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A COMPARISON OF ASSISTANCE USED BY FIELD-DEPENDENT AND FIELD-INDEPENDENT ADULTS ENGAGED IN SELF-PLANNED LEARNING

Iowa State University PH.D. 1985

A comparison of assistance used by field-dependent and field-independent adults engaged in self-planned learning

by

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CHAPTER 1. INTRODUCTION

Background

Two areas of study--self-directed learning and cognitive style--have increasingly come to the attention of researchers and practitioners in adult education. Researchers seek to discover the learning process of adults and practitioners attempt to design and implement programs that optimize the learning experiences of adults.

This study was an initial attempt to extend research from descriptions of self-directed learning projects to explanations of self-directed learning behavior. Cognitive style has been a construct previously identified as providing a potential explanatory base for self-directed learning behavior.

This introductory chapter presents an overview of the research study. Included are an explanation of self-directed learning with special reference to self-planned learning projects, and a description of the cognitive style of field-dependence versus field-independence which provides the theoretical framework for the study. Following this is a statement of the problem, conjectures, hypotheses, definition of terms, design, significance, and limitations of the study.

Self-directed learning

Smith (1976) distinguishes three types of learning based on who controls the decision making regarding the goals and organization of the learning. Learners can be primarily responsible for the organization and direction of their learning--self-directed learning. Otherwise, learners

can plan with members of a learning group--collaborative learning. Finally, an institution can make the major decisions--institutional learning.

Tough (1967) termed the concept self-directed learning as self-teaching. He stated that:

> When an individual decides that he wants to learn certain information, knowledge or skill, he often seeks a professional instructor to tell him how to proceed and to supervise his learning. However, instead of turning most of the responsibility over to a professional teacher, the individual may decide to act as his own teacher, and assume the primary responsibility for planning, initiating, and conducting the "learning project". Such behavior can be called self-teaching and the person learning in this manner can be called a self-teacher (p. 3).

It is the control of the learning project that makes self-planned learning a unique form of self-directed learning. In self-planned learning, the major responsibility for the day-to-day planning and carryout of the project is in the hands of the individual learner. They may receive help or information from other people or resources, but they retain the responsibility for deciding what to do next, what to read, and so on. In other forms of self-directed learning, the major responsibility for planning and deciding what and how to learn are controlled by another person, a group of people, or some material resource.

Tough (1978) indicated that of all self-directed learning projects, only about 20% are planned by a professional. In the other 80% of all learning projects, the detailed planning is handled by the learner alone, or with a friend or group of friends.

It is not clear exactly how many adults participate in adult learning projects. Penland (1977a) reported 79% whereas Coolican (1974) stated

100% of all adults conduct at least one learning project each year.

In order to enhance the understanding of self-planned learning, researchers have outlined the actions of adults when engaged in self-planned learning. Tough (1967) originally described self-planned learning as a series of learning episodes which loop back on themselves in a continual process of refinement. Peters (1980) placed the sequence of Tough into a problem solving function of diagnosis, solutions, alternatives, and implementation. This paralleled Knowles' (1977) andragogical steps of needs, goals, tactics, resources and evaluation of self-directed learning.

Stubblefield (1981) described self-planned learning behavior as a process with four phases including initiating, planning, managing, and evaluating a self-planned learning project. Most recently Tough (1982), in his work on intentional changes adults undertake, simplified the description of self-planned learning behavior by combining the process into three components and labeling them choosing, planning, and implementing.

Cognitive style

Cognitive style is the way in which an adult takes in information, selects information for processing, uses meanings, values, skills, and strategies to solve problems, makes decisions and creates new meanings (Brundage & MacKeracher, 1980). A style is the preferred way each individual organizes experiences. Every person has an individual style for processing information and for learning. Every adult is both similar

to and different from every other adult. Every group of adult learners will therefore be heterogeneous in nature, and every individual within the group will be a complex mixture of style and ability. Teachers of adults cannot assume that a group of adults will share similar cognitive styles (Cawley, 1976).

Messick (1976), for example, described nine cognitive styles. Each of these, as Kogan (1971) points out, has implications for instruction. Some have been given more emphasis because they have been used in research and have potential for education. Witkin's et al. (1962) model of field-dependence versus field-independence is one that has application for adult education.

Field-dependence versus field-independence refers to a consistent mode of approaching the environment in analytical as opposed to global terms. It denotes a tendency to articulate figures as discrete from their backgrounds and a facility in differentiating objects from embedded contexts--field-independent (FI); as opposed to a counter-tendency to experience events globally, in an undifferentiated fashion--field-dependent (FD). FI includes competence in analytical functioning combined with an impersonal orientation, while FD reflects less competence in analytical functioning but greater social orientation and social skills (Brundage & MacKeracher, 1980).

Of significance to adult education is the relationship between cognitive styles and adult learning. FD people appear able to learn social information more readily than FI learners and have more highly developed social skills than FIs. However, they are more likely to have

difficulty learning material that is abstract, or in which directions for completion are unclear.

FIs, on the other hand, make use of mediators in learning. That is, FIs provide their own structure and organization to a learning situation and thus appear more comfortable in learning on their own (Even, 1982).

Statement of the Problem

Self-planned learning has been studied in several ways such as readiness to participate (Guglielmino, 1977); types of learning projects (Baghi, 1979); learning tasks (Moorcraft, 1975); education level (Johnson, 1973). However, an area that needs to be studied more conclusively in adult education is types of assistance sought from other sources when adults are responsible for planning and conducting learning projects (Mocker & Spear, 1982).

Tough (1967) stated that:

> When one first thinks about self-teaching, it seems reasonable to assume that the self-teacher learns without much assistance from any other person. ...it became evident to the writer that some self-teachers obtained assistance with several major tasks from a fairly large number of persons and that some of the assistance clearly influenced the self-teacher's progress. Each assistant provided advice and information, renewed the learner's confidence and enthusiasm, or assisted in some other important way (p. 29).

In his study of 40 adults involved in learning projects, Tough (1967) found that every person obtained assistance from at least four individuals. The average number of assistants was 10.6, that is, the typical self-planned learner obtained assistance from about 10 people.

Penland (1979) enlarged the concept of assistance to include both human and nonhuman assistance. Human refers to assistance from people, either individually such as a teacher, friend or expert, and group as in a class or study group. Nonhuman refers to assistance from materials or inanimate objects such as books, magazines, television, newsletters, or other impersonal methods of help.

Cognitive styles and adult learning in group settings has been extensively studied (Hill, 1971; Fourier, 1984; Niles & Mustachio, 1978). However, cognitive style research has not adequately addressed the issue of self-planned learning.

Brundage and MacKeracher (1980) stated:

> It seems reasonable to assume, for example, that field-independent adults will be more likely to be self-directed and independent as learners than field-dependent adults. If this is true, then the major thrust of adult education which calls for and supports self-directed, independent learners may be ignoring the needs of field-dependent learners. If current theory, which suggests that these traits of style are relatively immune to change, is also true, then we may experience difficulties in helping all adults become self-directed. Furthermore, the literature suggests that the best teachers for self-directed learners are those who are warm, caring, supportive, friendly, and non-judgmental. These are characteristics more often found in field-dependent adults. Some writers may be recommending a mis-match in cognitive styles which other writers predict will lead to dissatisfaction. More research needs to be done in this area (p. 55).

Letteri and Kuntz (1982) go on to state that it is wrong to assume that any population of learners can be introduced to new or different information without first taking into account individual learner's cognitive style. This factor is not a limitation on what can be taught, rather it is an element of instructional design which must be attended to in order to facilitate learning.

From the above discussion, an important research question appears to be, what is the relationship between field-dependence/field-independence (FD/FI) and the sources of assistance utilized by adults engaged in self-planned learning projects? Even though self-planned learners are in control of planning and implementing their learning, they do seek help from other sources. By understanding the dynamics of this help during the learning process, helpers may be better able to support the self-planned learner. Several conjectures can be raised regarding the research question.

Conjectures

Witkin et al. (1977) pointed out several important differences between FD and FI learners. These differences may have an impact on self-planned learning.

First, FD learners tend to have a social orientation. They are drawn to other people and prefer to learn from and with people. FI people, on the other hand, tend to have a more impersonal nature and prefer a solitary environment for learning. They do not seek the human interaction as field-dependent learners do and appear able to use nonhuman resources for learning—books, films, television, and so on—more efficiently than do FD learners.

A question to be considered then is will adult learners who are field-dependent believe assistance that is of a personal nature with social contact, i.e., human assistance, is more important in self-planned learning than will FI learners who will believe that impersonal forms of

assistance, books and magazines, are more important for self-planned learning.

Second, Witkin also indicated that in certain learning situations, FD learners need more assistance in organizing and problem solving than do FI learners. Where material to be learned is not clearly organized, FD learners may be at a disadvantage. FD learners may need more support and explicit instructions in organization and problem solving strategies, or more description of performance outcomes than FI learners who may do better on their own.

In addition, Tough (1978) found that most self-directed learning projects are planned and conducted by the learner. Yet, cognitive style research indicates that FD learners may have more difficulty being self-directed, and may need more help in planning learning projects.

Therefore, in studying the self-planned learning tasks of choosing, planning, and implementing, as previously mentioned (Tough, 1982), is there a difference between FD and FI learners regarding the reported importance of assistance during self-planned learning? Will these differences be evident if the assistance is of a human nature or nonhuman nature? In other words, will FD learners believe human assistance is more important in choosing self-planned learning projects than will FI learners? In planning? In implementing? Will the same questions hold if the nature of assistance during the tasks of self-planned learning is provided by nonhuman sources?

Third, Brundage and MacKeracher (1980) stated that it seems reasonable to assume that FI learners are more likely to be self-planned

learners than are FD learners. Witkin et al. (1977) suggested that FI persons are more likely to be aware of their own needs and goals than are FD learners. Steinfeld (1973), pointed out that FI people tend to learn more than FD people under conditions of internal motivation. Add to this the fact that Tough (1978) found that most adult learners are involved in self-planned learning and prefer this as a method of learning.

Therefore, if the assumption is made that adult learners are satisfied with self-planned learning as a strategy, is this satisfaction related to cognitive style? In other words, are adult learners who are higher in the degree of field-independence more satisfied, in general, with their self-planned learning?

Finally, what affect does cognitive style, importance and timing of assistance have on satisfaction with self-planned learning? Can a meaningful prediction equation on satisfaction in self-planned learning be established from the variables of cognitive style and assistance?

Hypotheses

1) There is no significant difference between field-dependent and field-independent learners on the importance of human sources of assistance in self-planned learning projects.

2) There is no significant difference between field-dependent and field-independent learners on the importance of nonhuman sources of assistance in self-planned learning projects.

3) There is no significant difference between field-dependent and field-independent learners on the reported importance of human assistance during the task of choosing self-planned learning projects.

4) There is no significant difference between field-dependent and field-independent learners on the reported importance of human assistance during the task of planning self-planned learning projects.

5) There is no significant difference between field-dependent and field-independent learners on the reported importance of human assistance during the task of implementing self-planned learning projects.

6) There is no significant difference between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of choosing self-planned learning projects.

7) There is no significant difference between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of planning self-planned learning projects.

8) There is no significant difference between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of implementing self-planned learning projects.

9) There is no significant relationship between the adult learner's degree of field-dependence/field-independence and reported satisfaction in self-planned learning projects.

10) Satisfaction with self-planned learning projects is not significantly predictable from field-dependence/field-independence, importance of human and nonhuman sources of assistance, nor importance of human or nonhuman assistance in choosing, planning, or implementing self-planned learning projects.

Assumptions of the Study

Assumptions relating to the research under investigation were as follows:

1) The adult learning project explained by Tough is an appropriate framework to gather the information about learning activities of adults.

2) The interview schedule developed by Tough and other researchers and revised by the researcher is sufficiently reliable and valid for research purposes.

3) The Embedded Figures Test is a reliable and valid instrument to use in identifying a person's tendency toward field-dependence or field-independence.

4) The sample chosen for this study can differentiate self-planned learning from other forms of self-directed learning, and they have conducted self-planned learning projects in the past twelve months. They can also communicate the extent and nature of these projects to the interviewer.

5) Adult learners use both human and nonhuman sources of assistance in their self-planned learning projects, and are able to distinguish between the two forms of assistance.

Definition of Terms

The following definitions were included to summarize or reiterate terms that were used in the study:

Self-planned learning

The learner controls and assumes major responsibility for choosing both the goals and the means of learning. The learner decides what and how to learn, but other decisions, such as when and where to learn and how much to learn at a given time are implicit. The learner not only selects but may also reject, add, or change resources at will, decide to continue or end the project, and finally determine the satisfaction or adequacy of the outcomes (Mocker & Spear 1982, p. 11).

Learning project

A series of clearly related deliberate learning episodes. The last twelve months from the day of the interview is the time period in which projects are examined. Deciding and planning, traveling time as part of the learning, seeking resources and materials, conducting projects, and evaluating progress are considered as part of learning projects. It is the learning process, not the number of projects, that is the central focus of learning projects in this study.

Cognitive style

Individual variation in modes of perceiving, remembering, and thinking, or as distinctive ways of assimilating, storing, transforming, and using information. Abilities also involve these principles but there is a difference in emphasis. Abilities concern level of skill whereas cognitive style gives greater weight to the manner and form of cognition (Kogan 1971, p. 244).

Field-independence versus field-dependence

Field-independence versus field-dependence refers to a consistent mode of approaching the environment in analytical as opposed to global terms. It denotes a tendency to articulate figures as discrete from their backgrounds and a facility in differentiating objects from embedding contexts, as opposed to a counter-tendency to experience events globally in an undifferentiated fashion. Field-independence includes competence in analytical functioning combined with an impersonal orientation, while field-dependence reflects less competence in analytical functioning combined with greater social orientation and social skills (Messick 1976, p. 14).

Assistance

Assistance refers to providing what is useful in achieving an end. Tough (1967) found that learners obtained assistance with several major parts of their learning projects from a fairly large number of persons, and this help influenced the learning projects. An assistant provides

advice or information, renews learner confidence and enthusiasm, helps solve problems, or assist in other important ways. Assistance can come from human sources such as individuals or groups or nonhuman sources such as materials or inanimate objects.

Tasks of self-planned learning

During the process of self-planned learning, certain actions or behaviors occur. Tough (1982) has titled these behaviors tasks of self-planned learning and they include choosing, planning and implementing.

choosing--deciding whether to go ahead with learning projects and which projects to undertake.

planning--determining the effective strategy and resources to include in completing projects.

implementing--carrying out learning projects in which the learner's intention is to use knowledge, skills, or information in order to complete the project.

Design of Study

The study surveyed 57 adults regarding their reported importance of assistance to self-planned learning. A personal interview utilizing Tough's (1970) probing interview technique was used to gather data. In addition, three researcher designed checklists were included to study importance of several types of assistance in self-planned learning and importance of assistance during choosing, planning, and implementing

self-planned learning. Finally, the Embedded Figures test (Witkin et al., 1971), a measure of tendency toward field-dependence or field-independence, identified interviewees degree of FD/FI.

The study was interested in identifying differences between adult learners regarding importance of assistance in their self-planned learning. Since it was attempting to identify possible causes of observed variations in behavior, its design reflected the causal-comparative method (Borg & Gall, 1983). The appropriate statistic became the t-test.

However, the study was also interested in studying the relationship of certain factors to satisfaction with self-planned learning. Therefore, correlational statistics, Pearson correlation and multiple regression, were included in the analyses.

Significance of the Study

There has been a great deal of study on self-planned learning projects especially in terms of numbers of learning projects, types of learning projects and hours spent in learning. The results are fairly consistent across studies (Baghi, 1979). Therefore, it appears research concerning self-planned learning projects needs to move forward from a description of "how much" to an understanding of "how". In order to facilitate learning of adults, researchers and educators need to understand the behavior of learners when involved in self-planned learning projects.

One way to enhance the understanding of self-planned learning behavior is through the use of cognitive style theories. Of various

cognitive styles theories, Witkin's et al. (1962) field-dependence versus field-independence seems relevant to a study of self-planned learners. From this theory, an instrument, The Embedded Figures Test, has been developed to discriminate between the cognitive tendencies of learners.

