The following are suggested recommendations for educational practice.

1. Departments of adult education should develop materials and delivery systems, offer more programs, group activities, and seminars to assist self-directed adult students to adjust to their new roles. In addition, related faculty and staff require understanding of the needs of self-directed adult students through various in-service programs, seminars, and information exchange groups.
2. A finding of this study was that adult students with greater abilities to plan and direct their own learning were more effective in their personal, family, and social lives, were more interested in learning, and had a higher self-understanding. Educational programs for adult students should include skill building in the process of planning, conducting, and evaluating their own learning in order to provide more productive citizens and better educated individuals.
3. Another finding of this study was that college adult students have different patterns of learning with various degrees of self-directed ability. This finding has implications for community and educational agencies. Cooperation and collaboration among collegiate, community, and alternate educational agencies should be encouraged so that new and diverse educational possibilities in program and structure may come into being.

Recommendations to Instructors and College Professors

The following are suggested recommendations to instructors and college professors related to the findings of this investigation.

1. The finding of this study suggested that adults' self-directedness in learning is related to their self-image characteristics. Adult students with higher self-concepts are more interested in learning, more independent, more creative, have higher self-understanding, are more interested in lifelong learning, and are more likely to be able to plan and direct their learning projects than students with lower self-concepts. Instructors and college professors should pay more attention to the psychological characteristics of adult students. Adults have different levels of self-concept and as the results of this investigation indicated, people with different self-images have different abilities and are not the same in terms of their readiness for self-directed learning. Facilitators in learning experiences must involve adult students in planning and conducting the class programs and help each individual to develop his/her skills of organizing and managing the learning experiences. However, as it was mentioned earlier, facilitators' expectations should be based on psychological characteristics of each adult students. Individuals with higher self-images are more independent, more creative, and have a higher interest in lifelong learning. As a result, they can be involved in self-directed learning experiences much more easily than adult students with lower self-concepts. Individuals with lower self-images should be introduced to self-planned learning gradually

and with caution.

2. Another finding of this investigation was that highly self-directed adult students have more self-esteem, more self-acceptance, are more satisfied with their behavior, physical conditions, morals, religion, their social interaction and their family relationship than low self-directed adults. The results suggest that adults with greater ability to plan and direct their learning projects are more effective in other aspects of their lives and are more productive citizens than individuals with lower ability for self-directedness in learning. The findings also suggest that the final goal of education should be self-directed and lifelong learning. Professors should facilitate the process of self-directed experiences and help each individual to develop the skills for lifelong learning.
3. A result of this study also suggested that more educated adults have a greater capacity for self-directed learning than less educated adult students. More educated adults were found to have a greater love of learning, creativity, initiative, and self-understanding. This finding can be every important to facilitators and professors. Facilitators in learning experiences should note the educational status of adult students while they emphasize the self-directed learning process. Adult students who have just started college programs have lower capacities to plan and direct their learning than those who are going to finish college education soon. Professors should be cautious and treat freshman, sophomore, junior, and senior students differently. Adult students

at the "senior" level can be very comfortable in a self-planned learning situation, while freshman students may feel uncomfortable and shocked if they are pushed to self-directed learning experiences.

4. The results regarding male and female adult students suggested that females have greater abilities to organize and direct their learning activities, are more creative, more eager to learn, and have higher self-concepts than male adult students. Instructors' expectations relative to students' learning may need to differ between men and women. Females can be introduced to self-directed learning experiences more easily than male adult students. Since females are more creative and have higher self-concepts and love of learning than males, they may not need to refer to their instructors for direction very often.

5. Age also appears to be a significant variable considering adults' self-directedness in learning. The findings suggested that older adults have higher self-images, greater creativity, and initiative in learning, view learning as a lifelong process and are more self-directed than younger adult students. This result has some implications for instructors and college professors. Older adults can be easily involved in self-planned learning and can organize and direct their learning experiences without continuously referring to instructors. On the other hand, younger adult students are less creative, have lower self-images and are less able to plan and direct their learning projects by themselves. They usually need instructors to help and give direction of some sort.

6. Findings regarding the self-concept of adult students suggested

that older males have greater capacities for self-criticism than younger males, but older females have less capacities for self-criticism than younger females. Instructors should be cautious and must note the psychological characteristics of their adult students when they are giving feedback to improve their knowledge and skills. Positive rather than negative feedback is necessary for older females, because they are more sensitive to criticism than other groups. Also, younger males are more sensitive to criticism than older males. As a result, positive feedback is much more effective than negative feedback with younger males, but for older males and younger females, both positive and negative feedback can be used productively.

Summary

The purpose of this chapter has been to summarize the problem, the procedure, and the major findings of this study. Also, conclusions were drawn from the findings, and implications and recommendations for research and practice in the field of adult education were cited.

Change is a continuous phenomenon in every society. People have to change their lifestyles in order to be able to adjust to their changing society. Lifelong learning is needed to assist people to adapt to change. As the demand for lifelong learning opportunities continues to grow, it is important for educators to recognize the characteristics of learners and to effectively plan to meet the challenges these characteristics present.

It is the author's hope that the data from this investigation have added to the growing body of knowledge related to the characteristics of

adult students, and that the investigation has provided additional support for the self-directed in learning.

BIBLIOGRAPHY

Allerton, T. C. Selected characteristics of the learning projects pursued by parish ministers in the Louisville Metropolitan Area. Unpublished doctoral dissertation, University of Georgia, 1974.

Allport, G. W. Pattern and growth in personality. New York: Holt, Rinehart and Winston, 1961.

Anderson, C. Self-image: A theory of dynamics of behavior. Mental Hygiene, 1952, 36, 227-244.

Armstrong, D. Adult learners of low-educational attainments: The self-concept, backgrounds, and educative behavior of average and high learning adults of low educational attainment. Unpublished doctoral dissertation, University of Toronto, 1971.

Baghi, H. The major learning efforts of participatns in adult basic education classes and learning centers. Unpublished doctoral dissertation, Iowa State University, 1979.

Benson, F. B., Jr. Learning projects of selected administrators in Tennessee colleges and universities. Unpublished doctoral dissertation, University of Tennessee, 1974.

Berzon, B., Reisel, J., and Davis, D. P. PEER: An audio tape program for self-directed small groups. Journal of Humanistic Psychology, 1969, 9, 71-86.

Bivens, L. W., Campbell, Vincent N., and Terry, D. F. Self-direction in programmed instruction: Effects on learning in low-ability students. Report #AIR-DIO-7163-TR, July 1963. Washington, D. C.: Department of HEW, U. S. Office of Education.

Bloom, B. S. Taxonomy of educational objectives: Cognitive domain. New York: David McKay Co., Inc., 1956.

Brodrick, M. A. Effects of self-directed learning practices on the English achievement and attitudes of community college students in Iowa and Nebraska. Unpublished doctoral dissertation, University of Wyoming, 1974.

Brown, B. F. Education by appointment: New approach to independent study. West Nyack, N. Y.: Parker, 1968.

Bruner, J. The act of discovery. Harvard Educational Review, 1961, 31, 21-32.