This study contributes to the literature regarding self-planned learning in the following ways:

1) It will extend the study of self-planned learning from a description of learning projects to an explanation of learning behavior.

2) It will examine field-dependence versus field-independence as a useful construct for identifying learning differences among self-planned learners.

3) By studying the difference between field-dependent and field-independent learners with regards to types of assistance used, helpers may gain a better understanding of effective helping and resources for each type of learner.

4) The use of cognitive styles information may have application for program material development with self-planned learners. Studying the differences among self-planned learners may provide ideas on types of assistance needed during the tasks of self-planned learning to compensate for the differing cognitive style tendencies of self-planned learners.

Limitations of the Study

This study focused on the relationship between cognitive style and adult learning. The use of FD/FI as the cognitive style places certain limitations on the study. Norms for the sample were determined within the

group. Tendencies toward FI or FD relate to this particular group and limit the generalizations to other groups.

In addition, FD/FI was selected because of its use in the literature. There are many different types of cognitive styles. Each may identify different cognitive tendencies of learners.

A second limitation involved the sample used. The sample was a select sample of acquaintances from central, Iowa. The results cannot be generalized beyond the limits of the population that was used for the study.

A final set of limitations centered on the interview process. Although the probe technique was used to obtain accurate data from the interviewee, it was possible that some of the learning projects were forgotten. In addition, the data of the study are limited by the use of self-report checklists instead of objective observations of learning projects. The memory and bias of the interviewee should be noted as a potential limitation on the data.

A final limitation was that the interviewee was asked to respond, in general, to their learning efforts. Type of assistance, for example, may be influenced by the nature of the learning project. Focusing on specific learning projects rather than self-planned learning in general may have led to different results.

CHAPTER II. REVIEW OF LITERATURE

Overview

The present research project studied the relationship between cognitive styles and types of assistance sought by adults when engaged in self-planned learning. The purpose of this chapter is to describe previous research and theoretical work in these areas which provide the base for this research effort. The rationale for the present study is developed through the literature review. The literature will be reviewed in two sections: self-planned learning and the cognitive style of field-dependence versus field-independence.

Self-planned learning is presented through the sequence of a description of self-planned learning, research related to learning projects, the process of self-planned learning, and assistance utilized by self-planned learners.

Reviewing field-dependence/independence focuses on research efforts in adult learning and the use of assistance in the learning process.

Self-Planned Learning

Defining the concept

Explanations of self-planned learning are found under many labels such as independent learning, self-directed learning, self-instruction, autonomous learning, self-teaching, self-study, self-education, discovery learning, and the inquiry method. But the different labels are often wrongly associated with the belief that learning is in isolation and the learner carries out all activity on an entirely independent basis.

Self-planned learning has been evident throughout history. Tough (1967) made reference to Socrates following his own course of reading and study. Benjamin Franklin has been called "an example par-excellence" of the self-educated intellectual. Abraham Lincoln is considered by many to be the greatest of the self-educated leaders in American history (Grattan, 1955).

Many researchers have defined self-planned learning. Originally, self-planned learning was defined in the context of independent study. Bonthius, Davis, and Drushal (1957) for example, emphasized that each student's learning program is individual, and that teaching therefore is also individual, or tutorial, in nature. While these characteristics are essential, they are not adequate. In a tutorial program, the learner may be controlled by the tutor.

MacDonald (1967) believed that a third element of independent study was necessary; that of a learner's freedom to choose the manner of study. MacDonald stated that, "the independent learner is free to pace his learning according to his circumstances and needs, and is free to follow one of several channels for learning, but is not confined to a single channel" (p. 2).

Alexander and Hines (1967) added two characteristics of independent study not mentioned in the above definitions, that is, self-motivation and self-evaluation. "Independent study is considered by us to be learning activity, largely motivated by the learner's own aims to learn and largely rewarded in terms of the intrinsic values" (p. 67). In his definition, Brown (1968) gave a central position to the idea of learner

responsibility, "independent study is a term used to describe programs which place greater responsibility on students for their own education" (pp. 2-3).

The above definitions focused on study that took place independently in formal educational settings. However, as the study of learners outside of classroom settings came to prominence, new definitions were needed to describe this process of self-planned learning.

Knox (1973) for example, suggested that a self-planned learner is one who continued learning by the selection of objectives that had high priority followed by the selection of learning activities that were most appropriate for the situation the learner confronted.

Hiemstra (1975) defined self-planned learning as, "a learning activity that is self-directed, self-initiated and frequently carried out alone" (p. 39).

Smith (1976) described self-planned learning as having a special orientation to learning that emphasizes the learner establishing and maintaining the major share of the responsibility for initiative and motivation in planning and carrying out the learning activities. The process includes diagnosing needs, formulating goals, and choosing resources and methods. He further states that when the learner accepts this responsibility, the major consequences will be learning how to learn on their own or with little assistance from others.

Tough (1979), in his explanation of self-planned learning, pointed out that different labels such as self-education, self-instruction, independent study, self-directed learning and individual learning are

somewhat similar to self-planned learning projects, but not identical. He agrees that even though the learner may obtain help from a variety of human and material resources, the key to being a self-planned learner is carrying out the responsibility for the detailed decisions and arrangements associated with the learning activities.

The concept of self-planned learning has been defined in the above statements. But, in order to design a framework for further study, it is necessary to understand the research development of this concept.

Self-planned learning as a field of study

The first study focusing on the total pattern of adult learning efforts was carried out by Houle (1961). He was interested in finding out which background experiences learners believed had influenced their continuing learning. He also believed that the study of learners should change from outside observation to learners' reported perception.

Following the work of Houle, researchers began developing methodology and instrumentation to systematically study participation in adult education. Brown (1964), for example, examined the relationship between the continuing education of college alumni and the quality of their undergraduate college education. He found that alumni who reported receiving a quality college education participated to a greater degree in continuing education. He also reported that the relationship of college education to continuing education was most noticeable in those activities which involve a considerable commitment of time and energy. These activities included book reading, adult classes, and study-discussion

groups.

Litchfield (1965), in her study of the educational participation of adults, came to the conclusion that, "There no longer appears to be any validity in the belief long held by adult educators, that there are participants and nonparticipants in adult education. All men and women partake of adult education to some extent. The focus now must be upon the question of the degree and kind of that participation" (p. 188).

Up to this point, adult learning had been estimated by the extent of participation in formal education programs. When participation and characteristics of adult learners in formal settings were understood, adult educators used these findings to design adult education programs. Most of the research in adult learning, therefore, was equated with the single act of enrolling in formal educational programs as the entire range of deliberate learning efforts of adults.

However, Johnstone and Rivera (1965) conducted a comprehensive national survey which found that the total learning activity of adults in the United States included valuable learning activities outside of formal educational institutions. Based on the information from their study, it was estimated that approximately 25 million adults, more than one person in every five at that time, had been engaged in one or another form of educational activity. A great deal of that activity, nearly one-third, was in self-planned or independent study of some nature. About one-third of the endeavors were of a vocational nature and another one-fifth in the recreational area. Johnstone and Rivera described this finding as "surprising" and suggested that "self-instruction is the most overlooked

avenue of activity in the whole field of adult education" (p. 37).

A similar survey conducted by Cross and Valley (1974) indicated that 31% of the adult population is engaged in some form of learning. Of those reporting themselves to be engaged in learning, 17% are studying independently, and 5% are involved in correspondence study.

Tough (1967, 1979) believed that the information reported by Johnstone and Rivera was underestimated because of the method of questioning. Tough felt a need for a better technique to make clear to the interviewee the nature of self-planned learning and the range of topics which it might include.

Tough included all deliberate learning efforts in a lifetime, both in and out of educational institutions. To gather information about learning projects, he devised a probing interview technique which initiated recall of learning projects the interviewees conducted during the preceding six months.

Findings from his studies indicated that almost everyone conducted at least one or two major learning efforts a year, and some individuals undertake as many as 15 or 20. The median was eight learning projects a year, involving eight distinct areas of knowledge or skill. ...approximately 70% of these learning projects were self-planned (Tough, 1979, p. 1).

Since Tough's (1967) original study, many researchers have used his procedure and definitions to explore learning projects of adults in different populations. Coolican (1974) summarized the results of studies up to 1974. Hassan (1981) also summarized studies up to 1980. Rather

than duplicate these efforts, the following section will review four studies that illustrate the development of learning project research through studying the number of learning projects, amount of time, and major planner of the projects.

Learning projects research

Johns (1973) studied the learning projects of 39 pharmacists in Georgia. He found that the average pharmacist had conducted 8.4 learning projects in the 12 months prior to the interview. The average number of hours spent on the projects was 1046, 56% of the total learning projects were self-planned, 16% were group planned, 9% were one-to-one planned, 19% were resource planned.

Coolican (1973) studied the learning projects of 48 Syracuse, New York mothers of pre-school age children. The random sample was stratified on the basis of mothers whose oldest child was between 9 and 30 months and mothers whose oldest child was between 30 and 64 months. Coolican used one hour as the minimum time to qualify as a learning project. It was found that young mothers conducted an average of 5.8 learning projects. The mean length per project was 43 hours. Sixty-six percent of learning projects were learner planned; 16% were grouped planned. Thirteen percent were planned on a one-to-one basis.

Hiemstra (1975) studied the learning activities of 214 adults, age 55 and older, in Nebraska. Results were similar to the Coolican study. The data showed that older adults undertook an average of 3.3 learning projects and spent an average of 324 hours on them. Fifty-five percent of

the projects were self-planned, 20% were group planned, 10% were planned on a one-to-one basis, and 10% had no dominant type of planner. This study also reported that there were no significant differences in the number of learning projects or the number of hours spent on each one according to different age, male-female, urban-rural, and Mexican-American and white American categories. There were differences noted among different levels of education, social class, and occupations in the number of projects, but there were no significant differences in the total number of hours.

Zangari (1977) studied the learning projects conducted over a one year period by 45 adult educators in post-secondary institutions in Nebraska. The data in this research effort showed that adult educators undertook an average of 7.19 projects and spent an average of 583.20 hours on those projects. Approximately 72% of the learning projects were self-planned, 15% were group-planned, and the remaining 13% were implemented through use of tutors or programmed materials. Zangari also investigated the subjects studied by adult educators. He found that learning projects related to improving job performance and professional growth accounted for 37.65% of the total, with projects related to home and family, personal improvement, and hobbies also frequently cited as major areas of study.

The results of these studies and the many others that have identified adult learning projects indicate that differences among populations are not great. Tough (1978) summarized what learning project research demonstrates:

1. Ninety percent of all adults conduct at least one major learning effort during the year before the interview.

2. The average learner conducts five learning projects in one year.

3. The person spends an average of 100 hours per learning effort, a total of 500 hours a year.

4. Seventy-five percent of the learning projects are motivated by some anticipated use of the knowledge and skill; 20% of all learning projects are motivated by curiosity; 5% are motivated by credit toward a certificate or degree.

5. Who plans the learning efforts is fairly standard for "every study of adults finds a similar pattern, though the exact figures vary a little" (p. 6).

   a. Seventy-three percent of all learning projects are planned by the learner.

   b. Ten percent are planned by a professional who leads a group.

   c. Four percent are planned by a group of peers.

   d. Seven percent are planned by a professional in a one-to-one situation.

   e. Three percent are planned by a friend in a one-to-one situation.

   f. Three percent are planned by a professional indirectly through nonhuman resources such as programmed instruction.

Briefly, about 80% of all day-to-day decisions of planning learning projects have been made by the learner or some other "amateur" and the other 20% are planned by a professional in a group, and in one-to-one

situations.

Much data have been accumulated to describe adult learning projects with regard to the number of projects, hours spent, and type of planning. There has also been a body of knowledge attempting to explain the behavior of adults engaged in self-planned learning. It is important to understand the process of self-planned learning if researchers and educators are to support this type of adult learning.

Process of self-planned learning

The first detailed effort studying the process of adult learning from the perception of the learner was conducted by Houle (1961). He was interested in finding what background experiences the learner believed were important in influencing them to become a continued learner. He suggested that for developing the theory and practice of adult education, the nature of the individual adult learner should be discovered.

From in-depth interviews of 22 adults, he identified three learning orientations—goal oriented, activity oriented, and learning oriented.

Goal oriented learners were those who used education as a means to achieve their specific objectives. The learners participated primarily to satisfy their needs.

"Some kind of self-recognition or personal stocktaking seems to occur among the activity oriented" (p. 59). These learners selected the activity based on the human relationships they think learning might provide.

For some, education was a constant learning activity. "Each

particular educational experience is an activity with a goal, but the continuity and range of such experience make the total pattern of participation far more than the sum of the parts" (p. 23).

This effort by Houle precipitated further study on orientations toward learning. Sheffield (1964) set out to validate Houle's orientations and develop a method for identifying the extent of continuing learning.

Using an orientation index and continuing learning activity survey, Sheffield sampled 453 adults who were attending adult education conferences at 20 university sites in the midwest. Results of a factor analysis of the index showed that the learning orientations as defined by Houle remained essentially the same.

However, in the analysis of the activity orientation, finer distinctions were found to exist than originally thought. The activity orientation was found to consist of the desire for sociability orientation, and need-fulfillment orientation. Desire for sociability oriented learners find an interpersonal or social meaning in the learning. The need-fulfillment oriented learners are those who find an introspective or intrapersonal meaning in the learning.

Verner (1964), using a different classification system, stated that people participate in learning activities for the purpose of acquiring information; to acquire a skill or develop proficiency in performing a specific task; or to apply knowledge or the application of principles to new situations.

In an effort to better understand the behavior of adults when they

themselves had prime responsibility for conducting learning projects, Tough (1967) identified 12 tasks that learners may perform in their learning.

Using a probing interview technique, Tough studied 40 subjects to see how many of these tasks adult self-learners performed. He found the following results:

Table 1. Number of subjects who performed each self-planned learning task

Task	Number
Deciding activities	40
Obtaining resources	40
Estimating level	39
Choosing the goal	39
Deciding about time	37
Dealing with difficult parts	32
Dealing with doubts about success	27
Deciding about place	22
Dealing with dislike of activities	21
Deciding whether to continue	21
Deciding about money	19
Dealing with lack of desire	17

Tough concluded that the tasks of a professional educator are also performed by adults who teach themselves. Many adults are, in fact, able to teach themselves effectively and do not require a professional to plan and arrange things for them.

Reisser (1973) attempted to clarify a facilitative process for self-directed learning. In order to do this, she proposed a new picture of the learning process. Learning is the increased ability to respond effectively to the environment, through the acquisition of knowledge and competence. More specifically, this involves the ability to examine the environment in more discriminating ways (to become more responsive) and to organize responses in more efficient ways (to become more competent and responsible).

Knowles (1975) suggested that self-directed learners are motivated by internal incentives such as need for self-esteem, desire to achieve, and satisfaction that will come from accomplishment. In order to successfully engage in self-directed learning, Knowles (1977) believed adults must diagnose their own needs for learning, formulate their objectives which satisfy those needs, design learning experiences, conduct learning experiences with adequate materials, and evaluate their own progress.

Tough (1971) organized self-planned learning into three stages of deciding to begin, choosing a planner, and conducting learning episodes. The object of these stages is to acquire knowledge and skill.

Yet each of these stages may require several steps or decisions. For example, Tough discussed the preparatory steps involved in deciding whether to proceed with a given learning project and in deciding just what knowledge and skill to learn. He listed 26 potential steps in that process. These steps may be carried out several times throughout the learning project.

He also stated that four steps may be needed in choosing a planner for learning. Finally, he outlined 13 steps necessary to successfully conduct the learning episode. Potentially, there may be 43 steps taken in order to complete a self-planned learning project.

Penland (1977b) conducted a nationwide study of adult learners. One of the areas of interest was the use of information gained from learning projects. Making progress toward a goal was ranked as the most important use of information followed by understanding and diagnosing a situation, choosing between alternative ways of doing something, clarifying a problem, summarizing the learning, planning the learning, removing barriers to learning, just to have something to do, and receiving encouragement from others. The use of information gained from sources of assistance was for the purpose of applying information. It was to help learners successfully carry out the learning project.