Buros, O. K. The seventh mental measurement yearbook. Highland Park, New York: The Cryphon Press, Vol. 1, Test 151, 1972.

Carlow, C. D. A study of variables within the method of individually guided discovery in secondary school mathematics. Unpublished doctoral dissertation, Syracuse University, 1967.

Coolican, P. M. Self-planned learning: Implications for the future of adult education. Syracuse, N. Y.: Educational Policy Research Center, Syracuse University Research Corporation, 1974. (Addendum, 1975)

Coolican, P. M. The learning styles of mothers of young children. Unpublished doctoral dissertation, Syracuse University, 1973.

Cronbach, L. J. The logic of experiments on discovery. In L. S. Shulman and E. R. Keislar (Eds.), Learning by discovery: A critical appraisal. Skokie, Ill.: Rand McNally Co., 1967.

Davidson, E. W. Operation cope: Family learning center handbook with mothers who are heads of households. ERIC ED 116 018, 1976.

Davis, Q. S. R. A comparison of openness and self-concept of beginning teachers who have graduated from the University of Southern Mississippi since 1964 and are presently teaching within the primary grades of the rural and urban schools in the state of Mississippi. Dissertation Abstracts, 1969, 30, 2878A.

Denys, L. The major learning efforts of two groups of accra adults. Unpublished doctoral dissertation, University of Toronto, 1973.

Dewey, J. and Dewey, E. Schools for tomorrow. New York: E. P. Dutton, 1915.

Dill, W. R., Crowston, W., and Elton, E. J. Strategies for self-education. Harvard Business Review, 1965, November-December, 119-130.

Eldred, M. University without walls, seminar in process education. Adult Education Research Conference at University of Minnesota, April, 1977.

Esser, F. F. An appraisal of the relationship of teacher self-concept and their evaluations as administered by their principals. Unpublished doctoral dissertation, The University of Nebraska, 1969.

Fair, J. Teachers as learners: The learning projects of beginning elementary school teachers. Unpublished doctoral dissertation, University of Toronto, 1973.

Fekrat, M. A. A correlational study between self-concept and academic achievement of college freshman and seniors. Unpublished doctoral dissertation, Indiana University, 1969.

Field, J. L. The learning efforts of Jamaican adults of low literacy attainments. Unpublished doctoral dissertation, University of Toronto, 1977.

Fitts, W. H. The Tennessee self-concept scale. Nashville, Tennessee: Counselor Recordings and Tests, 1965.

Gibb, L. L. A study of differences in sex, home background, educational background, work experience, extra-curricular participation, and self-actualization attainment in college juniors. Unpublished doctoral dissertation, Northern Illinois University, 1966.

Griffith, J. C., Kolb, D. A., and Winter, S. K. Capacity for self-direction. Journal of Consulting and Clinical Psychology, 1968, 32, 35-41.

Guglielmino, L. M. Self-directed learning readiness scale. Doctoral dissertation, University of Georgia, 1977.

Hall, C. S. and Lindzey, G. Theories of personality. New York: John Wiley and Sons, Inc., 1957.

Hiemstra, R. Identifying "success" characteristics in self-directed adult learners. Occasional Paper No. 2. Adult and Extension Education Section, Department of Professional Studies, College of Education, Iowa State University, 1978.

Hiemstra, R. Lifelong learning. Lincoln, Neb.: Professional Educators Publications, Inc., 1976.

Hiemstra, R. The older adult and learning. Occasional Paper No. 1. Adult and Extension Education Section, Department of Professional Studies, College of Education, Iowa State University, 1975.

Hilgard, E. R. Human motives and the concept of the self. American Psychologist, 1949, 4, 374-382.

Hill, W. J. Specially admitted freshmen students: Self-concept, personality, and academic achievement. (Doctoral dessertation, Brigham Young University, 1977). Dissertation Abstracts, 1978, 38, 4685A.

Houle, C. O. The inquiring mind. Madison, Wisconsin: The University of Wisconsin Press, 1961.

Johns, W. E. Selected characteristics of the learning projects pursued by practicing pharmacists. Unpublished doctoral dissertation, University of Georgia, 1973.

Johnson, E. Selected characteristics of learning projects pursued by adults who have earned a high school diploma and/or high school equivalency certificate. Unpublished doctoral dissertation, University of Georgia, 1973.

Johnson, J. R. The acquisition of questioning skills among pre-service elementary social studies teachers through a self-directed learning experience. Unpublished doctoral dissertation, The Pennsylvania State University, 1972.

Kelley, N. E. A comparative study of professionally related learning projects of secondary school teachers. Unpublished master's thesis, Cornell University, 1976.

Knowles, M. S. Self-directed learning. New York: Association Press, 1975.

Knowles, M. S. The modern practice of adult education. New York: Association Press, 1970.

Kohlberg, L. and Mayer, R. Development as the aim of education. Harvard Education Review, November 1972, 42, 449-496.

Lecky, P. Self-consistency. New York: Island Press Cooperative, Inc., 1951.

Lehman, T. Educational outcomes from contract learning at Empire State College. ERIC ED 111 306, 1976.

Lewis, H. E. A descriptive study of self-concept and general creative of southern and northern undergraduate students. Unpublished doctoral dissertation, The Pennsylvania State University, 1966.

Loevinger, J. Ego development. San Francisco: Jossey-Bass Inc., 1976.

Lund, P. A. Self-concept, curricular selection, and academic achievement of college engineering students. Unpublished doctoral dissertation, Marquette University, 1972.

Maslow, A. R. Some relationships between social conformity and self-perception. Unpublished doctoral dissertation, The Amer. Univ., 1961.

Maxwell, J. W. The relationship of family adjustment to the self-concept of lower class adolescent males. Unpublished doctoral dissertation, The Florida State University, 1967.

McCatty, C. Patterns of learning projects among professional men. Unpublished doctoral dissertation, University of Toronto, 1973.

McDonald, J. Independent learning: The theme of the conference. In Gerald T. Gleason (Ed.), Theory and Nature of Independent Learning: A Symposium. Scranton, Pa.: International Textbook Co., 1967.

McGavern, M. L. The effects of cognitive self-instruction on the creative performance and self-concept of college women. Unpublished doctoral dissertation, The University of Texas at Austin, 1977.

McHale, J. The changing information environment. Boulder, Colo.: Westview Press, 1976.

McIntosh, D. K. Correlates of self-concept in gifted students. Unpublished doctoral dissertation, University of California, Los Angeles, 1966.

Miller, N. and Botsman, P. B. Continuing education for extension agents. Human Ecology Forum, 1975, 6, 14-17.

Minkevich, G. Differences in self-concept and other selected variables between transfer and occupational students in a comprehensive community college. (Doctoral dissertation, St. Louis University, 1972). Dissertation Abstracts, 1973, 33, 3300A.

Moore, M. G. Investigation of the interaction between the cognitive style of field independence and attitudes to independent study among adult learners who use correspondent independent study and self-directed independent study. (Doctoral dissertation, The University of Wisconsin, 1976). Dissertation Abstracts, 1976, 37, 3344A.

Moore, M. G. Learner autonomy: The second dimension of independent learning. Convergence, 1972, 2, 76-88.

Mynatt, H. L. The effects of a developmental education program in a community college upon self-concept, grade point average, and attrition. Unpublished doctoral dissertation, East Texas University, 1972.

Napps, K. B. The relationship of self-concept and internal-external control to the academic achievement of learners in adult basic education programs. Unpublished doctoral dissertation, North Carolina State University, 1972.

Neugarten, B. Middle age and aging. Chicago: University of Chicago Press, 1975.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., and Brent, D. H. Statistical package for the social sciences (SPSS). New York: McGraw-Hill Book Company, 1975.

Palermo, T. A. Implementation and empirical testing of a movement communication program of self-concept, autonomy, and social reaction of adult learners. Unpublished doctoral dissertation, The University of Wisconsin, Madison, 1976.

Pearson, K. On further methods of determining correlation. Drapers' Company Memories, Biometric series, 1907, IV.

Penland, P. R. Self-planned learning in America. ERIC ED 152 987, 1978.

Perry, W. G. Forms of intellectual and ethical development in the college years. Cambridge: Harvard University Press, 1968.

Peters, J. M. and Gordon, R. S. Adult learning projects: A study of adult learning in urban and rural Tennessee. Knoxville, Tenn.: University of Tennessee, 1974.

Poulton, C. G. The relationship of adults' participation in continuing education activities to certain demographic and positional characteristics, orientation toward learning and orientation toward continuing education institutions. (Doctoral dissertation, Michigan State University, 1975). Dissertation Abstracts, 1975, 36, 3336A.

Powell, M. C. The relationship of cognitive style, achievement, and self-concept to an indicated preference for self-directed study. (Doctoral dissertation, Memphis State University, 1976). Dissertation Abstracts, 1976, 37, 3383A.

Redmond, F. H. Growth and development of self-concept. Unpublished doctoral dissertation, Kent State University, 1966.

Reinhart, E. A study of the effects of the learning contract on cognitive gains and attitudes of practicing registered nurses in self-directed learning. Unpublished doctoral dissertation, Kansas State University, 1976.

Rosen, S. Future facts: The way things are going to work in the future. New York: Simon and Schuster, 1976.

Sarbin, T. R. A preface to a psychological analysis of the self. Psychological Review, 1972, 59, 11-22.

Sherwood, J. J. Self-identity and self-actualization: A theory and research. Unpublished doctoral dissertation, The University of Michigan, 1963.

Smith, W. R. B. The relationship between self-concept of academic ability, locus of control of the environment, and academic achievement of black students specially admitted to the University of Pittsburgh. Unpublished doctoral dissertation, University of Pittsburgh, 1972.

Stagner, R. Psychology of personality. New York: McGraw-Hill Co., Inc., 1961.

Tillerson, C. W. Effects of a learning center method versus lecture method of teaching as related to achievement, self-concept, and attitude of college freshmen. (Doctoral dissertation, North Texas State University, 1972). Dissertation Abstracts, 1973, 33, 6142A. (University Microfilms No. 73-12,930)

Todd, P. S. The development and evaluation of a module for individualized self-directed instruction at the college level. Unpublished doctoral dissertation, Auburn University, 1972.

Toffler, A. Future shock. New York: Random House, 1970.

Torrance, E. P. and Mourad, S. Some creativity and style of learning and thinking correlates of Guglielmino's self-directed learning readiness scale. Psychological Reports, 1978, 43, 1167-1171.

Torrance, E. P. and Torrance, J. P. Future problem solving: national interscholastic competition and curriculum project. Journal of Creative Behavior, 1978, 12, 87-89.

Tough, A. The adult's learning projects. Education Research Series No. 1. Toronto: Ontario Institute for Studies in Education, 1971.

Tuttle, R. L. The effects of video tape self-analysis on teacher self-concept, effectiveness, and perceptions of students. (Doctoral dissertation, University of North Carolina, 1972). Dissertation Abstracts, 1972, 33, 1577A. (University Microfilms No. 72-24,854)

Umoren, A. Learning projects: An exploratory study of learning activities of adults in a selected socioeconomic group. Unpublished doctoral dissertation, University of Nebraska, Lincoln, 1977.

Weltha, D. A. Some relationships between religious attitudes and the self-concept. Unpublished doctoral dissertation, Iowa State University, 1969.

Williams, E. Job satisfaction and self-concept as perceived by black female paraprofessional trainees. Unpublished doctoral dissertation, University of Miami, 1972.

Wylie, R. The self-concept. Lincoln, Neb.: University of Nebraska Press, 1961.

Zangari, D. J. Learning projects of adult educators in Nebraska post-secondary institutions. Unpublished doctoral dissertation, University of Nebraska, 1977.

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APPENDIX A: THE SELF-DIRECTED LEARNING READINESS SCALE

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. Old dogs can learn new tricks.	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

APPENDIX B: THE TENNESSEE SELF-CONCEPT SCALE

TENNESSEE SELF CONCEPT SCALE

by

William H. Fitts, PhD.

Published by

Counselor Recordings and Tests

Box 6184 - Acklen Station Nashville, Tennessee 37212

INSTRUCTIONS

On the top line of the separate answer sheet, fill in your name and the other information except for the time information in the last three boxes. You will fill these boxes in later. Write only on the answer sheet. Do not put any marks in this booklet.

The statements in this booklet are to help you describe yourself as you see yourself. Please respond to them as if you were describing yourself to yourself. Do not omit any item! Read each statement carefully; then select one of the five responses listed below. On your answer sheet, put a circle around the response you chose. If you want to change an answer after you have circled it, do not erase it but put an X mark through the response and then circle the response you want.

When you are ready to start, find the box on your answer sheet marked time started and record the time. When you are finished, record the time finished in the box on your answer sheet marked time finished.

As you start, be sure that your answer sheet and this booklet are lined up evenly so that the item numbers match each other.

Remember, put a circle around the response number you have chosen for each statement.

Responses	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

You will find these response numbers repeated at the bottom of each page to help you remember them.

Page 1

	Item No.
1. I have a healthy body	1
3. I am an attractive person	3
5. I consider myself a sloppy person	5
19. I am a decent sort of person	19
21. I am an honest person	21
23. I am a bad person	23
37. I am a cheerful person	37
39. I am a calm and easy going person	39
41. I am a nobody	41
55. I have a family that would always help me in any kind of trouble	55
57. I am a member of a happy family	57
59. My friends have no confidence in me	59
73. I am a friendly person	73
75. I am popular with men	75
77. I am not interested in what other people do	77
91. I do not always tell the truth	91
93. I get angry sometimes	93

Responses-	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

Item No.