Using the "Learning Projects Protocol" as developed by Tough (1967, 1970), Leean and Sisco (1981) conducted a survey interview of 93 low educated adults living in four, rural counties of Vermont. The researchers were interested in finding out how adult learners carried out their learning episodes.

The preferred methods of learning were learning by doing (56%), talking and listening to others (19%), reading (12%), observing others (4%), watching T.V./listening to the radio (3%), and other (5%). The place where most learning took place was in the home (69%) followed by the farm (9%), and at a place of employment (8%).

Likewise, in an effort to gain a better understanding of what causes adults to learn, Aslanian and Brickell (1980) conducted a nationwide study of 1519 adults over 25 years of age. They hypothesized that adult transitions were reasons for learning; life transitions led to the decisions to undertake learning.

They found that 83% of the interviewees described some past, present, or future change in their lives as reasons to learn. The interviewees talked about "how their lives had changed, were changing or would change and how they had to learn to cope with the changes" (p. 40).

Stubblefield (1981) attempted to clarify the process of self-planned learning by suggesting a basic list of competencies requisite to the successful completion of a learning project. To conduct a learning project successfully, the adult learner should be able to:

1. Analyze one's situation and identify a need, interest, or aspiration which the learning project will meet.
2. Formulate a rationale for the learning activity
3. Define the parameters of the project.
4. Establish objectives.
5. Determine the validity and value of the project by identifying its practical application or ultimate benefit.
6. Identify available resources, i.e., persons and material containing the content to be learned and persons who can assist in setting goals and planning strategies.
7. Identify and select activities to gain information, skills, or attitudes.

8. Establish criteria of successful accomplishment.

9. Collect, analyze, and interpret data from source material and people.

10. Record progress of findings in retrievable form.

11. Judge how well the objectives were met, identify the ones not met, and identify new learning needs which emerged in the course of the project.

12. Assess the adequacy and worth of the learning process and one's proficiency as a learner (p. 25).

Most recently Tough (1982), building on his earlier work (1971), described the self-planned learning process as having three phases: choosing, planning, and implementing.

These components do not constitute a simple linear path in which adults choose a learning project, plan the strategy, and then implement the project. The components are tasks to be completed in a learning project rather than steps. Each task may have to be performed several times at various stages of the learning project.

Within each task are activities that help define self-planned learning behavior. Tough explains that adults are often very thoughtful and active in considering and tentatively choosing projects and then definitely deciding to proceed. They may reflect on their personal lives--skills, values, successes, or failures. Such an examination may uncover new interests, dissatisfactions, or lead to a desire to undertake new learning.

In other cases, an outside event may trigger the necessity for this self-examination. For example, the loss of a job may trigger the need to re-evaluate a current lifestyle. This, in turn, may lead to a decision to pursue a new job career.

In either case, when choosing a learning project, the adult may gather information and advice, list advantages or disadvantages of the project, estimate costs, decide to proceed. This process may take a few minutes or several weeks before actually beginning to plan a learning project.

In addition to choosing the project and deciding to proceed, learners must also plan a strategy for completing the project. While planning the project, adult learners may gather information and advice on several possibilities. The result will be an understanding of resources to use, a beginning and end point to the project, and the most effective learning mode.

In order to complete the learning project though, adults must not only choose the activities of a learning project but also successfully implement them. The task of implementation includes carrying out a series of episodes in which the learners' intention are to develop certain knowledge, skills, or information in order to complete the project. These episodes could include reading, listening, practicing, observing.

The above section examined the tasks involved in the process of self-planned learning. Still to be discussed is the facilitation of that process. The next section describes the concept of assistance in relation to self-planned learning.

Assistance during self-planned learning

> Still obscure and troublesome is the question of how the professional adult educator can find an effective role in the world devoted to self-planned learning (Mocker & Spear, 1982, p. 24).
>
> What kinds of learning resources and psychological support, if any, are most helpful to adults who learn on their own (Aslanian & Brickell, 1980, p. 13).
>
> ...adult learners do want and need help. In particular, they need help in planning and utilizing learning activities that will help them reach their goals. One of the greatest needs of a society with a rich variety of learning resources and potential constituency of millions is to make the necessary connections between learners and resources (Cross, 1976, p. 43).

The role of assistance in adult learning has perplexed educators and researchers. Most agree that assistance is important to adult learning. However, it is not clear what type of assistance and at what point in the learning process help is most important for adult learning.

Educators attempted to describe the role of assistance in relation to self-planned learning. For example, Houle (1961) outlined four factors that explain why an adult learner may seek assistance with learning:

> First, he is trying to master a skill or area of knowledge that is new to him and consequently may not know which books and invidividuals can provide assistance.
>
> Second, because he is not an experienced teacher, the self-planned learner may not know what activities are necessary for learning the new skill or knowledge.
>
> Third, he may have doubts or fears about the ability to learn or feel inferior because he is performing at a beginning level. He may not begin or continue learning if he meets opposition.
>
> Fourth, the learner probably has contact with a number of people during his daily life. From this variety of people, the learner is able to select certain people who can provide the information, assistance and support required (pp. 42-43).

Knox (1973) compared providing assistance during self-planned learning to the teaching component of the teaching/learning transaction. According to Knox, a professional who helps plan or guide a major learning effort typically attends to five interrelated tasks of identifying needs, becoming aware of the setting for learning, selecting objectives that are attainable, organizing learning activities that will produce the anticipated results, and evaluating the extent to which the learning meets the expectations of the learner.

Reisser (1973) advanced a similar facilitation process for self-planned learning. In order to facilitate self-planned learning, a facilitator helps to identify goals, plan activities which work toward those goals, plan ways to evaluate progress, and help the learner take responsibility for the learning. This process assists the learner in choosing an area of interest, organizing the interest into an area of study, and establishing a plan of action including a goal statement, activities, and provision for evaluating progress.

Cross (1978) used the concept of "missing link" to describe the role of helper in self-planned learning. To her, fulfilling the missing link meant providing adult learners with information about available learning resources, about their strengths and weaknesses, and counseling and referral support to assist learners in planning and matching their needs to appropriate resources.

The above statements regarding assistance during adult learning, as stated by adult educators, were mostly inferred from the way teachers teach rather than how adults learn. Their statements described the role

of assistance but did not attempt to identify the various sources of assistance used by self-planned learners. Researchers, therefore, became interested in examining the importance of assistance to the learners who actually designed and conducted their own self-planned learning.

Tough (1967) originated a detailed study of assistance utilized by adults engaged in self-planned learning. He believed that if adult educators were interested in assisting self-planned learners, they needed to understand the sources and types of assistance self-planned learners used in their learning.

In order to better understand assistance, Tough developed a scheme for classifying the types of individuals who provide assistance during learning:

1. Intimates (the self-teacher's parents, siblings, spouse, children, and two or three closest friends).

2. Librarians who were not intimates.

3. Sales people (including sales clerks in bookstores and other stores) who did not fit into a previous classification.

4. Fellow learners (people whom the self-teacher knew primarily because they were trying to learn the same sort of knowledge and skills) who did not fit into a previous classification.

5. Acquaintances (friends, relatives, colleagues, and all other people who were not experts in the knowledge and skills being learned nor in teaching them) who did not fit into a previous classification.

6. Experts who were approached because of a personal relationship (friends, relatives, and colleagues who were experts) and who did not fit into a previous classification.

7. Experts who were approached only on a business or professional relationship (experts who were not friends or relatives) and who did not fit into a previous classification (pp. 31-32).

In his study of 40 adult self-planned learners, Tough was interested in how often these assistants were used in self-planned learning. Table 2 compares the frequency of use of the seven types of assistants according to three different measures.

Table 2. Frequency of use of assistants to self-planned learning

Type	Total number of assistants used	Number of subjects who used at least one assistant	Average number of assistants used by those subjects
Acquaintances	156	36	4.3
Intimates	87	37	2.4
Business-relationship experts	71	24	3.0
Personal-relationship experts	52	25	2.1
Sales people	28	11	2.6
Fellow learners	23	9	2.6
Librarians	7	7	1.0

All subjects used at least two different types of assistants, and most used three or four. Almost all subjects used at least one intimate (member of immediate family or very close friend) and one acquaintance (friend, relative or colleague who is not an expert). The 40 subjects obtained assistance from a total of 156 acquaintances and 87 intimates. Smaller proportions of the assistants were subject matter experts approached on a personal basis and those approached on a business or professional basis. Sales people, fellow learners, and librarians were

less numerous.

Tough concluded that "the adult learner in this study received an astonishing amount of assistance and they obtained it from an equally astonishing number of individuals" (Tough, 1967, p. 75).

Following this work, several other researchers studied the type of assistants contacted during self-planned learning using the classification scheme developed by Tough, or an adaptation of it.

Coolican (1973), in her study of the learning efforts of 48 mothers of preschool children, replicated Tough's work regarding types of assistants used. She found that 21% reported receiving assistance from an intimate, 15% from a paid expert, 16% from books, 11% from a group or instructor, 6% from magazines, 3% from programmed instruction, 5% newsletters, 5% television, 3% self-formed group, 2% intimate expert, 3% observation and experience, 1% exhibits, and 8% mixed.

Peters and Gordon (1974) studied 475 adults between the ages of 18 and 90 in rural and urban Tennessee. They used a combination of personal interview and mailed questionnaire.

Books, experts and magazines were the most frequently cited resources in their study. Tools and building materials were listed next, while friends and family members were also mentioned by interviewees. Courses ranked a distant eighth. Newspaper and television were relatively low in use. Tapes, radio, kits and learning packages were rarely used by interviewees.

Hiemstra (1975) studied the learning projects of 214 adults 55 years of age and older. They were asked where they gained information regarding

the subject matter studied. Combining several sources, he reported that books/pamphlets/newspapers were the most often mentioned sources of information. Following these were classes, friends/relatives/neighbors, television/radio/recordings, experts, and prepared written materials. Hiemstra also stated that close to one-third of the adults mentioned using various combinations of these sources of information.

In an attempt to understand more about the people providing help for self-planned learners, Luikart (1975) analyzed the social structure associated with help received in self-planned learning. Friends, experts, and experts who were also friends were the sources where help was most frequently obtained. Relatives outside the household of the learner were the least used source of assistance. Learners sought help from the sources more than once. Luikart suggested that self-planned learners are less autonomous than assumed and that self-planned learners wanted and received sustained help from assistants.

As part of his nationwide survey of adult learning, Penland (1977b) studied the main sources that adult learners seek when they want to know something or get information on a subject. Penland asked 1184 continuing learners (those learners who considered themselves active learners and wished to continue learning) to indicate how important 19 selected sources of assistance were in their learning efforts. The subjects were asked to indicate which of the 19 sources were extremely important to their learning. Table 3 summarizes the percentages of respondents' ratings of importance of assistance sought.

Table 3. Sources respondents seek for help

Category	Extremely important
Expert who was also a friend or relative	75.2
Books	71.2
Close friend or relative	58.7
Travel	52.5
Individual instruction or tutoring	49.2
Paid expert	48.8
Newspaper	48.1
Television	44.2
Group, class or lecture series with an instructor	43.1
Self-formed group of equals	41.8
Magazines	39.0
Exhibits, museums, field trips	32.3
Browsing in libraries	32.3
Films	27.6
Radio	27.3
Human relations training, role-playing	26.8
Brochures, newsletters, mailings	20.0
Correspondence study	19.3
Phonorecords and tape recordings	16.8

Though Penland did not differentiate between people and material types of assistance, the learners indicated using both types of assistance. Over 70% believed that certain sources of assistance, experts (people) and books (material) were extremely important in self-planned learning.

Finally, in a different approach to studying the process of self-planned learning, Gibbons et al. (1980) analyzed the biographies of 20 acknowledged experts without formal training beyond high school in a search for common denominators that might suggest ways people become effectively self-directed.

Among their findings was, "self-educators tend to settle on the unique pattern of formal, informal and casual methods by which they learn best--drawing from such possibilities as study, observation, experience, courses, training, conversation, practices, trial and error, apprenticeship, productive activity, group interaction, events and projects" (p. 53).

In order to gain the most from self-planned learning, the authors pointed out that facilitation involved helping each learner to develop a personal learning style and to provide access to sources of assistance at the moment learners need to gain access to information.

Discussion

Research in self-planned learning has been mainly directed toward identifying the outcome of self-planned learning, the number of projects adult learners undertake, and the hours spent in learning. The results across populations have been consistent. However, what appears to be lacking in self-planned learning research is a better understanding of the behavior of adults while engaged in learning.

There is a notable absence of a framework for understanding the process of self-planned learning which has created problems. Such problems relate to both developing a theoretical framework for research, and in defining an educator's role in self-planned learning.

Research studies show that adult learners do use assistance during their self-planned learning and that this assistance is important to their learning. However, the role and use of that assistance in learning is not

as clear.

Few studies have examined assistance during the process of self-planned learning. Tough (1971) believed that adults choose from a wide variety of resources for the purpose of gathering information, obtaining help with methodology, and evaluating the project activities. Penland (1977b) suggested that assistance is perceived by learners as more important during the conduct of learning projects than in the beginning phases of the project. But the importance of assistance during the process of self-planned learning has not been systematically studied. Tough's three phase framework serves as a beginning point in the development of a theory base to explain the behavior of self-planned learning, and types of assistance needed during each phase.

The present study examined the types of help learners may require under each phase of self-planned learning. For example, adult learners, in choosing a project, may need assistance in deciding the advantages or disadvantages of undertaking projects, or encouragement to undertake them. Other times, adult learners, in planning projects, may require assistance in finding resources, in estimating the costs and time involved, or in setting reasonable goals for learning. Learners, in implementing projects, may seek help dealing with difficult aspects of the learning projects, deciding on how to proceed, or judging the outcome of learning.

Finally, the several sources of assistance and relative importance of them have been enumerated in various studies. But in order to better understand the use of assistance in learning, it is helpful to classify the various sources. Peterson (1979) divided sources of assistance into

two general types--personal and impersonal--with the distinction depending on whether or not there is human feedback. Personal sources include assistance from experts, tutors, friends, study groups. Sources in the impersonal category are primarily print or electronic media. Examples of impersonal sources of assistance include books, newspapers, television, records, video tape programs and computer programs. Which sources of assistance, personal (human) or impersonal (nonhuman), is more important in self-planned learning is an issue that, up to this point, has not been studied.

Cognitive Style and Adult Learning

The previous discussion points out that adult learners use several types of assistance and perform several tasks in their self-planned learning. Yet, in order to examine differences within learners regarding assistance and self-planned learning behavior, it is appropriate to study learners' cognitive style. Cognitive style may help identify learning approaches and preferences of self-planned learners. This may, in turn, influence the use of assistance and the process of learning.

Field-dependence versus field-independence is one such cognitive style construct. It has been previously described in chapter I. This section will focus on field-dependence/independence (FD/FI) and its relation to adult learning. First will be a discussion of studies involving FD/FI in self-planned learning. Following that, the relationship of assistance to FD/FI learning will be described.

Field-dependence/independence and self-planned learning

Very little research has studied the relationship of FD/FI to self-planned learning. The studies that have been conducted examined the relationship of FD/FI to satisfaction with self-planned learning.

Fedje (1978) compared the satisfaction of FD/FI home economics teachers with learning in group settings and study in independent learning environments. One of her research questions asked if field-dependent (FD) teachers would react more favorably than field-independent (FI) teachers to learning in an independent setting?

The group version of the Embedded Figures Test (EFT) was administered to 24 workshop participants to measure their degree of FD/FI. After participating in the workshop, the subjects were given a learning module to complete in an independent setting. Following completion and return of the independent learning module, a measure of the satisfaction of independent learning was obtained.

Fedje found no evidence of a relationship between cognitive style and satisfaction with the independent learning environment. She pointed out that only ten (five FI and five FD) of the 24 teachers returned the module completed in an independent setting.

In a second study, Moore (1976) studied the relationship between field-independence and attitude toward independent study. He proposed that people who decide to learn through independent study will prove to be of the FI cognitive style, and that when engaged in independent study, more FI learners will report greater satisfaction than less FI learners with this form of study. Moore studied two types of independent study, a

highly structured correspondence course, and an unstructured, autonomous learning program in which learners controlled the selection of learning activities.

He found a higher than chance distribution of field-independence among correspondence learners. But Moore did not find more FI learners in the unstructured, independent program. They tended to be more FD. Learners taking the unstructured program were found to be relatively FD and those taking the structured program were FI. This finding was unexpected in light of Witkin's suggestion that FI people are better able to provide themselves with the structure needed to facilitate learning and that FD people have difficulty learning when material is unstructured.

Moore concluded by stating:

> In this study, an autonomous learner was defined as one who preferred deciding what to study over receiving instructor's directions on what to study, learning by looking things up in a library over getting the answers from the instructor, and self-evaluation over examinations. It was found that learners in the more autonomous program were more autonomous than learners in the more distant program. However, the more autonomous learners were found to be more field-dependent than the less autonomous learners, and no more field-dependent than the norm, so it must be concluded that field-independence cannot be used to predict learners autonomy as we defined it (p. 154).

Assistance and FDI

The concept of assistance as defined in the present research has not been studied in relation to cognitive style. Research that has been conducted studied the relationship between guidance, feedback, and cognitive style.

For example, Randolph (1971) was interested in studying the relationship between praise, criticism, and failure and the problem

solving performance of FD/FI fifth grade boys. The tasks consisted of solving a list of 36 anagrams. One-third of the subjects were praised in the middle of the task, one-third were criticized, and one-third were neither praised nor criticized but were given unsolvable anagrams which led to failure. Results of the test confirmed that FD boys were more effective in the problem solving task after being praised than after being criticized. In addition, FD boys were less effective than FI boys in the task after failure. In fact, when compared to FI children, criticism as well as failure, impaired the performance of FD boys. The researcher concluded that a critical, distant or demanding classroom might impede rather than facilitate the learning of field-dependent learners who seem to need more assurance and support.

To compare the use of guidance and FD/FI adult learners, DeCosmo (1977) studied 22 adult students making curriculum decisions regarding community college classes. He did not find an association between preferred guidance strategies and cognitive style at the .05 level. However, at the .10 level of probability, there was an association between cognitive style and preferred guidance strategies. FIs tended to prefer self-help strategies while FD subjects preferred individual consultation strategies in choosing curriculum and courses.

McLeod et al. (1978) studied the amount of guidance in relation to academic performance. They developed two programmed instruction units which taught math skills. One unit provided maximum guidance to the learner while the other provided very little guidance. The results of their experiment showed a significant interaction between level of

guidance and FD/FI. FD students who received maximum guidance performed better on a posttest than their FD counterparts who received only minimum guidance.

In addition, FI students performed worse with maximum guidance than they did with minimum. These results supported Witkin's et al. (1977) claim that FD students need more structure in their learning experience than do FI students.

Boysen (1980) conducted research along similar lines. She studied the interaction between FD/FI and feedback in a computerized problem-solving situation. She developed two computer programs which presented simple equations and required subjects (adolescents and adults) to solve them by specifying the operation the computer should perform. One program provided corrective help for every mistake, while the other provided no feedback but did perform all operations requested by the learners.

Instead of FD learners performing better under the high structure feedback program as hypothesized, they scored higher under the low structure program. In addition, the FI learners, who were expected to score best under the low structure program, actually performed better under the high structure program. Boysen speculated that the unexpected results might be due to the experimental design and the type of restrictions placed on the feedback program.

Finally, Brown (1984) investigated the effect of feedback on college students' performance in a perceptual task--the Rod and Frame test. She found that students who were given clarified feedback performed better on

the Rod and Frame test than those students whose feedback was confusing. FI men had less difficulty with the confusing feedback than did FD men. This would support Witkin's contention that field-independent learners perform better under abstract conditions.

Discussion

Research on FD/FI and assistance in learning has, in large part, been directed toward studying young populations in group settings. Studies of FD/FI and adult learning are limited and those that have been conducted focused on satisfaction with specific forms of self-planned learning. Results have not been consistent and have suffered from small sample size. These studies examined satisfaction with specific types of adult learning—correspondence study, independent learning modules, and distance learning. An issue that remains to be studied is the satisfaction of FD/FI learners in the process of self-planned learning and not only with specific learning methods.

Studies did indicate a difference between FD/FI learners and the usefulness of guidance in learning. However, the results were also inconsistent. Some studies showed the FDs performed better with maximum assistance and more structure than did FI learners as Witkin would propose. However, other studies found the opposite.

Recognizing that previous studies were limited but promising, that they more often studied young populations and FD/FI, and that the results were conflicting, it was felt additional study was warranted.

The focus of this study was on assistance, broadened to include more than guidance and feedback, sought by adult learners in self-planned learning and the relationship of FD/FI to this assistance. It also attempted to understand the process of self-planned learning through needs for assistance by FD/FI learners during that process.

Summary

Self-planned learning has been recognized as a legitimate form of adult learning. Research efforts have documented the existence and extent of self-planned learning. Findings from these research efforts indicate that most adults participate in self-planned learning; they plan most of their learning efforts; they spend a great deal of time in their learning; and they are satisfied with self-planned learning. If, as the research indicates, self-planned learning is an accepted form of adult learning, then it becomes imperative to gain a better understanding of self-planned learning behavior so that educational programs and adult educators can better support adult learners in their efforts. Identifying the process of self-planned learning, recognizing the importance of assistance requested by self-planned learners, and studying the cognitive preferences of self-planned learners are three ways that this understanding can be enhanced.

Several models have been proposed to explain the behavior of self-planned learners. Tough's three-phase model for understanding self-planned learning provides a useful base for researching the behavior of self-planned learning. His framework outlines several tasks that must

be accomplished in choosing, planning, and implementing self-planned learning. However, a detailed investigation of the phases of choosing, planning, and implementing self-planned learning has not been undertaken; particularly in relation to the importance of different kinds of help during these three phases.

The importance of assistance in self-planned learning has been emphasized in the literature and several studies have corroborated this importance. Studies have shown that adult learners prefer certain types of assistance over others in their learning efforts. In addition, the literature suggested that in order to better understand the importance of various sources of assistance, assistance might be categorized into human or nonhuman depending on the interaction—people or materials—with the self-planned learner.

Finally, the use of cognitive style research has been a useful way of differentiating learning preferences. Field-dependence versus field-independence is one type of cognitive style study that identifies learning differences. It has been widely used in educational research; most often in classroom settings and with young populations. Studies with adult learners have been limited and have reported conflicting findings. Some studies have indicated a relationship between cognitive style and self-planned learning; other studies have found no relationship. No study, up to this point, has compared FD and FI learners on the types of assistance requested by adult learners when participating in self-planned learning.

The absence of a theoretical framework for understanding self-planned learning has prevented research from progressing beyond the description of learning projects. By studying the relationship of cognitive style to the importance of assistance during the process of self-planned learning, researchers will be able to identify more accute differences in self-planned learners. This may allow a better understanding of the process of self-planned learning in addition to the product of self-planned learning.

CHAPTER III. METHODOLOGY

Introduction

This chapter describes the method employed to investigate relationships between cognitive style of adult learners and types of assistance requested when involved in adult self-planned learning.

The research was undertaken to answer the following questions:

1. Is there a difference among adult learners in the importance of assistance in self-planned learning?

2. When is assistance most important to adult self-planned learners? Is it more important in choosing, planning, or implementing learning projects?

3. Are field-independent learners more satisfied with adult self-planned learning than are field-dependent learners?

4. Which factors are considered most important in predicting the satisfaction of adult learners in self-planned learning?

Study Design

The research project was a survey study since its primary objective was to identify general differences between field-dependent and field-independent cognitive style learners with regard to self-planned learning.

An original, three-part questionnaire was developed by the researcher to use with a select sample of 57 adult learners. Penland's (1977b) study of sources of assistance used in self-planned learning provided the background for the listing of sources of assistance. Tough's (1982) three

phase process of self-planned learning provided the framework for investigating importance of assistance during the process of self-planned learning.

In addition, Witkin's et al. (1962) field-dependence (FD) versus field-independence (FI) formed the theoretical base for studying the cognitive styles of adult self-planned learners. The Embedded Figures Test (EFT), a standard measure of field-dependence/independence, was employed in the study. Four descriptive, demographic items completed the instrumentation.

Hypotheses were developed to study the relationship between cognitive styles of adult learners and the types of assistance requested when conducting self-planned learning projects and when assistance is most important in the process of self-planned learning. The relationship of cognitive style to satisfaction in self-planned learning was also studied.

It was hypothesized that FD learners would seek more human assistance and FI learners would find nonhuman assistance more helpful. FD learners would require more assistance in implementing self-planned learning than would FI learners. And FI learners would report more satisfaction with self-planned learning than would FD learners.

A personal interview was conducted with the sample. The interview lasted approximately one hour.

Inferential and descriptive statistics were used to analyze the data obtained from the interview. The statistical level of probability was established at ($<.05$).

Sample

The sample for the study consisted of 57 learners residing in central Iowa. A select sample of acquaintances was used in the study since the study was explorative in nature and was concerned with the differences in FD/FI and not characteristics of a general population.

Tables 4 through 7 present the characteristics of the sample according to selected demographic information. This information includes the gender, age, educational level, and length of residence of the sample in their community.

A fairly equal distribution between males and females was found in the sample with females accounting for 50.9 percent (N=29) and males comprising 49.1 percent (N=28) of the population.

Table 4. Gender of the sample

Gender	Number	Percent
Female	29	50.9
Male	28	49.1
Total	57	100.0

The greatest percentage of the learners, 35.1 percent, were in the 30-34 age group. Another 29.8 percent were between the ages of 35 and 39.

Table 5. Chronological age categories of the sample

Age	Number	Percent
<25	1	1.8
25-29	9	15.8
30-34	20	35.1
35-39	17	29.8
40-44	7	12.3
45-49	3	5.3

A breakdown of the sample under investigation according to educational level shows that the majority have participated in post-secondary learning (91.2 percent). Only five (8.8 percent) have not participated in formal education beyond the high school level. The sample appears to be a highly educated one, with those having graduate training or graduate degree accounting for 54.4 percent of the sample.

Table 6. Educational level acquired by the sample

Educational level	Number	Percent
High school graduate	5	8.8
Some college	18	31.6
College graduate	3	5.3
Graduate training	11	19.3
Graduate degree	20	35.1

The largest percentage (33.3) of the learners indicated they had lived in their community for 6-10 years. Another 29.8 percent stated their length of residence was 1-5 years. This equaled the percentage of those reporting having lived in their community for over 10 years. An

additional 7.0 percent of the sample indicated having lived in their community less than one year.

Table 7. Length of residence

Years	Number	Percent
Less than 1 year	4	7.0
1 - 5 years	17	29.8
6 - 10 years	19	33.3
Over 10 years	17	29.8

Instrumentation

Two instruments were used in the study. The EFT developed by Witkin et al. (1971) was used to identify the interviewees degree of field-dependence/independence.

The second instrument was developed by the researcher. It consisted of an interview schedule (Appendix A) and three checklists (Appendix C) to collect information regarding self-planned learning projects and the types of assistance believed important in self-planned learning.

The Embedded Figures Test

The EFT is a perceptual test. The subject's task on each trial is to locate a previously seen simple shape within a larger complex figure which has been so organized as to obscure or embed the sought-after simple figure.

The test material consists of two sets of cards. The first contains one set of 12 cards with complex figures. The second set of 8 cards contains simple geometric shapes. Next to the number on the reverse side of each complex figure card is printed the letter identifying the simple shape which is embedded in that complex figure.

In the EFT, a subject's score is based on the amount of time required to locate the simple shape in a more complex geometric pattern. The more time required to correctly locate the shape, the greater the degree of field-dependence; the less time required, the greater the degree of field-independence.

Validity and reliability

There are different ways of assessing the validity of the EFT. One method is to correlate it with the Group Embedded Figures Test (GEFT)—which is the group form of the EFT. The GEFT contains three sections with the first section being a practice session. Witkin et al. (1971) reported that one group of subjects was administered the second section of the GEFT in its group form and the third section as an individually administered test. Another group was administered section two individually and the third section as a group test. The correlation for 73 males was -.82 and -.63 for 68 females. (The correlation between EFT and GEFT should be negative because the tests are scored in reverse fashion.)

Fenchel (1958) gave the Einstellung test and the EFT to a group of 63 adults in a VA clinic. The Einstellung test is used to study the effect

of mental set upon problem solving. The more difficulty in solving the problem--breaking the set--the greater the function fixedness and tendency toward field-dependence. He found a significant relation ($r=.36$, $P<.01$) in the expected direction, between the relative speed of solving the problem and degree of field-independence.

Bauman (1951) reported a test-retest reliability of .89 for the EFT after a three year interval for both men and women in their twenties. Karp (1963) in a study of 150 college males, reported a reliability of .85. Following this, Witkin et al. (1971) reported .90 reliability for 21 males aged 30-39 and .82 for 22 females with the same age range.

Interview schedule

To identify actual learning activities of the sample, the interview schedule as originally developed by Tough in 1970 and refined by other researchers (Leean & Sisco, 1981; Hassan, 1981; Penland, 1979; Baghi, 1979) was used (Appendix A). This schedule explored the nature and number of learning projects conducted by the interviewee, as well as satisfaction with self-planned learning.

One purpose of this schedule was to familarize the interviewee with the concept of a learning project and broaden the understanding of where and how learning can occur. Another facet of the schedule was the use of probe sheets to uncover more detailed information about the projects including satisfaction with self-planned learning.

Since the nature of the research was to study assistance during self-planned learning, three additional checklists were used. One studied

the importance of different sources of human and nonhuman assistance in learning projects, the second studied the importance of human assistance during the process of self-planned learning, and the third studied the importance of nonhuman assistance during the process of self-planned learning.

Validity and reliability

To assess the validity of the interview schedule, Tough (1970) examined the content validity of the instrument. He reported that the instrument actually measures the basic characteristics of learning projects.

Hiemstra (1975) examined the interview schedule. He found no significant differences between what adults prefer to learn and what they actually learned during the twelve month period prior to the interview. Further, he reported that "individual respondent correlations of the number of course preferences to the number of actual learning projects are significant at the .001 level and beyond" (pp. 30-31).

To further test the validity of the schedule, Hassan (1981) obtained a correlation coefficient between self-directed readiness score as measured by the Self-Directed Learning Readiness Scale and number of self-planned projects. A relationship of .88 was obtained.

The following efforts were performed to maximize reliability. First, the interview schedule and instruments were pilot-tested with adults from the target population. All questions were checked for clarity, ambiguity, and wording, to ensure instrument reliability, and necessary corrections

were made on the instrument.

Second, to check the consistency of the researcher in gathering data from respondents, the total sample was divided into two groups based on the first 29 learners who were interviewed and the second 28 interviewed. Then, the two groups were compared by t-test on the total number of reported learning projects. As Table 8 shows, no significant difference ($p < .01$) was found when the total number of learning projects were compared. (The two-tail probability in this table and following ones refers to the test of significance in variance for the groups.) Although this is not intended to be a reliability coefficient, it is one indication that the interviewer was consistent in gathering data.

Table 8. T-test comparison of two groups on number of learning projects reported

Group	N	Mean	F-value	2-tail prob.	t-value (pooled variance)	df (pooled variance)
Group I	29	12.90	1.39	0.398	0.804	55
Group II	28	13.18				

Checklist Development

Since the nature of the research was to study assistance during self-planned learning, three additional checklists were used (Appendix C). Checklist one consisted of 20 sources of assistance used in self-planned learning. The sources were grouped according to human assistance or nonhuman assistance depending on whether the interaction was with people

or materials (Peterson, 1979; Penland, 1979).

Human	Nonhuman
Spouse	Books
Family relative	Television
Paid professional	Records or tapes
Private lessons	Pamphlet or newsletter
Study group with friends	Video tape series
Neighbor	Magazines
Expert who is also a friend	Newspaper
Store clerk	Exhibits, museums, field trips
Group, demonstration or class with instructor	Correspondence course
Public speech or lecture	Computer program

Two other checklists were used to study the kinds of help adults receive from human and nonhuman resources during their learning efforts.