2. I like to look nice and neat all the time.....

4. I am full of aches and pains.....

6. I am a sick person.....

20. I am a religious person.....

22. I am a moral failure.....

24. I am a morally weak person.....

38. I have a lot of self-control.....

40. I am a hateful person.....

42. I am losing my mind.....

56. I am an important person to my friends and family.....

58. I am not loved by my family.....

60. I feel that my family doesn't trust me.....

74. I am popular with women.....

76. I am mad at the whole world.....

78. I am hard to be friendly with.....

92. Once in a while I think of things too bad to talk about.....

94. Sometimes, when I am not feeling well, I am cross.....

Responses-	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

	Item No.
7. I am neither too fat nor too thin	7
9. I like my looks just the way they are	9
11. I would like to change some parts of my body	11
25. I am satisfied with my moral behavior	25
27. I am satisfied with my relationship to God	27
29. I ought to go to church more	29
43. I am satisfied to be just what I am	43
45. I am just as nice as I should be	45
47. I despise myself	47
61. I am satisfied with my family relationships	61
63. I understand my family as well as I should	63
65. I should trust my family more	65
79. I am as sociable as I want to be	79
81. I try to please others, but I don't overdo it	81
83. I am no good at all from a social standpoint	83
95. I do not like everyone I know	95
97. Once in a while, I laugh at a dirty joke	97

Responses-	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

Item No.

8. I am neither too tall nor too short.....

10. I don't feel as well as I should.....

12. I should have more sex appeal.....

26. I am as religious as I want to be.....

28. I wish I could be more trustworthy.....

30. I shouldn't tell so many lies.....

44. I am as smart as I want to be.....

46. I am not the person I would like to be.....

48. I wish I didn't give up as easily as I do.....

62. I treat my parents as well as I should (Use past tense if parents are not living)

64. I am too sensitive to things my family say.....

66. I should love my family more.....

80. I am satisfied with the way I treat other people.....

82. I should be more polite to others.....

84. I ought to get along better with other people.....

96. I gossip a little at times.....

98. At times I feel like swearing.....

Responses -	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

Page 5

		Item No.
13.	I take good care of myself physically.....	13
15.	I try to be careful about my appearance.....	15
17.	I often act like I am "all thumbs".....	17
31.	I am true to my religion in my everyday life.....	31
33.	I try to change when I know I'm doing things that are wrong.....	33
35.	I sometimes do very bad things.....	35
49.	I can always take care of myself in any situation.....	49
51.	I take the blame for things without getting mad.....	51
53.	I do things without thinking about them first.....	53
67.	I try to play fair with my friends and family.....	67
69.	I take a real interest in my family.....	69
71.	I give in to my parents. (Use past tense if parents are not living).....	71
85.	I try to understand the other fellow's point of view.....	85
87.	I get along well with other people.....	87
89.	I do not forgive others easily.....	89
99.	I would rather win than lose in a game.....	99

Responses -	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

		Item No.
14.	I feel good most of the time	[redacted]
16.	I do poorly in sports and games	[redacted]
18.	I am a poor sleeper	[redacted]
32.	I do what is right most of the time	[redacted]
34.	I sometimes use unfair means to get ahead	[redacted]
36.	I have trouble doing the things that are right	[redacted]
50.	I solve my problems quite easily	[redacted]
52.	I change my mind a lot	[redacted]
54.	I try to run away from my problems	[redacted]
68.	I do my share of work at home	[redacted]
70.	I quarrel with my family	[redacted]
72.	I do not act like my family thinks I should	[redacted]
86.	I see good points in all the people I meet	[redacted]
88.	I do not feel at ease with other people	[redacted]
90.	I find it hard to talk with strangers	[redacted]
100.	Once in a while I put off until tomorrow what I ought to do today	[redacted]

Responses-	Completely false	Mostly false	Partly false and partly true	Mostly true	Completely true
	1	2	3	4	5

APPENDIX C: LETTER TO ADULT STUDENTS OF IOWA STATE UNIVERSITY

College of Education
Professional Studies
201 Curtiss Hall
Ames, Iowa 50011

IOWA STATE
UNIVERSITY

Telephone 515-294-4143

Dear Adult Student:

A current trend in the United States is for many mature persons to return to the classroom as college students. These persons return to the classroom for many reasons: for a self-directed learning desire, to become better prepared for some occupation, or to develop new interests. You are a part of this trend and we need your help if we are to do a better job of planning college programs.

We would like approximately 20 minutes of your time to help with a research project being conducted at Iowa State University. You are one of the relatively small number of ISU Students selected on a random sampling basis to receive and be asked to complete the enclosed instrument.

The purpose of the study is to assess the learning preferences and relationship between self-image and attitudes toward learning. It is vital to our work that you answer the questions honestly and return the form to us as soon as possible. Only if all of the people we have asked to help return the forms, can we learn the attitudes toward learning and self-image characteristics related to learning preferences. Thus, your answers are very important!

Your answers will remain completely confidential. Your name or other identifying information will never be associated with your survey form. The number on the return envelope is for our follow-up notice. However, if you would like a general summary of the research after it is completed, please attach a note requesting such a summary to this letter.

Instructions are printed right on the form. After you complete the survey, mail it back in the postage-paid envelope provided.

We hope you can take a few minutes now to answer the questions. Thank you very much for your help.

Sincerely,

Roger Hiemstra
Professor and Section Leader
Adult and Extension Education

Zahra Sabbaghian
Doctoral Candidate
Adult and Extension Education

APPENDIX D: THE FACTORS OF SELF-DIRECTED LEARNING READINESS SCALE

Items Loading on Factor 1:

Love of Learning

Item	Loading
47. Learning is fun.	.72
5. I love to learn.	.69
45. I have a strong desire to learn new things.	.61
1. I'm looking forward to learning as long as I live.	.59
46. The more I learn, the more exciting the world becomes.	.59
17. There are so many things I want to learn that I wish that there were more hours in a day.	.58
28. I really enjoy tracking down the answer to a question.	.46
24. The people I admire most are always learning new things.	.41
49. I want to learn more so that I can keep growing as a person.	.59
31. I'll be glad when I'm finished learning.	.55
51. Learning how to learn is important to me.	.51
53. Constant learning is a bore.	.45
54. Learning is a tool for life.	.36
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.	.36
39. I think of problems as challenges, not stop signs.	.34
32. I'm not as interested in learning as some other people seem to be.	.33
26. I try to relate what I am learning to my long term goals.	.30

Items Loading on Factor 2:

Self-concept as an Effective, Independent Learner

Item	Loading
11. I can learn things on my own better than most people.	.65
38. I'm better than most people are at trying to find out the things I need to know.	.64
27. I am capable of learning for myself almost anything I might need to know.	.54
57. I am an effective learner in the classroom and on my own.	.53
10. If I discover a need for information that I don't have, I know where to go to get it.	.46
33. I don't have any problem with basic study skills.	.43
13. In a learning experience, I prefer to take part in deciding what will be learned and how.	.36
42. I become a leader in group learning situations.	.45
25. I can think of many different ways to learn about a new topic.	.43
9. I don't work very well on my own.	.37
2. I know what I want to learn.	.32
4. If there is something I want to learn, I can figure out a way to learn it.	.31

Items Loading on Factor 3:

Tolerance of Risk, Ambiguity, and Complexity in Learning

Item	Loading
29. I don't like dealing with questions where there is not one right answer.	.49
48. It's better to stick with the learning methods that we know will work instead of always trying new ones.	.44
7. In a classroom, I expect the teacher to tell all class members exactly what to do at all times.	.43
3. When I see something I don't understand, I stay away from it.	.43
19. Understanding what I read is a problem for me.	.41
44. I don't like challenging learning situations.	.40
23. I think libraries are boring places.	.38
20. If I don't learn, it's not my fault.	.36
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.	.33
12. Even it I have a great idea, I can't seem to develop a plan for making it work.	.31
6. It takes me a while to get started on new projects.	.31
9. I don't work very well on my own.	.44
32. I'm not as interested in learning as some other people seem to be.	.38
53. Constant learning is a bore.	.35
56. Learning is a tool for life.	.32
31. I'll be glad when I'm finished learning.	.30
35. I don't like it when people who know what they're doing point out mistakes that I am making.	.30

Itmes Loading on Factor 4:

Creativity

Item	Loading
36. I'm good at thinking of unusual ways to do things.	.63
30. I have a lot of curiosity about things.	.53
34. I like to try new things, even if I'm not sure how they will turn out.	.49
37. I like to think about the future.	.44
43. I enjoy discussing ideas.	.39
41. I'm happy with the way I investigate problems.	.35
26. I try to relate what I am learning to my long term goals.	.35
39. I think of problems as challenges, not stop signs.	.33
25. I can think of many different ways to learn about a new topic.	.32
55. I learn several new things on my own each year.	.31

Items Loading on Factor 5:

View of Learning as a Lifelong, Beneficial Process

Item	Loading
52. Old dogs can learn new tricks.	.50
56. Learning doesn't make any difference in my life.	.54
58. Learners are leaders.	.50
54. Learning is a tool for life.	.47
43. I enjoy discussing ideas.	.37
49. I want to learn more so that I can keep growing as a person.	.34
55. I learn several new things on my own each year.	.30

Items Loading on Factor 6:

Initiative in Learning

Item	Loading
40. I can make myself do what I think I should.	.55
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.	.42
58. Learners are leaders.	.40
41. I'm happy with the way I investigate problems.	.36
42. I become a leader in group learning situations.	.32

Items Loading on Factor 7:

Self-Understanding

Item	Loading
21. I know when I need to learn more about something.	.52
16. I can tell whether I'm learning something well or not.	.50
14. Difficult study doesn't bother me if I'm interested in something.	.38
4. If there is something I want to learn, I can figure out a way to learn it.	.43
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.	.40
55. I learn several new things on my own each year.	.33
35. I don't like it when people who really know what they're doing point out mistakes that I am making.	.32
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.	.30
2. I know what I want to learn.	.30

Items Loading on Factor 8.

Acceptance of Responsibility for One's own Learning

Item	Loading
15. No one but me is truly responsible for what I learn.	.75
50. I am responsible for my learning - no one else is.	.74

APPENDIX E: DATA RELATED TO ANALYSIS OF SELF-DIRECTED LEARNING READINESS SCORES

Table 29. Three-way analysis of variance for total self-directed learning

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	5,383.28	1,076.66	2.51*
Sex	1	684.00	684.00	1.59
Age	1	796.63	796.63	1.85
Year	3	3,832.35	1,277.45	2.97*
Two-way interactions	7	7,349.03	1,049.86	2.44*
Sex by age	1	233.74	233.74	0.54
Sex by year	3	5,580.84	1,860.28	4.33**
Age by year	3	1,536.19	512.06	1.19
Three-way interactions	3	5,184.26	1,728.09	4.02**
Sex by age by year	3	5,184.26	1,728.09	4.02**
Error	61	26,205.98	429.61	
Total	76	4,412.56		

*Significance $< .05$.

**Significance $< .01$.

Table 30. Three-way analysis of variance for love of learning

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	839.08	167.82	3.55**
Sex	1	265.79	265.79	5.62*
Age	1	132.07	132.07	2.79
Year	3	394.18	131.39	2.78*
Two-way interaction	7	1,339.49	191.36	4.04**
Sex by age	1	89.51	89.51	1.89
Sex by year	3	768.44	256.15	5.41**
Age by year	3	460.19	153.39	3.24*
Three-way interaction	3	601.73	200.58	4.24**
Sex by age by year	3	601.73	200.58	4.24**
Error	61	2,887.66	47.34	
Total	76	5,577.91		

*Significance $<.05$.

**Significance $<.01$.

Table 31. Mean, standard deviation and Duncan Test of Significance for love of learning of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	69.50	6.04	Freshman Junior
Sophomore	17	72.53	8.70	
Junior	20	70.60	11.75	
Senior	20	75.00	6.07	Sophomore Senior
Total	77	71.88	8.46	

[a]Those groups not shown on the same line are significantly different.

Table 32. Mean score and standard deviation for love of learning of male and female adult students

Group	N	Mean	Standard Deviation
Male	37	69.43	9.44
Female	40	74.15	7.05
Total	77	71.88	8.29

Table 33. Mean scores of love of learning for sex by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	70.60	70.43	63.50	73.50
	Female	68.40	74.00	77.70	76.15

Table 34. Mean scores of love of learning for age by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Age	Young	69.70	68.60	72.30	73.00
	Old	69.30	78.14	68.90	77.00

Table 35. Mean scores of love of learning for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	71.00	68.40	70.20	68.40
Sophomore	66.00	71.20	81.50	76.80
Junior	70.80	73.80	56.20	81.60
Senior	72.60	73.40	74.40	79.60

Table 36. Three-way analysis of variance for self-concept as an effective, independent learner

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	305.73	61.15	1.69
Sex	1	1.93	1.93	0.05
Age	1	45.36	45.36	1.25
Year	3	279.57	93.19	2.57
Two-way interactions	7	488.87	69.84	1.93
Sex by age	1	2.57	2.57	0.07
Sex by year	3	404.66	134.88	3.73*
Age by year	3	113.23	37.74	1.04
Three-way interactions	3	522.46	174.15	4.81**
Sex by age by year	3	522.46	174.15	4.81**
Error	61	2,209.193	36.22	
Total	76	3,338.93		

*Significance $\leq .05$.

**Significance $< .01$.

Table 37. Mean, standard deviation, and Duncan Test of Significance for self-concept as an effective, independent learner of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	41.55	7.04	Freshman
Sophomore	17	45.65	5.36	Junior Senior
Junior	20	44.25	8.03	Junior Senior Sophomore
Senior	20	44.85	5.28	
Total	77	44.01	6.63	

[a]Those groups not shown on the same line are significantly different.

Table 38. Mean scores of adults' self-concepts as effective, independent learners for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	42.40	39.80	45.20	38.80
Sophomore	42.60	46.20	56.00	44.00
Junior	45.40	44.80	36.20	50.60
Senior	44.20	44.00	45.00	46.20

Table 39. Three-way analysis of variance for tolerance of risk, ambiguity, and complexity in learning

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	562.92	112.58	1.43
Sex	1	7.14	7.14	0.09
Age	1	214.50	214.50	2.71
Year	3	358.23	119.41	1.51
Two-way interactions	7	749.49	107.07	1.36
Sex by age	1	1.38	1.38	0.02
Sex by year	3	635.21	211.74	2.68
Age by year	3	86.37	28.79	0.36
Three-way interaction	3	406.04	135.35	1.71
Sex by age by year	3	406.04	135.35	1.71
Error	61	4,818.77	78.99	
Total	76	6,496.65		

Table 40. Mean, standard deviation, and Duncan Test of Significance for tolerance of risk, ambiguity, and complexity in learning of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	64.50	6.48	
Sophomore	17	66.12	12.12	
Junior	20	63.90	9.34	
Senior	20	69.25	8.41	Junior Freshman Sophomore Senior
Total	77	65.94	9.25	

[a]Those groups shown on the same line are not significantly different.