The 12 items in checklist two and three consisted of sequentially placed statements focusing on behaviors associated with self-planned learning as presented in Tough's (1982) choosing, planning, and implementing framework for self-planned learning. Four statements were behaviors involved in choosing learning projects; four were associated with planning learning projects; and four were behaviors used in implementing learning projects.

Choosing

Learn about my interests or skills that can lead to learning.

Consider the pros and cons of undertaking projects.

Convince me that the projects are possible to accomplish.

Understand myself or my lifestyle so I know what I need to learn.

Planning

Estimate the costs, time and problems involved in the projects.

Find available resources, for example, people and materials with the information needed for projects.

Decide which is the best way to go about learning a project.

Set the goals or "hoped-for-outcome" of learning projects.

Implementing

Deal with difficult or confusing parts of projects.

Decide what to do next in the learning projects.

Receive encouragement or support to continue learning projects.

Judge the outcome of learning projects.

A Likert scale with a description of degrees of importance was used in the three checklists. Respondents were asked to circle the numerical point on the continuum that represented their perception of the description of importance. A 5-point scale was used in the instrumentation. Following is an example of the instrument's scale using this measurement technique.

1	2	3	4	5
not important	slightly important	somewhat important	quite important	very important

In checklist one, interviewees were asked to indicate how important each of the 20 sources of assistance were in their self-planned learning projects. The same Likert-type measurement on importance of assistance was used in checklist two and three. In checklist two, interviewees were asked to indicate how important it was to receive human assistance with the identified self-planned learning behavior. The interviewees were instructed in the same manner for checklist three. However, they were asked to think in terms of nonhuman assistance for checklist three.

Procedure

The data for this project were obtained from personal interviews conducted with the 57 interviewees described under "sample" within this chapter. The interviewees were contacted personally or by phone and asked their help in conducting the research.

Interviews took place in the interviewee's home or place of work. Each interviewee was first asked to complete the consent form (Appendix E). Using the procedure developed by Tough (1970), the interview then centered on identifying self-planned learning projects and general satisfaction with the process of self-planned learning (Appendix A). The interviewees were also asked to complete the three checklists designed to indicate the importance of 20 sources of assistance and the importance of assistance during the process of self-planned learning.

Finally, the EFT was administered to each interviewee following the directions for administration contained in "A Manual for the Embedded Figures Test". Each interview lasted approximately one hour.

Data Analysis

Data collected from the interviews were coded (Appendix D) and the information was key punched for statistical analysis. The Statistical Package for the Social Sciences (SPSS^{x}) (Nie, 1983) was used to analyze the data. The inferential statistics used in the study were the independent t-test and multiple regression.

In addition to these statistical tests, two descriptive analyses were used. Frequencies, with measures of central tendency, were calculated for the types of assistance, importance of assistance during self-planned learning, degrees of FD and FI and the demographic information. A Pearson correlation was calculated on all variables.

Establishing sub-groups

To test certain hypotheses in the study, it was necessary to split the scores by FD/FI. It was also necessary to split the sample in such a way so that subjects who were near the mean would not be included in those analyses where differences between groups were being tested. This minimized the influence of those interviewees who possessed tendencies of both FD and FI.

Witkin et al. (1971) acknowledged that there are no national norms regarding measures of central tendency and field-dependence/independence. They stated that measures of central tendency are most often developed within the group under investigation.

Several methods were considered as ways of creating the two sub-groups. One method was to take the mean from a study listed in Witkin et al. (1971) as the basis for creating the FD and FI groups for the present study. Using this method with the present sample, however, created grossly unequal cells.

A second alternative was to establish the FD/FI mean and standard deviation of the present study. Then, select those cases falling one standard deviation above and below the mean to be included in the tests of differences between groups. This would assure that strong FD and strong FI tendencies would be present. However, in using this method only six cases would have been usable in the field-dependent group.

Therefore, it was decided to start at both ends of the score continuum and move toward the middle creating equal cells for both groups. Two groups of 19 subjects were created. Those 19 cases with the highest FD/FI scores became the field-dependent group and those 19 cases with the lowest scores became the field-independent group. The remaining cases were not included in those analyses that studied differences between FD and FI learners. Table 9 shows the EFT scores for the two groups.

This created larger groups for analysis while still controlling for those subjects who, based on their EFT score, were more likely to display tendencies of both FD and FI. The sub-groups were somewhat

disproportionate regarding males and females. Of the 19 members of the FI group, 11 were males and eight were females. The FD group contained 11 females and eight males. Reports by Witkin et al. (1971) have indicated that females tend to be more FD than males. This sample corroborated that finding.

Table 9. Sub-groups based on Embedded Figures Test scores

Field-independent (N=19)	Field-dependent (N=19)
12.42	48.58
14.75	48.83
14.83	51.00
17.75	51.08
18.92	52.67
19.17	54.00
20.66	54.92
20.83	64.75
21.08	68.00
21.58	68.50
22.08	72.00
22.83	72.58
23.58	74.50
24.42	77.82
28.58	78.92
28.67	79.92
29.08	109.75
29.25	115.00
29.42	126.22
$\bar{X}$=22.10	$\bar{X}$=72.05

Testing of hypotheses

In addition to the descriptive analysis, several statistical procedures were employed depending on the stated hypothesis. The level of

probability for all research hypotheses was established at .05.

Hypotheses one and two investigated the importance of human and nonhuman sources of assistance. Subjects were asked to rate the importance of 20 sources of assistance to their learning projects in general. Two scores were generated for each subject--a human sources of assistance score and a nonhuman sources of assistance score. Independent t-tests were calculated to compare the mean scores on importance of human sources of assistance and importance of nonhuman sources of assistance for FD and FI learners.

Hypotheses three through eight tested the importance of assistance during the three phases of choosing, planning, and implementing learning projects. The interviewees were asked to indicate how important help is during the three phases of self-planned learning by completing checklists two and three. Checklist two focused on human assistance during the process of self-planned learning and checklist three focused on nonhuman assistance during the process of self-planned learning.

From the checklists, six mean scores were generated for each interviewee: 1) importance of human assistance in choosing projects, 2)importance of human assistance in planning projects, 3) importance of human assistance in implementing projects, 4) importance of nonhuman assistance in choosing projects, 5) importance of nonhuman assistance in planning projects, and 6) importance of nonhuman assistance in implementing projects.

Independent t-tests were computed to study the difference between FD and FI learners on the importance of human and nonhuman assistance during

the phases of choosing, planning, and implementing learning projects.

An analysis of hypothesis nine compared satisfaction with self-planned learning by FD/FI. To test the relationship between the degree of FD/FI and reported overall satisfaction with the process of self-planned learning, a Pearson correlation was computed.

To test hypothesis ten, multiple regression techniques were applied to analyze the predictive relationship of assistance during self-planned learning, the learner's degree of FD/FI, and satisfaction with self-planned learning. A stepwise formula was used. The independent variables of degree of FD/FI, importance of human sources of assistance, importance of nonhuman sources of assistance, importance of human assistance in choosing projects, importance of human assistance in planning projects, importance of human assistance in implementing projects, importance of nonhuman assistance in choosing projects, importance of nonhuman assistance in planning projects, and importance of nonhuman assistance in implementing projects were used to predict satisfaction with the process of self-planned learning.

Finally, post hoc analyses were computed on the data. Paired t-tests were calculated within the FD/FI groups to examine potential differences among choosing, planning, and implementing self-planned learning. Frequencies were calculated on the three scores with the highest degree of FI and the three scores with the highest degree of FD in an attempt to detect trends between "pure" FD and FI learners.

Summary

The methodology used in completing this research project was described in this chapter. The research sample was comprised of 57 adult learners from central Iowa. The research procedure consisted of a personal interview on importance of assistance in self-planned learning. A probing interview technique and three checklists were used in the study as well as the Embedded Figures Test--a measure of cognitive style. Validity and reliability measures of the interview technique and EFT support the confidence of the research procedure.

Data analysis utilized the Statistical Package for the Social Sciences. Inferential statistics were used for the majority of hypotheses testing. A Pearson correlation was used to test hypothesis nine. Frequencies, with measures of central tendency, completed the data analysis.

CHAPTER IV. ANALYSIS OF DATA

Introduction

The purpose of this chapter is to present the results of the statistical analyses applied to the present research project. The study focused on the comparison of field-dependent/field-independent learners and types of assistance requested during self-planned learning.

The sample was personally interviewed regarding the focus of self-planned learning projects and their overall satisfaction with self-planned learning. They were also asked to complete three checklists. Checklist one listed 20 sources of assistance adults consult in their self-planned learning projects. Ten sources were categorized as human sources of assistance since they involved direct interaction with a human resource and ten sources were categorized as nonhuman sources of assistance since the interaction was with a material resource.

Checklist two listed 12 assistance behaviors associated with the process of self-planned learning. Four of the behaviors were linked to choosing learning projects, four behaviors were linked to planning projects, and four behaviors were linked to implementing self-planned learning projects. Interviewees were asked to rate the importance of receiving human assistance with these behaviors.

Checklist three included the same 12 items as contained in checklist two. In checklist three, however, the respondents were asked to think in terms of receiving nonhuman assistance with the identified assistance behaviors. The Embedded Figures Test (EFT) completed the instrumentation for the study.

The chapter is organized according to the order of hypotheses. The findings of each of the statistical tests applied to the ten hypotheses are reported. The statistical tests used were the t-test, Pearson correlation and multiple regression. In addition, post hoc analyses and descriptive tables are included.

Hypothesis One

Hypothesis one states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the importance of human sources of assistance in self-planned learning projects.

To test this hypothesis, the respondents were first sub-divided into two groups based on their EFT scores. Those 19 with the lowest EFT scores were placed into the field-independent (FI) group and those 19 with the highest EFT scores comprised the field-dependent (FD) group. The 19 respondents in the middle were not included in the analyses that compared the FI group with the FD group.

To test the hypothesis, an independent t-test for the significant difference between the mean score of Group I (FI) and Group II (FD) was computed for the dependent variable, overall importance of the ten sources of human assistance in self-planned learning. Homogeneity of variance was tested. The F-value of 1.27 was not significant. Therefore, the pooled variance estimate was used.

Table 10 presents a summary of the findings. No significant difference at the .05 level of probability was found between Group I and II. The mean for Group I was 3.06 and the mean for Group II was 3.24.

The t-value was -0.94 with 36 degrees of freedom. The results indicate there is no difference between FI and FD learners on the importance of human sources of assistance. Therefore, hypothesis one could not be rejected.

Table 10. T-test comparison of FI and FD learners on importance of human sources of assistance in self-planned learning

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	3.06	1.27	0.61	-0.94	36
Group II	19	3.24				

Hypothesis Two

Hypothesis two states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the importance of nonhuman sources of assistance in self-planned learning.

To test this hypothesis, an independent t-test was used to compare the mean score of Group I (FI) and Group II (FD) on the dependent variable, overall importance of the ten sources of nonhuman assistance in self-planned learning.

Homogeneity of variance was tested. There was no significant difference in the variance of the groups ($F=1.13$, $p<0.80$). Thus, the pooled estimate of variance was used. Results of testing the hypothesis are presented in Table 11. The mean score of Group I was 2.65 and the mean score of Group II was 2.99.

The t-value with 36 degrees of freedom was significant at the .05 level of probability indicating that FD learners rated the importance of nonhuman assistance in self-planned learning significantly different from FI learners. A check of the means of the two groups indicates FD learners reported nonhuman assistance as more important than FI learners did. Hypothesis two, therefore, was not supported.

Table 11. T-test comparison of FI and FD learners on importance of nonhuman sources of assistance in self-planned learning

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.65	1.13	0.80	-2.13*	36
Group II	19	2.99				

*Significant at .05 level.

Hypothesis Three

Hypothesis three states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of human assistance during the task of choosing self-planned learning projects.

The group classification for this hypothesis--and hypotheses four through eight--is identical to that used in hypotheses one and two. Group I consisted of FI learners and Group II was made up of FD learners.

The dependent variable, importance of human assistance in choosing self-planned learning, was calculated by producing a mean score for each respondent from items 1,4,7,10 in checklist two (Appendix C).

A t-test was used to test the hypothesis. The comparison of the importance of human assistance in choosing self-planned learning by FD/FI learners is presented in Table 12. No significant difference at the .05 level was found between means of the two groups. The mean for the FI group was 2.76 with the mean for the FD group being 3.08. The t-value of the two groups, -1.20 with 36 degrees of freedom, did not result in a significant difference between means. There was no significant difference in the variance of the groups ($F=1.16$, $p<0.76$), therefore the pooled variance formula was used.

The analysis supports the hypothesis that there is no significant difference between the two groups of learners regarding the importance of human assistance in choosing self-planned learning projects.

Table 12. Mean difference of FI and FD learners on the importance of human assistance in choosing self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.76	1.16	0.76	-1.20	36
Group II	19	3.08				

Hypothesis Four

Hypothesis four states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of human assistance during the task of planning self-planned learning projects.

The importance of human assistance in planning self-planned learning, the dependent variable, was obtained by calculating a mean score for each person to items 2,5,8,11 on checklist two--importance of human assistance during the process of planning self-planned learning.

A t-test analysis of the importance of human assistance in planning self-planned learning between FD and FI learners was computed. The F-statistic was used to test the homogeneity of variance. There was no significant difference in variance ($F=1.65$, $p<0.29$). Due to no difference, the pooled variance estimate formula was used.

The mean scores, as shown in Table 13, indicate Group I had a mean score of 2.96 and Group II's mean score was 3.28. The resulting t-value was -1.51 with 36 degrees of freedom. The findings show that there is no significant difference at the $p<.05$ level for the stated hypothesis. It cannot be stated that FD learners rated the importance of human assistance in planning self-planned learning projects statistically different from FI learners.

Table 13. Mean difference of FI and FD learners on the importance of human assistance in planning self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.96	1.65	0.29	-1.51	36
Group II	19	3.28				

Hypothesis Five

Hypothesis five states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of human assistance during the task of implementing self-planned learning projects.

Importance of human assistance during the task of implementing self-planned learning, which was the dependent variable, was calculated by taking the mean score for each person to items 3,6,9,12 on checklist two. The groups under study remained the same.

The independent t-test was used to test the hypothesis. In the test for homogeneity of variance, the F-statistic was not significant ($F=1.46$, $p<0.43$).

Table 14 presents the findings of the analysis. It shows that Group I had a mean score of 3.41 and Group II had a mean score of 3.46. The resulting t-value was -0.22 with 36 degrees of freedom.

The findings indicate that the hypothesis cannot be rejected. There appears to be no significant difference between FD and FI learners on the reported importance of human assistance in implementing self-planned learning projects.

Table 14. Mean difference of FI and FD learners on the importance of human assistance in implementing self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	3.41	1.46	0.43	-0.22	36
Group II	19	3.46				

Hypothesis Six

Hypothesis six states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of choosing self-planned learning projects.

The dependent variable, importance of nonhuman assistance in choosing self-planned learning, was calculated by producing a mean score for each interviewee on items 1,4,7,10 in checklist three (Appendix C). Checklist three asked respondents to answer in terms of nonhuman assistance when indicating the importance of receiving help with various self-planned learning behaviors. The item values ranged from 1 (not important) to 5 (very important). Based on the results of the EFT, Group I consisted of FI learners and Group II was made up of FD learners.

A t-test was used to test the hypothesis. The comparison of the importance of nonhuman assistance in choosing self-planned learning by FD/FI learners is presented in Table 15. No significant difference at the .05 level was found between the means of the two groups. The mean for the FI group was 2.50 with the mean of the FD group being 2.71. The t-value of the two groups, -0.91 with 36 degrees of freedom, did not result in a significant difference between means. With a nonsignificant F-value ($F=1.50$, $p<0.40$), the pooled estimate of variance was employed.

The analysis supports the hypothesis that there was no significant difference between the two groups of learners regarding the importance of nonhuman assistance in choosing self-planned learning projects.

Table 15. Mean difference of FI and FD learners on the importance of nonhuman assistance in choosing self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.50	1.50	0.40	-0.91	36
Group II	19	2.71				

Hypothesis Seven

Hypothesis seven states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of planning self-planned learning projects.

The importance of nonhuman assistance in planning self-planned learning, the dependent variable, was obtained by computing a mean score for each respondent to items 2,5,8,11 on checklist three—importance of nonhuman assistance during the process of self-planned learning.