Table 41. Three-way analysis of variance for creativity

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	293.85	58.77	2.67*
Sex	1	6.86	6.86	0.31
Age	1	35.20	35.20	1.60
Year	3	253.67	84.56	3.84**
Two-way interactions	7	429.52	61.36	2.79**
Sex by age	1	13.60	13.60	0.62
Sex by year	3	302.19	100.73	4.58**
Age by year	3	117.55	39.18	1.78
Three-way interaction	3	214.23	71.41	3.25*
Sex by age by year	3	214.23	71.41	3.25*
Error	61	1,341.69	21.99	
Total	76	2,200.88		

*Significance $<.05$.

**Significance $<.01$.

Table 42. Mean, standard deviation, and Duncan Test of Significance for creativity of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	36.50	4.61	Freshman Junior
Sophomore	17	40.18	4.99	
Junior	20	37.85	6.88	Junior Sophomore Senior
Senior	20	40.40	3.93	
Total	77	38.68	5.38	

[a]Those groups not shown on the same line are significantly different.

Table 43. Mean scores of adults' creativity in learning for sex by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	38.30	40.29	34.50	39.70
	Female	34.70	40.10	41.20	41.10

Table 44. Mean scores of adults' creativity for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	38.40	35.20	38.20	34.20
Sophomore	37.80	38.40	46.50	41.80
Junior	38.00	38.20	31.00	44.20
Senior	39.40	40.80	40.00	41.40

Table 45. Three-way analysis of variance for view of learning as a lifelong, beneficial process

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	117.51	23.50	1.61
Sex	1	16.07	16.07	1.10
Age	1	22.63	22.63	1.55
Year	3	75.28	25.09	1.72
Two-way interactions	7	320.42	45.78	3.13**
Sex by age	1	2.40	2.40	0.17
Sex by year	3	151.09	50.36	3.45*
Age by year	3	171.52	57.17	3.92*
Three-way interaction	3	68.65	22.89	1.57
Sex by age by year	3	68.65	22.89	1.57
Error	61	890.89	14.61	
Total	76	1,371.94		

*Significance $<.05$.

**Significance $<.01$.

Table 46. Mean, standard deviation, and Duncan Test of Significance for view of learning as a lifelong, beneficial process of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	33.50	3.91	
Sophomore	17	35.59	4.53	
Junior	20	34.85	5.10	Freshman Junior Sophomore Senior
Senior	20	35.70	3.23	
Total	77	34.88	4.25	

[a]Those groups shown on the same line are not significantly different.

Table 47. Mean scores for view of learning as a lifelong, beneficial process for sex by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Sex	Male	34.90	34.57	32.40	35.00
	Female	32.10	36.30	37.30	36.40

Table 48. Mean scores of adults' view of learning as a lifelong, beneficial process for age by year variables

		Year			
		Freshman	Sophomore	Junior	Senior
Age	Young	33.90	33.90	36.30	33.90
	Old	33.10	38.00	33.40	37.50

Table 49. Three-way analysis of variance for adults' initiative in learning

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	137.79	27.56	3.57**
Sex	1	9.95	9.95	1.29
Age	1	20.64	20.64	2.67
Year	3	105.34	35.11	4.55**
Two-way interactions	7	78.62	11.23	1.45
Sex by age	1	2.75	2.75	0.36
Sex by year	3	54.86	18.29	2.38
Age by year	3	21.55	7.18	0.93
Three-way interaction	3	97.53	32.51	4.21**
Sex by age by year	3	97.53	32.51	4.21**
Error	61	471.29	7.73	
Total	76	767.21		

**Significance $< .01$.

Table 50. Mean, standard deviation, and Duncan Test of Significance for adults' initiative in learning of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	16.80	2.44	Freshman
Sophomore	17	19.17	2.79	
Junior	20	19.20	3.83	
Senior	20	19.55	2.86	Sophomore Junior Senior
Total	77	18.66	3.18	

[a]Those groups not shown on the same line are significantly different.

Table 51. Mean scores of adults' initiative in learning for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	17.20	16.20	17.60	16.20
Sophomore	17.40	19.40	22.50	19.40
Junior	19.80	18.80	15.60	22.60
Senior	18.00	19.40	19.40	21.40

Table 52. Three-way analysis of variance for adults' self-understanding

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	155.96	31.19	2.12
Sex	1	7.43	7.43	0.51
Age	1	5.79	5.79	0.39
Year	3	139.33	46.44	3.16*
Two-way interaction	7	97.70	13.96	0.95
Sex by age	1	3.11	3.11	0.21
Sex by year	3	49.94	16.65	1.13
Age by year	3	48.02	16.01	1.09
Three-way interaction	3	162.89	54.30	3.69*
Sex by age by year	3	162.89	54.30	3.69*
Error	61	896.09	14.69	
Total	76	1,274.12		

*Significance $<$ .05.

Table 53. Mean, standard deviation, and Duncan Test of Significance for adults' self-understanding of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	35.15	4.21	Freshman
Sophomore	17	37.82	4.73	Junior Sophomore
Junior	20	36.35	4.00	Junior Sophomore Senior
Senior	20	38.20	2.89	
Total	77	36.84	4.09	

[a]Those groups not shown on the same line are significantly different.

Table 54. Mean scores of adults' self-understanding for sex by age by year variables

	Young		Old	
	Male	Female	Male	Female
Freshman	36.40	35.40	35.40	33.40
Sophomore	34.40	39.40	42.50	37.80
Junior	36.80	35.80	33.00	39.80
Senior	37.40	38.60	38.00	38.80

Table 55. Three-way analysis of variance for adults' acceptance of responsibility for their own learning

Source of variation	d.f.	Sum of Squares	Mean Squares	F-ratio
Main effects	5	14.19	2.84	1.10
Sex	1	0.18	0.18	0.07
Age	1	3.70	3.70	1.44
Year	3	11.97	3.99	1.55
Two-way interactions	7	7.33	1.05	0.41
Sex by age	1	0.73	0.73	0.28
Sex by year	3	6.07	2.02	0.79
Age by year	3	0.96	0.32	0.12
Three-way interaction	3	20.53	6.85	2.66
Sex by age by year	3	20.53	6.85	2.66
Error	61	157.20	2.58	
Total	76	196.81		

Table 56. Mean, standard deviation, and Duncan Test of Significance for adults' acceptance of responsibility of four college years

Group	N	Mean	Standard Deviation	Duncan Test[a]
Freshman	20	8.15	1.46	
Sophomore	17	8.88	1.40	
Junior	20	7.90	1.86	Junior Freshman Senior Sophomore
Senior	20	8.20	1.60	
Total	77	8.26	1.61	

[a]Those groups shown on the same line are not significantly different.

APPENDIX F: DATA RELATED TO ANALYSIS OF TENNESSEE SELF-CONCEPT SCORES

Table 57. Three-way analysis of variance for adults' total self-concept

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	11,395.88	2,279.18	2.08
Sex	1	15.39	15.39	0.01
Age	1	1,795.54	1,795.54	1.64
Year	3	9,926.48	3,308.83	3.02*
Two-way interactions	7	10,331.41	1,475.92	1.35
Sex by age	1	1,252.36	1,252.36	1.14
Sex by year	3	5,380.07	1,793.36	1.64
Age by year	3	3,117.58	1,039.19	0.95
Three-way interaction	3	1,585.14	528.38	0.48
Sex by age by year	3	1,585.14	528.38	0.48
Error	61	66,870.94	1,096.25	
Total	76	90,183.38		

*Significance $<.05$.

Table 58. Three-way analysis of variance for identity

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	1,511.13	302.23	2.22
Sex	1	123.66	123.66	0.91
Age	1	195.84	195.84	1.44
Year	3	1,179.76	393.25	2.89*
Two-way interactions	7	968.41	138.34	1.02
Sex by age	1	266.01	266.01	1.96
Sex by year	3	406.01	135.59	0.99
Age by year	3	278.34	92.78	0.68
Three-way interaction	3	137.87	45.96	0.34
Sex by age by year	3	137.87	45.96	0.34
Error	61	8,294.78	135.98	
Total	76	10,912.21		

*Significance $<.05$.

Table 59. Three-way analysis of variance for self-satisfaction

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	1,269.68	253.94	1.42
Sex	1	21.29	21.29	0.11
Age	1	115.11	115.11	0.65
Year	3	1,188.01	396.01	2.22
Two-way interactions	7	1,681.13	240.16	1.35
Sex by age	1	61.20	61.20	0.34
Sex by year	3	1,171.42	390.47	2.19
Age by year	3	372.96	124.32	0.69
Three-way interaction	3	432.99	144.33	0.81
Sex by age by year	3	432.99	144.33	0.81
Error	61	10,877.89	178.33	
Total	76	14,261.69		

Table 60. Three-way analysis of variance for behavior

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	1,192.32	238.47	1.67
Sex	1	11.34	11.34	0.08
Age	1	285.86	285.86	2.00
Year	3	960.99	320.33	2.24
Two-way interactions	7	1,264.32	180.62	1.27
Sex by age	1	109.76	109.76	0.77
Sex by year	3	411.91	137.30	0.96
Age by year	3	625.76	208.59	1.46
Three-way interactions	3	155.24	51.75	0.36
Sex by age by year	3	155.24	51.75	0.36
Error	61	8,706.68	142.73	1.22
Total	76	11,318.56	148.93	

Table 61. Three-way analysis of variance for physical self

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	424.47	84.89	1.22
Sex	1	73.38	73.38	1.05
Age	1	89.11	89.11	1.28
Year	3	305.69	101.89	1.46
Two-way interactions	7	778.89	111.27	1.59
Sex by age	1	111.75	111.75	1.60
Sex by year	3	124.32	41.44	0.59
Age by year	3	443.92	147.97	2.12
Three-way interactions	3	87.68	29.23	0.42
Sex by age by year	3	87.68	29.23	0.42
Error	61	4,258.85	69.82	
Total	76	5,549.90		

Table 62. Three-way analysis of variance for moral-ethical self

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	511.95	102.39	2.11
Sex	1	5.57	5.57	0.12
Age	1	145.29	145.29	2.99
Year	3	373.78	124.59	2.57
Two-way interactions	7	473.18	67.59	1.39
Sex by age	1	121.29	121.29	2.50
Sex by year	3	299.69	99.89	2.06
Age by year	3	47.21	15.74	0.33
Three-way interaction	3	124.48	41.49	0.86
Sex by age by year	3	124.48	41.49	0.86
Error	61	2,958.09	48.49	
Total	76	4,067.71		

Table 63. Three-way analysis of variance for personal self

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	646.20	129.24	2.22
Sex	1	28.85	28.85	0.49
Age	1	126.97	126.97	2.18
Year	3	530.16	176.72	3.04*
Two-way interactions	7	789.89	112.84	1.94
Sex by age	1	46.55	46.55	0.80
Sex by year	3	626.26	208.75	3.59*
Age by year	3	100.39	33.47	0.58
Three-way interaction	3	137.63	45.88	0.79
Sex by age by year	3	137.63	45.88	0.79
Error	61	3,550.76	58.21	
Total	76	5,124.48		

*Significance $<.05$.

Table 64. Three-way analysis of variance for family self

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	497.34	99.47	1.19
Sex	1	25.91	25.91	0.31
Age	1	15.98	15.98	0.19
Year	3	433.13	144.38	1.73
Two-way interactions	7	404.99	57.86	0.69
Sex by age	1	6.71	6.71	0.08
Sex by year	3	289.63	96.54	1.16
Age by year	3	110.06	36.69	0.44
Three-way interaction	3	118.59	39.53	0.48
Sex by age by year	3	118.59	39.53	0.48
Error	61	5,078.43	83.25	
Total	76	6,099.36		

Table 65. Three-way analysis of variance for social life

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	825.39	165.08	3.14*
Sex	1	99.09	99.09	1.87
Age	1	174.10	174.10	3.31
Year	3	544.32	181.44	3.45*
Two-way interactions	7	429.49	61.36	1.17
Sex by age	1	15.67	15.67	0.29
Sex by year	3	217.62	72.54	1.38
Age by year	3	186.26	62.09	1.18
Three-way interaction	3	74.75	24.92	0.47
Sex by age by year	3	74.75	24.92	0.47
Error	61	3,205.58	52.55	
Total	76	4,535.22		

*Significance $< .05$.

Table 66. Three-way analysis of variance for variability

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	393.95	78.79	0.74
Sex	1	127.60	127.60	1.20
Age	3	20.49	20.49	0.19
Year	3	269.98	89.99	0.85
Two-way interactions	7	522.44	74.63	0.70
Sex by age	1	104.74	104.74	0.99
Sex by year	3	222.86	74.29	0.70
Age by year	3	181.60	60.53	0.57
Three-way interaction	3	517.97	172.66	1.62
Sex by age by year	3	517.97	172.66	1.62
Error	61	6,486.44	106.34	
Total	76	7,920.79		

Table 67. Three-way analysis of variance for distribution scores

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	6,531.07	1,306.22	1.72
Sex	1	4.23	4.23	0.01
Age	1	1,858.78	1,858.78	2.45
Year	3	5,025.77	1,675.26	2.20
Two-way interactions	7	5,321.77	760.25	1.00
Sex by age	1	1,299.75	1,299.75	1.71
Sex by year	3	1,221.35	407.12	0.54
Age by year	3	2,401.42	800.47	1.05
Three-way interaction	3	1,042.59	347.53	0.46
Sex by age by year	3	1,042.59	347.53	0.46
Error	61	46,357.86	759.97	
Total	76	59,253.29		

Table 68. Three-way analysis of variance for adults' self-criticism

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	110.04	22.01	0.72
Sex	1	34.31	34.31	1.13
Age	1	27.88	27.88	0.92
Year	3	44.57	14.86	0.49
Two-way interactions	7	252.79	36.11	1.19
Sex by age	1	154.89	154.89	5.09*
Sex by year	3	28.72	9.57	0.31
Age by year	3	70.43	23.48	0.77
Three-way interaction	3	42.05	14.02	0.46
Sex by age by year	3	42.05	14.02	0.46
Error	61	1,858.09	30.46	
Total	76	2,262.98		

*Significance $<.05$.