An independent t-test analysis of the importance of nonhuman assistance in planning self-planned learning between FD/FI learners tested the hypothesis. The F-statistic was used to test the homogeneity of variance. There was no significant difference in variance ($F=1.53$, $p<0.37$). The pooled variance estimate formula was used.

The mean scores are shown in Table 16. Group I had a mean of 2.93 and Group II had 3.03 as its mean score. The t-value was -0.37 with 36 degrees of freedom. The findings show no significant difference at the .05 level of probability for the stated hypothesis.

It cannot be stated that FD learners reported the importance of nonhuman assistance in planning self-planned learning differently from FI learners.

Table 16. Mean difference of FI and FD learners on the importance of nonhuman assistance in planning self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.93	1.53	0.37	-0.37	36
Group II	19	3.03				

Hypothesis Eight

Hypothesis eight states: There is no significant difference ($p<.05$) between field-dependent and field-independent learners on the reported importance of nonhuman assistance during the task of implementing self-planned learning projects.

To obtain an importance of nonhuman assistance score, a mean score for each respondent was calculated from items 3,6,9,12 on checklist three. The groups under study were the same as in previous hypotheses.

The independent t-test was again utilized in this analysis. In the test for homogeneity of variance, the F-statistic was not significant ($F=1.74$, $p<0.25$).

Table 17 presents the findings of the analysis. It indicates that Group I had a mean score of 2.58 and Group II's mean score was 2.85. The t-value, pooled variance estimate, was -1.12 with 36 degrees of freedom.

The stated hypothesis cannot be rejected. There appears to be no significant difference between FD and FI learners on the reported importance of nonhuman assistance in implementing self-planned learning projects.

Table 17. Mean difference of FI and FD learners on the importance of nonhuman assistance in implementing self-planned learning projects

Group	N	Mean	F-value	variance 2-tail prob.	pooled variance t-value	df
Group I	19	2.58	1.74	0.25	-1.12	36
Group II	19	2.85				

Hypothesis Nine

Hypothesis nine states: There is no significant relationship ($p<.05$) between the adult learner's degree of field-dependence/field-independence and reported satisfaction with self-planned learning projects.

The total group (N=57) was used to test this hypothesis. A Pearson correlation was the statistical analysis employed. The findings in Table 18 describe the results of the analysis. The correlation coefficient was .0836 for 57 cases. The one-tailed significance level was P=.27.

The coefficient of .0836 indicates very little correlation between the two variables. There is no significant relationship between the degree of FD/FI and satisfaction with self-planned learning. Therefore, this hypothesis was corroborated.

Table 18. Relationship between FD/FI and satisfaction with self-planned learning

Correlation Coefficient	Cases	1-tail Significance
.0836	57	.27

Hypothesis Ten

Hypothesis ten states: Satisfaction with self-planned learning projects is not significantly predictable ($p<.05$) from field-dependence/field-independence, importance of human or nonhuman sources of assistance, nor in importance of human or nonhuman assistance in choosing, planning, or implementing self-planned learning projects.

This hypothesis was tested using a stepwise multiple regression technique. On the basis of this analysis, the hypothesis was rejected at the .05 level ($F(1,55)=5.78$, $p<.02$).

The analysis shows that the importance of nonhuman sources of assistance is a significant predictor of learner satisfaction with self-planned learning projects. After importance of nonhuman sources of assistance has been considered, none of the remaining eight variables make a significant contribution. Table 19 describes the amount of variance accounted for by importance of nonhuman sources of assistance.

Table 19. Stepwise regression effect of nonhuman sources of assistance on reported satisfaction with self-planned learning

Variable[a]	Multiple R	R square	B[b]
Nonhuman help	.309	.095	1.05
(Constant)			4.90

[a] Remaining variables would not make an additional contribution, hence were not entered into the equation.

[b] B is the coefficient of the variable in the prediction equation.

Based on the findings of the multiple regression analysis, Hypothesis Ten is only partially rejected. The importance of nonhuman sources of assistance was the only predictor of satisfaction with self-planned learning. Though the finding is significant at the .05 level of probability, the risk of making a type I error is greater than if the significant level had been established at the .01 level. In fact, with a significant F=.0196, this finding would not have been significant at the .01 level.

Secondly, the analysis reveals that a variance of only nine percent was accounted for by the importance of nonhuman assistance. This means that 91 percent of the variance was not accounted for. Additional, unexplained variables may be better predictors of satisfaction with self-planned learning than are sources of assistance and importance of assistance during the process of self-planned learning.

Descriptive tests were also performed on the data. These analyses helped identify trends not apparent in the testing of hypotheses. Tables 20 and 21 contain the mean ratings of the reported importance of human sources in self-planned learning.

Table 20. Mean ratings by total group and by FD/FI groups on importance of human sources of assistance in self-planned learning

Source	Total Group (N=57)	FI (N=19)	FD (N=19)
Expert	4.21	4.32	4.05
Spouse or partner	3.93	3.84	4.00
Paid professional	3.65	3.53	4.26
Group or class with instructor	3.23	2.89	3.26
Family relative	3.21	3.26	3.53
Store clerk	2.81	2.42	3.05
Private lessons	2.72	2.68	3.26
Study group	2.67	2.58	2.47
Public speech	2.61	2.53	2.42
Neighbor	2.53	2.53	2.31
	Total $\bar{X}$=3.16	$\bar{X}$=3.06	$\bar{X}$=3.24

Table 21. Mean ratings by total group and by FI/FD groups on importance of nonhuman sources of assistance in self-planned learning

Source	Total group (N=57)	FI (N=19)	FD (N=19)
Books	4.33	4.21	4.26
Magazines	3.74	3.53	3.63
Pamphlet/Newsletter	3.12	3.10	2.95
Newspaper	3.03	3.10	2.95
Exhibits, field trip	2.89	2.58	3.21
Computer program	2.54	2.21	3.05
Television	2.42	2.58	2.32
Video tape	2.14	1.84	2.26
Correspondence course	2.09	1.84	2.26
Records, tapes	2.07	1.53	2.74
	Total $\bar{X}$=2.84	$\bar{X}$=2.65	$\bar{X}$=2.99

The means of the two tables indicate that FD learners rated both human and nonhuman sources of assistance as more important than did FI learners. This was to be expected regarding human sources of assistance. But it was not expected with regards nonhuman sources of assistance since it was anticipated that FI learners would rate nonhuman sources of assistance higher than FD learners would rate them. Of interest was the low ratings of less than 2.50 given by FI learners to four of the ten nonhuman sources.

It was also apparent that both FI and FD learners reported human sources of assistance as more important than nonhuman sources of assistance.

Descriptive statistics were also computed for the interviewees' ratings of assistance during the process of self-planned learning. Tables 22 and 23 examine mean ratings on the reported importance of assistance in choosing, planning, and implementing self-planned learning.

The means of the FD learners are higher than those of FI learners on all three tasks of self-planned learning, both for human and nonhuman assistance. As expected, means for the FD group were higher when considering human help compared to nonhuman help. This was also the case for the FI group which was not expected.

In studying Tables 22 and 23 more closely, it was interesting that only one assistance behavior--dealing with difficulties (Table 22)--received a rating above 4.00 which corresponded to "quite important" on the scale of checklist two. In fact, in Tables 20 to 23, most all sources and kinds of assistance were rated just above "somewhat important" (3.00+) or below. FD and FI learners may believe that neither human nor nonhuman assistance is critical for self-planned learning.

Table 22 also illustrates a possible problem concerning the development of variables and ultimately, the testing of the hypotheses. As previously reported, there were no significant statistical differences

Table 22. Mean ratings by total group and by FD/FI groups on importance of human assistance during the three tasks of self-planned learning

Tasks	Total group (N=57)	FI (N=19)	FD (N=19)
Choose			
-learn about interests and skills	3.02	2.63	3.53
-consider pros and cons of learning	3.28	3.42	3.10
-convince self learning is possible	2.72	2.63	2.74
-understand personal learning needs	2.47	2.37	2.95
Choose $\bar{X}$	$\bar{X}$=2.87	$\bar{X}$=2.76	$\bar{X}$=3.08
Plan			
-estimate costs and problems	3.47	3.16	3.79
-find available resources	3.68	3.42	3.84
-decide preferred learning mode	2.93	2.95	2.95
-set goals	2.37	2.32	2.53
Plan $\bar{X}$	$\bar{X}$=3.11	$\bar{X}$=2.96	$\bar{X}$=3.28
Implement			
-deal with difficulties	4.53	4.53	4.47
-decide next steps	2.73	2.68	2.89
-receive encouragement and support	3.56	3.68	3.53
-judge outcome of projects	2.72	2.74	2.95
Implement $\bar{X}$	$\bar{X}$=3.39	$\bar{X}$=3.41	$\bar{X}$=3.46
Total $\bar{X}$	$\bar{X}$=3.12	$\bar{X}$=3.04	$\bar{X}$=3.27

Table 23. Mean ratings by total group and by FD/FI groups on importance of nonhuman assistance during the three tasks of self-planned learning

Tasks	Total group (N=57)	FI (N=19)	FD (N=19)
Choose			
-learn about interests and skills	2.93	2.68	3.10
-consider pros and cons of learning	2.91	3.00	3.10
-convince self learning is possible	2.37	2.26	2.63
-understand personal learning needs	2.02	2.05	2.32
Choose $\bar{X}$	2.56	$\bar{X}$=2.50	$\bar{X}$=2.71
Plan			
-estimate costs and problems	3.26	3.26	3.26
-find available resources	3.37	3.26	3.63
-decide preferred learning mode	2.88	2.84	2.95
-set goals	2.30	2.37	2.26
Plan $\bar{X}$	2.96	$\bar{X}$=2.93	$\bar{X}$=3.03
Implement			
-deal with difficulties	3.63	3.53	3.84
-decide next steps	2.91	2.95	3.00
-receive encouragement and support	1.84	1.84	2.00
-judge outcome of projects	2.21	2.00	2.58
Implement $\bar{X}$	2.65	$\bar{X}$=2.58	$\bar{X}$=2.85
Total $\bar{X}$	2.72	$\bar{X}$=2.67	$\bar{X}$=2.86

between the means of FI and FD learners regarding importance of assistance in choosing self-planned learning projects. Yet, there are differences within the variable "Choosing". FD learners rated item 1—learning about interests and skills—much higher than did FI learners. On the other hand, FI learners rated item 2—consider the pros and cons of learning—higher than did FD learners. When the ratings of the four items making up the variable "choosing" were combined to form one mean, the individual item differences negated each other and created no significant difference between the means.

To ascertain if any additional differences between the tasks of choosing, planning, and implementing self-planned learning projects could be detected, post hoc analyses were performed.

A paired t-test analysis was calculated on the FI and FD groups regarding within differences among choosing, planning, and implementing self-planned learning projects. Tables 24 to 27 describe the differences among the three tasks for both the FI and FD groups.

From these tables it appears that, overall, assistance is reported as more important during implementation of learning projects than during choosing or planning them. Help is more useful in the carry out of learning projects. In almost all cases, the means for implementing are higher than the means for choosing or planning. The notable exception is the mean for importance of nonhuman assistance in planning self-planned learning projects which is higher than the mean for implementing. This is consistent for both groups.

Table 24. Paired t-test comparison of FI group on importance of human assistance during the three tasks of self-planned learning

Task	N	Mean	SD	t-value	2-tail probability
Choosing	19	2.76	.779	-1.20	.247
Planning	19	2.96	.718		
Choosing	19	2.76	.779	-3.47	.003**
Implementing	19	3.41	.796		
Planning	19	2.96	.718	-2.47	.024*
Implementing	19	3.41	.796		

*Significant at .05 level.
**Significant at .01 level.

Table 25. Paired t-test comparison of FI group on importance of nonhuman assistance during the three tasks of self-planned learning

Task	N	Mean	SD	t-value	2-tail probability
Choosing	19	2.50	.640	-2.91	.009**
Planning	19	2.93	.686		
Choosing	19	2.50	.640	-0.54	.598
Implementing	19	2.58	.651		
Planning	19	2.93	.686	2.34	.031*
Implementing	19	2.58	.651		

*Significant at .05 level.
**Significant at .01 level.

Table 26. Paired t-test comparison of FD group on importance of human assistance during the three tasks of self-planned learning

Task	N	Mean	SD	t-value	2-tail probability
Choosing	19	3.08	.838	-1.76	.096
Planning	19	3.28	.558		
Choosing	19	3.08	.838	-3.00	.008**
Implementing	19	3.46	.658		
Planning	19	3.28	.558	-1.74	.100
Implementing	19	3.46	.658		

**Significant at .01 level.

Table 27. Paired t-test comparison of FD group on importance of nonhuman assistance during the three tasks of self-planned learning

Task	N	Mean	SD	t-value	2-tail probability
Choosing	19	2.71	.783	-2.08	.052
Planning	19	3.03	.849		
Choosing	19	2.71	.783	-0.96	.350
Implementing	19	2.85	.859		
Planning	19	3.03	.849	1.23	.235
Implementing	19	2.85	.859		

Help from nonhuman sources, written materials for example, is more important in organizing learning projects than in carrying them out.

It also appears that assistance is least important in choosing projects. Learners either know what they need or want to learn or they are forced into a learning situation and, therefore, have no choice in the matter.

The lack of significant difference between FD and FI learners in this study did not agree with FD/FI theory. The researcher was curious to see if a lack of difference in this study, and other studies, could be due, in part, to not testing enough "pure" FD and FI learners. To see if this was the case, frequencies for selected assistance variables were calculated for the three FI learners with EFT scores below 15.00 and the three FD learners with EFT scores above 100.00. With an N of only three per group, it is impossible to perform much meaningful analyses. However, as Table 28 shows, interesting trends did appear.

The importance of human assistance to the three FD learners is evident. With a rating scale from 1 to 5 used in calculating the means, there were several 4.00+ ratings on importance of human assistance. Likewise, there were several 2.00- ratings for the three FI learners.

It is especially interesting to note the differences in ratings on the importance of human sources of assistance. FD learners rated the ten sources of human assistance as very important overall, and FI learners rated them only slightly to somewhat important overall. Also, the three FD learners appeared to request more assistance in planning learning projects than did FI learners.

Table 28. Mean ratings on importance of assistance

Assistance Variable	FI (N=3)	FD (N=3)
Importance of human sources of assistance	1.80 2.40 3.00	3.10 4.20 4.30
Importance of nonhuman sources of assistance	1.80 2.40 3.40	3.00 3.50 3.80
Importance of human assistance in planning self-planned learning	2.25 2.25 3.00	2.75 4.00 4.25
Importance of nonhuman assistance in planning self-planned learning	1.75 1.75 2.75	3.50 3.75 4.00
Importance of human assistance in implementing self-planned learning	3.00 3.75 3.75	3.25 4.00 4.50
Importance of nonhuman assistance in implementing self-planned learning	2.25 2.50 2.50	2.50 3.25 3.50

Summary

This chapter has presented the results of the statistical analyses used to test the ten hypotheses. The findings failed to reject eight hypotheses and rejected two though one was only minimally rejected.

Hypothesis two stated there was no difference between FI and FD learners regarding the importance of nonhuman sources of assistance. This hypothesis was rejected as FD learners reported that nonhuman sources of

assistance were, in fact, more important to their learning projects.

The importance of nonhuman sources of assistance was found to be a statistical predictor of reported satisfaction with self-planned learning, partially rejecting hypothesis ten. However, the predictive value was not substantial and with the unexplained variance, the practical use of this variable as a predictor is tenuous.

Closer examination of the data revealed several trends worth further consideration. In studying Tables 10 through 17 for example, means for the FD groups were almost always higher than the FI group. This would support the contention that FD learners believe assistance is more important to self-planned learning than FI learners do.

It was also important to note that in most cases neither FD or FI learners rated assistance as crucial for learning. In only a few cases were means greater than 4.00 reported. In several cases, means less than 2.50 were calculated. This finding indicated that neither group of learners reported an overwhelming need for assistance with their projects. From the post hoc analyses, it appeared that significant differences in self-planned learners appear during the process of learning within the group rather than between groups.

Finally, the fact that no significant differences were found in the hypotheses might also be attributable to the organization of the data. In those cases where items were combined to form new variables, differences among FI and FD learners may have been negated.

The next chapter provides a more thorough discussion of these research findings and implications for further study.

CHAPTER V. SUMMARY, DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the study, discuss the findings, offer implications, and suggest recommendations for future research. The chapter is organized as follows:

1. Summary of Research Study.
2. Discussion of the Study.
3. Implications for Programming.
4. Recommendations for Research.

Summary of Research Study

This section summarizes the development, methodology, and results of the study. The focus of the present study was the comparison of assistance requested by field-dependent and field-independent learners engaged in self-planned learning.

Development of the study

Self-planned learning has been recognized as a form of adult learning. It is estimated that nearly all adults engage in self-planned learning to some extent. Most research studying self-planned learning has focused on documenting the number of projects, amount of time spent in learning, and subjects learned.

Little research has addressed the behavior of self-planned learners, though some studies have identified resources adult learners use in their learning projects. Also, adult educators have suggested that studying the

cognitive style of learners may enhance the understanding of self-planned learning behavior. The purpose of this study, therefore, was to compare cognitive styles of adult, self-planned learners with sources of assistance, and importance of that assistance during the phases of self-planned learning.

Methodology

A revision of the interview process developed by Tough (1970) was used to collect information on the interviewees' learning project activities and the overall satisfaction with the process of self-planned learning.

Since the nature of the research was to study assistance during self-planned learning, three additional researcher designed checklists were used. Checklist one contained 20 sources of assistance adult learners consult in their learning projects. Checklists two and three were developed from Tough's (1982) description of self-planned learning. These checklists listed 12 types of assistance learners used in the process of learning. Checklist two studied the importance of human assistance during the process of self-planned learning and checklist three studied the importance of nonhuman assistance during the process. The Embedded Figures Test (EFT), a standard measure for identifying degrees of field-dependence (FD) or field-independence (FI), completed the study instrumentation.

A personal interview, lasting approximately one hour, was conducted with each participant. The researcher conducted each interview.

The subjects in the study were a select sample of 57 adults residing in central Iowa. The sample was almost equally divided between males and females. Most were between 24 and 48 years of age, highly educated, and over 60% have lived in their community six years or more.

Data from the interviews were analyzed using:

1. Frequencies and measures of central tendencies for the total group and for selected FI and FD sub-groups.

2. Independent t-tests to study significant differences between FD and FI learners on the importance of human and nonhuman sources of assistance to self-planned learning, and the importance of human and nonhuman assistance during choosing, planning, and implementing self-planned learning.

3. Pearson correlation to study the relationship between the degree of FD/FI and reported overall satisfaction with self-planned learning.

4. Stepwise multiple regression to identify the predictability of human and nonhuman sources of assistance, human and nonhuman assistance during self-planned learning, degree of FD/FI on overall satisfaction of adults in self-planned learning.

5. Dependent t-tests to compare within group differences of FD and FI learners in choosing, planning, and implementing self-planned learning. This t-test analysis was conducted as a post hoc procedure.

Results of the study

FD learners reported significantly more importance of nonhuman sources of assistance than was reported by FI learners. No significant difference in the importance of human sources of assistance was observed between FD and FI learners.

There was no significant difference between the two groups on importance of human assistance in choosing learning projects. This was also found to be the case in planning and implementing projects. Likewise, no significant differences were found in the reported importance of nonhuman assistance during the tasks of self-planned learning.

A post hoc analysis identified differences within the FD and FI groups regarding the process of choosing, planning, and implementing self-planned learning. In considering the importance of human assistance during the learning process, FIs reported that assistance was more important in implementing learning projects than in choosing or planning them. There was no difference in the importance of assistance in choosing or planning. On the other hand, the FI group believed that nonhuman assistance was more important in planning self-planned learning projects than in choosing or implementing them.

With FD learners, the post hoc analysis indicated that it was more important to receive human assistance in implementing self-planned learning than in choosing projects. There was no significant difference between implementing and planning projects. FD learners reported no significant difference in the importance of nonhuman assistance in choosing, planning, or implementing self-planned learning.

The Pearson correlation failed to identify a relationship between a learner's degree of FD/FI and reported overall satisfaction with the self-planned learning process.

The multiple regression analysis indicated that reported importance of nonhuman sources of assistance contributed significantly ($p<.05$) to the overall satisfaction of self-planned learning. No other variables in the study appeared to contribute to satisfaction.

When the hypotheses were tested, the results indicated that:

1. There is no significant difference between the two groups on the importance of human sources of assistance in self-planned learning.

2. There is a significant difference between the two groups on the importance of nonhuman sources of assistance in self-planned learning.

3. There is no significant difference between the two groups on the reported importance of human assistance during the task of choosing self-planned learning.

4. There is no significant difference between the two groups on the reported importance of human assistance during the task of planning self-planned learning.

5. There is no significant difference between the two groups on the reported importance of human assistance during the task of implementing self-planned learning.

6. There is no significant difference between the two groups on the reported importance of nonhuman assistance during the task of choosing self-planned learning.

7. There is no significant difference between the two groups on the reported importance of nonhuman assistance during the task of planning self-planned learning.

8. There is no significant difference between the two groups on the reported importance of nonhuman assistance during the task of implementing self-planned learning.

9. There is no significant relationship between the adult learner's degree of field-dependence/field-independence and reported satisfaction with self-planned learning.

10. There is no significant effect on satisfaction with self-planned learning after importance of human sources of assistance and importance of human and nonhuman assistance in choosing, in planning, and in implementing self-planned learning are taken into account. The importance of nonhuman sources of assistance in self-planned learning produced a significant effect, therefore, the null hypothesis was partially falsified.

Discussion of the Study

This study was undertaken by the researcher to gain a better understanding of the relationship of cognitive style to the process of self-planned learning and the types of assistance learners believe are important to that process. Witkin's et al. (1962) field-dependence versus field-independence provided a theoretical framework for studying the cognitive differences of adult learners. Tough's (1982) three phase description of self-planned learning served as the basis for identifying

self-planned learning behavior with which to investigate importance of assistance as reported by FD and FI learners.

Demographics

Since the research project was studying differences in cognitive style and was exploratory in nature, a select sample was chosen for this study. Because of this fact, generalizations and limitations from the study are not readily transferred to other populations.

The overall EFT mean score for the 57 participants was 44.47. This indicates a more FI total group than that reported in Schaffer (1969) who reported a combined male/female mean of 55.65. However, Moore (1976) reported a mean of 32.6 for distance learners and Brown (1984) reported a mean of 49.84 in her study. It appears that the mean of this group is within the range reported in other studies.

Over 90% of the sample had participated in post-secondary learning and over 35% had obtained a graduate degree. Cross (1981) stated that the higher the education level, the more likely people are to be engaged in self-planned learning. This might have contributed to the relatively high satisfaction of the participants. The educational level may have also influenced reporting on importance of sources of assistance. Since high levels of formal education usually include extensive use of written materials, the sample in the present study was probably comfortable with nonhuman resources. This may have influenced the rating of books, for example, as important resources of learning.

But it was interesting to note that both FD and FI groups produced higher means for human sources of assistance than for nonhuman sources. Though it was not directly investigated in this study, it is possible that the interaction between assistant and learner is important to self-planned learners.

Data collection

Because of the lack of significant differences between groups in the testing of hypotheses, it might seem logical to state that FD/FI cognitive style is not appropriate for study of self-planned learner behavior. However, this may not be the case.

A closer examination of Table 28 in chapter IV shows that only three of the FD group had scores over 100.00 and only three subjects had FI scores under 15.00. In other words, the present sample may not be comprised of strong FI or FD learners but rather subjects with degrees of both FD/FI tendencies. In order to study true differences between FD and FI learners, it might be necessary to sample a much larger group of people to obtain truly FD and FI subjects. The lack of significance in this study and other studies with FD learners may be due, in part, to not having obtained pure FD or FI subjects. Table 28 illustrates that there are several trends supporting the fact that differences between learners may be more likely if true FD and FI learners are compared.

There are also caveats to consider regarding the researcher designed checklists which may have influenced interviewee responses. The interviewees were asked to think in terms of overall human assistance when

completing the phrase, "its important that I have human assistance in helping me..." (Appendix C). However, it might have been confusing for the interviewee to think of human assistance in overall terms. It is possible that the respondent thought of one particular type of human assistance when completing the checklist. Focusing on one particular type of assistance, family relative for example, might produce a different response than if the interviewee thought of human assistance in general. It would be useful to investigate the importance of selected sources of human and nonhuman assistance on self-planned learning behavior.

In addition, the 12 assistance behavior items listed in checklist two and three were developed from the literature. They were assembled to tap importance of assistance in choosing, planning, and implementing learning projects. Though each item was developed to study a different part of the learning process, it is possible that the items might overlap tasks. For example, "estimate the costs, time, and problems involved in the projects", was associated with planning self-planned learning (Tough, 1982). However, this item might also be an important part of choosing projects. Tough did indicate that the tasks of self-planned learning are not independent but rather they may overlap and require being dealt with several times in the learning process.

Though the interviewee was not aware of the three phases of the learning process and that the 12 items were designed to study the differences, it is possible that the items may have been a measure of more than one variable. Further research on factoring these behavior items, therefore, seems appropriate.

Conjecture 1

This study was built on the conjecture that importance of human and nonhuman sources of assistance is related to FD/FI. FD learners would believe that human sources of assistance were more important than would FI learners. FI learners, on the other hand, would believe that nonhuman sources of assistance were more important than would FD learners. However, the findings indicated that this was not entirely the case.

Both groups were relatively equal in their rating of the importance of the sources of human assistance. Though the overall mean difference was not significant, FD learners did produce a slightly higher mean. It was interesting that both FD and FI groups reported human sources of assistance higher than nonhuman sources of assistance. (An explanation of this finding is presented in the discussion of conjecture two.)

What was also surprising was that FD learners rated the importance of nonhuman sources of assistance significantly higher than FI learners. It appears that FD learners find sources of assistance, whether it is human or nonhuman, more beneficial than do FI learners. This tends to support Witkin's et al. (1977) claim that FD learners, because of their approach to learning, may require more assistance in their learning.

In most of the sources of human assistance where there was direct interaction or guidance provided by a facilitator, FD learners reported higher means than FIs did. For example, paid professionals, class with instructor, store clerk, private lessons, were all rated higher by FD learners. Conversely, the study group and public speech had higher ratings by the FI group. FD learners appear to prefer the human

interaction that includes receiving direction and guidance. They do not appear as comfortable when the direct guidance is lacking.

Regarding nonhuman sources of assistance, it was surprising that FD learners gave higher ratings than FI learners did on seven of the ten nonhuman sources of assistance. These sources of assistance do not provide direct human feedback and it was anticipated that they would be less useful to FD learners. However, it is possible that these nonhuman resources provide some structure to the FD's learning process; whereas FI learners provide their own structure and thus resources are not as important. For example, it would seem more likely for FI learners to rate the importance of computer programs higher than FD learners. Yet, FD learners rated its importance almost a full scale point higher than FI learners did. Software packages, with their interactive format, appear to provide a structure that is appreciated by FD learners.

It is interesting to note that the rankings of the sources of assistance corroborates the study of Penland (1977b). Books and experts were the two sources receiving the highest ratings in the present study. Penland's study also identified these two sources as the main ones adults turn to for help in learning (Table 13). Correspondence courses, records, and tapes also received the lowest rankings in both studies.

The reason for these rankings is not clear. It might be anticipated that due to the education level of the present research sample, books and experts would be rated high. However, Penland's study contained a more heterogenous sample and their ranking of books and experts were also high. Further study to explain the rationale for the ratings of sources of

assistance seems fitting.

In addition to examining the data, there was information gleaned from the interview itself that may help explain the ratings of the sources of assistance. Familiarity with a particular resource appeared to influence its rating of importance. If learners had never used a particular resource, for example correspondence course, they tended to rate that resource as less important than if they actually used the resource in their learning.

Second, the interviewees were asked to assume that the listed sources of assistance were available to them. However, this might not always be the case. For example, a single person may not have the assistance provided by a partner. It is conceivable, therefore, that those resources that are actually available to the learners would be rated differently than those that are assumed to be available.

Finally, it appeared that the learners utilized the sources of assistance differently. Some resources such as books and magazines were actually sought out by the learners in their learning. Television is an example of a resource that was not actively used in most learning projects though most all learners had access to it. Rather, the learners reported television was used in incidental learning. In other words, they would be watching television when something of interest was learned. But it would not necessarily relate to a learning project currently in progress. Very seldom did an interviewee mention using the television to help in a current learning project. This raises the question as to why certain sources of assistance are sought out and others are not. Or, what is

intrinsic to certain resources that cause learners to seek them and not others? To speculate further, how are different resources used to assist self-planned learning? The discussion of the next conjecture may help to shed some light.

Conjecture 2

This study was also based on the conjecture that FD learners will request more assistance during the process of self-planned learning. When learning tasks are not clearly defined, as might be the case in self-planned learning, FD learners may report that assistance is more important to them than will FI learners.

The present research did not support this conjecture. FD learners did not report the importance of assistance during the process of learning significantly higher than did FI learners.

It is important to note, however, that the organization of the data could have produced misleading results. When the four individual items comprising the three phases of self-planned learning were combined, the difference in the ratings of individual items may have cancelled out potential statistical differences. For example, FI learners may have reported items one and two as very important and FD learners may have reported the same two items as not important. FD learners may have reported items three and four as very important and FI learners may have reported the same items as not important. When the four items were averaged, no difference between groups may have occurred though there were differences within individual items.

Also, asking the interviewees to think of human and nonhuman sources in general when rating the importance of help during the process of self-planned learning, might have caused different ratings than if they focused on a specific resource. It might be appropriate to compare ratings of human or nonhuman resources "in general" with ratings of specific human or nonhuman resources. Are there certain resources that are most effective during a certain phase in the learning process?

It was also interesting that both FD and FI learners reported only one assistance behavior--dealing with difficult parts of projects--as quite important to the process of learning. It is possible that learners do not believe assistance is all that important to their learning, although the sample may also have influenced the ratings. The sample was a highly educated one and more likely to be self-planned learners. And one that, by the nature of their formal education, has more experience in learning by themselves. This research sample may have been more comfortable with self-planned learning and, therefore, less in need of assistance.

Nevertheless, the data did show trends that are worth future consideration concerning the process of self-planned learning. When considering assistance from people, it appears assistance is most important in carrying out projects, followed by planning projects. Receiving help in choosing projects is least important. However, a different pattern emerges when viewing help from nonhuman sources. Assistance in planning projects was rated as most important, followed by assistance in implementing projects. Choosing projects is the phase of

the process where the least amount of assistance is needed.

Learners use resources differently in their learning. Nonhuman sources are more important for planning and organizing projects; locating resources, estimating costs, designing a course of action. Human resources, on the other hand, are more important in carrying out the projects; dealing with problems, receiving encouragement, deciding the next steps. This may help explain why both FD and FI learners rated human sources of assistance higher than nonhuman ones (as discussed in the previous conjecture). It appears both groups request more help in carrying out learning projects than in planning them, and that this help is more useful when it comes from human resources. It appears that help is least needed in choosing self-planned learning projects. Learners appear to choose their projects, and then seek assistance in the planning and implementation of them. More detailed investigation of the phases of choosing, planning, and implementing self-planned learning projects seems promising.

Conjecture 3

Is there a relationship between cognitive style and satisfaction with self-planned learning? Will it hold that the stronger the degree of field-independence, the more satisfied adult learners will be with their self-planned learning?

The present study did not support this conjecture. Both FD and FI learners reported being satisfied with self-planned learning. This corroborated Tough's (1978) finding that most adult learners prefer

self-planned learning as a method of learning. Moore (1976) also found that FD and FI learners were satisfied with selected independent study programs.

That a learner's degree of FD/FI was not a predictor of satisfaction in self-planned learning was not surprising. But it was interesting that only one importance of assistance factor out of eight contributed to the prediction of satisfaction in self-planned learning.