Table 69. Three-way analysis of variance for true/false ratio

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	0.09	0.02	0.31
Sex	1	0.02	0.02	0.38
Age	1	0.01	0.01	0.17
Year	3	0.07	0.02	0.39
Two-way interactions	7	0.87	0.12	2.19
Sex by age	1	0.03	0.03	0.48
Sex by year	3	0.28	0.09	1.63
Age by year	3	0.56	0.19	3.31*
Three-way interaction	3	0.23	0.08	1.36
Sex by age by year	3	0.23	0.08	1.36
Error	61	3.45	0.06	
Total	76	4.64		

*Significance $< .05$.

Table 70. Three-way analysis of variance for net conflict

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	391.22	78.24	0.42
Sex	1	3.85	3.85	0.02
Age	1	233.59	233.59	1.26
Year	3	169.11	56.37	0.30
Two-way interactions	7	1,265.95	180.85	0.98
Sex by age	1	125.75	125.75	0.68
Sex by year	3	798.12	266.04	1.43
Age by year	3	417.64	139.21	0.75
Three-way interaction	3	407.13	135.71	0.73
Sex by age by year	3	407.13	135.71	0.73
Error	61	11,315.59	185.50	
Total	76	13,379.90		

Table 71. Three-way analysis of variance for total conflict

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	166.58	33.32	0.49
Sex	1	62.53	62.53	0.92
Age	1	57.73	57.73	0.85
Year	3	40.54	13.51	0.20
Two-way interactions	7	301.93	43.13	0.63
Sex by age	1	31.97	31.97	0.47
Sex by year	3	254.46	84.82	1.25
Age by year	3	42.21	14.07	0.21
Three-way interaction	3	161.91	53.97	0.79
Sex by age by year	3	161.91	53.97	0.79
Error	61	4,150.08	68.03	
Total	76	4,780.50		

Table 72. Three-way analysis of variance for defensive positive

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	455.85	91.17	1.11
Sex	1	56.29	56.29	0.69
Age	1	33.13	33.13	0.41
Year	3	397.07	132.36	1.62
Two-way interactions	7	749.56	107.08	1.31
Sex by age	1	1.90	1.90	0.02
Sex by year	3	443.68	147.89	1.81
Age by year	3	261.47	87.16	1.06
Three-way interaction	3	124.93	41.64	0.51
Sex by age by year	3	124.93	41.64	0.51
Error	61	4,995.52	81.89	
Total	76	6,325.88		

Table 73. Three-way analysis of variance for number of deviant signs

Source of variation	d.f.	Sum of Squares	Mean Squares	F-Ratio
Main effects	5	1,195.54	239.11	2.40*
Sex	1	101.13	101.13	1.02
Age	1	29.69	29.69	0.29
Year	3	1,045.30	348.43	3.50*
Two-way interactions	7	485.28	69.33	0.69
Sex by age	1	231.17	231.17	2.32
Sex by year	3	19.01	6.34	0.06
Age by year	3	229.96	76.65	0.77
Three-way interaction	3	65.17	21.72	0.22
Sex by age by year	3	65.17	21.72	0.22
Error	61	6,068.82	99.49	
Total	76	7,814.81		

*Significance $<.05$.

APPENDIX G: HUMAN SUBJECT COMMITTEE APPROVAL

INFORMATION ON THE USE OF HUMAN SUBJECTS IN RESEARCH
IOWA STATE UNIVERSITY
(Please follow the accompanying instructions for completing this form.)

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1. Title of project (please type): Adult Self-Directedness and Self-Concept: An Exploration of Relationship

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are properly protected. Additions to or changes in procedures affecting the subjects after the project has been approved will be submitted to the committee for review.

Typed Named of Principal Investigator	Date	Signature of Principal Investigator
Zahra Sabbaghian	2/8/79	Zahra Sabbaghian

Campus Address	Campus Telephone
1368 Hawthorn	292-8279

3. Signatures of others (if any)

Signatures of others (if any)	Date	Relationship to Principal Investigator
Roger Thomas	2/9/79	Major Professor

4. ATTACH an additional page(s) (A) describing your proposed research and (B) the subjects to be used, (C) indicating any risks or discomforts to the subjects, and (D) covering any topics checked below. CHECK all boxes applicable.

- ☐ Medical clearance necessary before subjects can participate
- ☐ Samples (blood, tissue, etc.) from subjects
- ☐ Administration of substances (foods, drugs, etc.) to subjects
- ☐ Physical exercise or conditioning for subjects
- ☐ Deception of subjects
- ☐ Subjects under 14 years of age and(or) ☐ Subjects 14-17 years of age
- ☐ Subjects in institutions
- ☐ Research must be approved by another institution or agency

5. ATTACH an example of the material to be used to obtain informed consent and CHECK

3. Signature of others (if any)	Date	Relationship to Principal Investigator
Roger Hemstra	2/9/79	Major Professor

4. ATTACH an additional page(s) (A) describing your proposed research and (B) the subjects to be used, (C) indicating any risks or discomforts to the subjects, and (D) covering any topics checked below. CHECK all boxes applicable.

- ☐ Medical clearance necessary before subjects can participate
- ☐ Samples (blood, tissue, etc.) from subjects
- ☐ Administration of substances (foods, drugs, etc.) to subjects
- ☐ Physical exercise or conditioning for subjects
- ☐ Deception of subjects
- ☐ Subjects under 14 years of age and(or) ☐ Subjects 14-17 years of age
- ☐ Subjects in institutions
- ☐ Research must be approved by another institution or agency

5. ATTACH an example of the material to be used to obtain informed consent and CHECK which type will be used.

- ☐ Signed informed consent will be obtained.
- ☐ Modified informed consent will be obtained.

6. Anticipated date on which subjects will be first contacted: Month 3 Day 14 Year 1979

Anticipated date for last contact with subjects: Month 4 Day 1 Year 1979

7. If Applicable: Anticipated date on which audio or visual tapes will be erased and(or) identifiers will be removed from completed survey instruments:

Month ____ Day ____ Year ____

8. Signature of Head or Chairperson	Date	Department or Administrative Unit
[signature]	2/9/79	Educational Studies

9. Decision of the University Committee on the Use of Human Subjects in Research:

☐ Project Approved ☐ Project not approved ☐ No action required

George G. Karas		
Name of Committee Chairperson	Date	Signature of Committee Chairperson

Revised 0