It appears that other, unexplained variables are more important in predicting satisfaction with self-planned learning. For example, many of the interviewees reported that satisfaction with self-planned learning was higher when the project was of interest to them. But in projects that they needed to learn but were not necessarily of interest to them, they would prefer others to plan and structure the learning for them. This raises an interesting question: What effect does motivation have on satisfaction and assistance in self-planned learning? Would learners be less satisfied with projects that are necessary but not of interest? Would they report that assistance is more important to them when interest in the project is not high?

Conclusion

If self-planned learning is a major form of adult learning, and if adult educators are interested in facilitating self-planned learning, then it is necessary to understand how learners go about their learning process.

This study is a beginning step at initiating a body of knowledge regarding the sources of assistance and the importance of assistance during the process of self-planned learning. It further attempted to identify differences among learners regarding the importance of assistance. The cognitive style of field-dependence versus field-independence provided the theoretical base for identifying differences and the model to test the process of self-planned learning was gleaned from Tough (1982).

The findings of this study revealed little difference between FD and FI learners regarding assistance. FD learners did report that nonhuman sources of assistance were important to their learning. No differences were found between the groups and the importance of assistance in choosing, planning, and implementing learning projects.

There appeared to be more differences within the groups than between groups. Assistance is more important in planning and implementing projects than in choosing them; regardless of cognitive style. Nonhuman sources of assistance are more important in planning and gathering information for learning. Human sources of assistance are more helpful in carrying out projects.

Due to the nature of self-planned learning, it was hypothesized that FI learners would be more satisfied with self-planned learning. That was not the case in this study. Both groups reported being satisfied with this form of learning. The stronger the degree of FI did not mean more satisfaction with self-planned learning.

Overall, neither group reported a high need for human or nonhuman sources of assistance. The low to average ratings on importance of assistance could be due, in part, to the educational level of the sample. The high educational level may be associated with familiarity in self-planned learning and less need for assistance. Also, since the learners were satisfied with self-planned learning, they may not report a strong need for help.

Finally, the fact that very few pure FD and FI subjects were included in the study probably influenced the results.

As Table 28 in chapter IV indicates, ratings on the importance of human and nonhuman assistance were different for the three strong FD and FI learners. Lack of differences between FD and FI learners in self-planned learning research may be due, in part, by not including enough pure FD/FI learners in the samples investigated. Examining learning differences among strong FD/FI learners seems appropriate.

Implications for Programming

One focus of this study was to examine FD/FI as a construct in identifying differences among self-planned learners. Though FD/FI does identify differing tendencies in cognitive style, the present research indicates that it might not be as useful in understanding self-planned learning, especially with regards importance of assistance during the learning process. If there are cognitive style differences regarding the importance of assistance, FD/FI did not identify them. But the frequencies of the three strong FI and FD learners are intriguing.

However, even with the lack of strong FD and FI learners in the present study, it might be premature to dismiss FD/FI in relation to self-planned learning. More accurate means of detecting FD and FI learners need to be developed.

Second, learners appear to request help from human sources in carrying out their learning projects. They want encouragement, help with difficult parts, and assistance in proceeding with learning. Its important that adult educators study their own interaction with self-planned learners to see, if in fact, they are providing the assistance that is needed by adult learners.

Likewise, learners appear to request assistance from nonhuman sources in planning the learning projects. They want help in estimating costs, finding resources, and deciding how to begin. Again, it is important that adult educators study the nonhuman resources they prepare to see if that material is providing the appropriate assistance.

Third, certain kinds of resources, both human and nonhuman, are mentioned throughout several studies as helpful to self-planned learners. The present study supported these findings. Educators need to examine these resources more closely to identify why these resources are satisfying to learners and emulate these strengths in their own resource development and assistance. Similarly, a closer examination of resources listed as not important to learning is warranted.

Recommendations for Future Research

This study was an exploratory effort to begin developing an explanation of the self-planned learning process. It has provided a valuable function in identifying several areas needing further investigation.

1. Replication of the study with a different population is needed to document the results of no difference between FD and FI learners regarding the importance of assistance to self-planned learning. If the results coincide, it would further substantiate the limits of FD/FI cognitive style in identifying differences in self-planned learning assistance and behavior. If the results contradict, it would indicate possible research errors in the present study or differences among populations. Special emphasis must be taken to identify learners who possess high degrees of FD or FI so that true cognitive style differences are more likely to appear.

2. Studies of this nature may benefit from an improved design that would take advantage of more sophisticated data analysis. Such a design could examine the interaction of variables and within group differences. Also, a path analysis design that would test the model of choosing, planning, and implementing self-planned learning would be appropriate.

3. Though FD/FI may not be an appropriate construct for identifying differences in importance of assistance, it might be useful in studying other facets of self-planned learning, for example, problem solving strategies, or facilitator/learner interaction. In addition, there may be other cognitive style constructs that might prove effective in identifying differences among self-planned learners with regards importance of

assistance.

4. One of the study's limitations was that it asked participants to think of learning projects "in general" when rating their satisfaction with self-planned learning. A study focusing on satisfaction with specific learning projects instead may lead to different ratings than those listed in this study. In addition, focusing on specific projects may identify projects where interest is high versus those where interest is low. For example, are projects that learners choose reported as more satisfactory than projects that learners are required to undertake? This may have implications for the importance of assistance during the learning process.

5. Refinement of the instruments for use in future studies would seem appropriate. Two areas where refinement might be considered are:

a. re-examining the checklists to see if they are an accurate measurement of the process of self-planned learning.

b. identifying more appropriate assistance behaviors to describe the tasks of choosing, planning, implementing.

In addition, research might focus on the specific assistance behaviors of the checklists. For example, why are some assistance behaviors such as, "dealing with difficult parts", rated quite high? Why is "judging outcomes of self-planned learning" not rated as very important to self-planned learners?

6. Further research is needed to understand the use of resources. A study examining individual types of human and nonhuman resources instead of human and nonhuman resources "in general" is needed. What is inherent

in some resources, books for example, that leads to its high rating of importance to self-planned learners? Why are certain resources consistently seen as not important to learning? The present study found that learners use human and nonhuman resources differently. Does this hold for all human and nonhuman resources or just certain ones? It is evident that a great deal needs to be done to gain a better understanding of assistance to self-planned learners.

In summary, this study was an exploration of self-planned learning behavior from the viewpoint of assistance to that process. The study has raised questions concerning cognitive style research with self-planned learning. It has also contributed to the literature of self-planned learning and assistance by identifying trends worthy of future study.

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APPENDIX A.

INTERVIEW SCHEDULE

A-INTERVIEW SCHEDULE - LEARNING PROJECTS

(Note: Spend some time talking to establish rapport, confirm confidentiality, and explain the reason for the research and the procedure for the interview. Emphasize the benefit of their answers to Extension and other adult education groups in helping these agencies be more supportive to adult learners such as themselves.)

1. Learning Projects

A. "As I've mentioned, my research is about the sorts of things people learn. Everyone learns, but different people learn different things--and in different ways.

I'm interested in listing the things you are now learning or have learned during the past year.

When I say 'learn' I don't mean only learning the sorts of things people learn in schools and colleges. I mean any sort of specific effort at all to learn something, or to learn how to do something. Perhaps you tried to get some information or knowledge--or to gain new skills or improve your old ones.

Can you think of any efforts like this that you have made during the past 12 months?"

(Pause)

B. "Try to think back over all the past 12 months—right back to (month) last year. I am interested in any deliberate effort you made to learn anything at all. Anything at all can be included, regardless or whether it was easy or hard, big or little, important or trivial, serious or fun."

(Pause)

C. "I wish to get as complete a list as possible, because I think that people make far more attempts to learn than anyone realizes. We can include any sort of information - knowledge - skill - or understanding at all that you have tried to gain, just as long as you spent at least a few hours at it sometime during the past 12 months. What else do you recall?"

(Pause)

D. Think of highlights in your life during the past year which may have led to learning something new, for example, moving, new baby, building an addition, new lifestyle, new job etc..

(Whenever interviewee mentions some activity or area of his/her life that might have produced a learning project, ask about this possibility)

GIVE INTERVIEWEE PROBESHEET No. 1.

E. "Now, lets look again at some of the things people learn. Does it remind you of any thing else that you have tried to learn during the past 12 months. Think about whether you have tried to learn something similar.

Summarize.

---

2. Degree of Satisfaction

I am especially interested in those projects in which you were in charge of the day-to-day planning and decision making. You may get advice and help from other people or materials but you had the responsibility for deciding what to try next, what to read, how to study etc.

This is called self-planned learning and it is different from other adult learning in which a teacher tells you step-by-step what you need to learn; or a class or study group that decides what you should learn; or where the decision on what to learn is determined by some material resource such as a self-help book.

Which of the projects you mentioned (go through the list) do you think are self-planned—you were in charge of the planning and learning? Can you tell me why you think so?

Okay, as we proceed through the rest of the interview I would like for you to answer the questions in terms of self-planned learning in general.

Please think for a moment about how satisfied, in general, you are with self-planned learning. How do you feel about the outcome of self-planned learning?

On a scale from 1 to 10 with 1 being not satisfied and 10 being extremely satisfied, tell me the number that best indicates how satisfied you are with your self-planned learning.

1	2	3	4	5	6	7	8	9	10
not satisfied									extremely satisfied

Summarize.

---

3. Sources of Assistance

Another question I would like to ask you is about the sources of help you generally use in your learning. Most people seek help during their learning efforts. This help can be in the form of answering your questions, ideas on what to do next, support or encouragement, help with difficult parts etc..

On checklist 1 is a list of sources that adults turn to in their learning. Would you please circle the number that tells me how important, in general, each of these sources are to you in your own adult learning projects, assuming that these sources of help would be available to you. By important I mean these sources are of value to you, or worth a lot to

your learning, or they help make a significant impact on the learning project. Use the scale at the top of the page as a guide. If you have any questions, I'll try to answer them.

---

4. Human Assistance During Learning Tasks

I would like to ask you about the different kinds of help you receive from these sources. From the sheet you just completed you probably noticed that people can be sources of help; friends, teachers, expert. Also, there are nonhuman sources of help; books, exhibits, correspondence course etc.

On this sheet (Give interviewee checklist 2) is a list of several kinds of help learners receive from other sources. Thinking about learning efforts in general, how important do you believe each type of help is to you?

Also with this sheet are examples of human sources of help. For these first set of questions, please answer in terms of human assistance. In other words, circle the number that best indicates how important it is to you to receive this type of help from these human sources during your learning efforts.

If you have any questions about the types of help, I'll be glad to answer them.

---

5. Nonhuman Assistance During Learning Tasks

Finally, you'll notice that checklist 3 has the same set of statements as checklist 2. (Give interviewee checklist 3.) Also, included is a list of nonhuman sources of assistance.

This time, I would like you to think about your learning efforts in terms of nonhuman assistance. Please circle the number that best indicates how important it is to you to receive this type of help from the nonhuman sources during your learning efforts.

If you have any questions, I'll be glad to answer them.

DEMOGRAPHICS:

1. AGE SEX

3. What was the last year of school you completed?

UNDER 8 GRADES	1		
SOME HIGH SCHOOL	2	B.S.(UNDERGRADUATE) DEGREE	7
HIGH SCHOOL GRADUATE	3	GRADUATE WORK	8
SOME COLLEGE	4	GRADUATE DEGREE	9

4. About how long have you lived in your community?

LESS THAN 1 YEAR	1
1 - 5 YEARS	2
6 - 10 YEARS	3
OVER 10 YEARS	4

B-INTERVIEW SCHEDULE - EMBEDDED FIGURES TEST

1. Embedded Figures Test (EFT)

Administer the EFT as outlined in the "Manual For The Embedded Figures Tests". The manual gives specific procedures for administration and scoring. The length of the test is between 15-45 minutes.

APPENDIX B.

PROBE SHEETS

SOME THINGS THAT PEOPLE LEARN Probesheet 1

Recreation

a sport or game, dancing, cards

Hobby

learning a new craft, collecting something, photography, musical instrument

Home Improvement

home repairs, woodworking, landscaping, gardening, car maintenance, decorating, plumbing

Job/Career

finding a job, choosing a career, professional or technical skills, new job responsibilities

Schooling

evening classes, tutoring, correspondence class, special training (CPR), helping with child's education, learning new language

National/International Affairs

following political campaigns, international events, federal legislation

Personal/Health

physical fitness, appearance, self-awareness, dealing with personal problem, spiritual growth, better nutrition

Social/Relationships

raising children, infant care, marriage, communication skills, friendship

Nature/Science

ecology, birds, conserving energy, computers, electronics

Financial

personal finances, insurance, investing, purchasing something, business management

Probesheet 2

HUMAN SOURCES OF HELP IN SELF-PLANNED LEARNING PROJECTS

SPOUSE OR PARTNER

NEIGHBOR

EXPERT WHO IS ALSO A FRIEND

FAMILY RELATIVE

PAID PROFESSIONAL

STORE CLERK

PRIVATE LESSONS

GROUP, DEMONSTRATION OR CLASS WITH INSTRUCTOR

STUDY GROUP WITH FRIENDS

PUBLIC SPEECH OR LECTURE

For example:

A NEIGHBOR tells you that you have a knack for sewing and you should learn how to make money through sewing.

A STORE CLERK helps you estimate the costs and problems in finishing the outdoor patio.

Your STUDY GROUP helps you decide the pros and cons of going back to work.

A LECTURE by a financial advisor helps you figure out the investment options that you were having trouble understanding.

Probesheet 3

NONHUMAN SOURCES OF HELP
IN SELF-PLANNED LEARNING PROJECTS

BOOKS

MAGAZINES

TELEVISION

NEWSPAPER

RECORDS OR TAPE RECORDINGS

EXHIBITS, MUSEUMS, FIELD TRIPS

PAMPHLET OR NEWSLETTER

CORRESPONDENCE COURSE

VIDEO TAPE SERIES

COMPUTER PROGRAM

For example:

A MAGAZINE gives you ideas on what people to see and material to gather in managing you money better.

A self-help BOOK helps you understand yourself better so you know what you need to learn.

A VIDEO TAPE convinces you that you can assemble a garage door opener yourself.

A CORRESPONDENCE COURSE gives you a step-by-step approach on how to learn Spanish.

APPENDIX C.

CHECKLISTS

SOURCES OF HELP IN SELF-PLANNED LEARNING Checklist 1

For each source of help, please state how important each source is by circling 1 through 5 to indicate the degree of importance.

Use the following scale as a guide.

1	2	3	4	5
not important	slightly important	somewhat important	quite important	very important

SPOUSE OR PARTNER	1	2	3	4	5
NEIGHBOR	1	2	3	4	5
FAMILY RELATIVE	1	2	3	4	5
EXPERT WHO IS ALSO A FRIEND	1	2	3	4	5
PAID PROFESSIONAL (doctor, realtor, counselor)	1	2	3	4	5
STORE CLERK (helper at place of business)	1	2	3	4	5
PRIVATE LESSONS (tutor,coach)	1	2	3	4	5
GROUP, DEMONSTRATION OR CLASS WITH INSTRUCTOR	1	2	3	4	5
STUDY GROUP WITH FRIENDS	1	2	3	4	5
PUBLIC SPEECH OR LECTURE	1	2	3	4	5

(OVER)

Checklist 1
(cont.)

1 not important	2 slightly important	3 somewhat important	4 quite important	5 very important

BOOKS	1	2	3	4	5
MAGAZINES	1	2	3	4	5
TELEVISION	1	2	3	4	5
NEWSPAPER	1	2	3	4	5
RECORDS OR TAPE RECORDINGS	1	2	3	4	5
EXHIBITS, MUSEUMS, FIELD TRIPS	1	2	3	4	5
PAMPHLET OR NEWSLETTERS	1	2	3	4	5
CORRESPONDENCE COURSE	1	2	3	4	5
VIDEO TAPE SERIES	1	2	3	4	5
COMPUTER PROGRAM	1	2	3	4	5

HUMAN ASSISTANCE DURING LEARNING Checklist 2

Following is a list of several kinds of help adults receive from human resources during their learning efforts.

Please circle the number that best indicates how important it is to you to receive this type of help from human sources during your learning efforts. Use the following scale as guide.

1	2	3	4	5
not important	slightly important	somewhat important	quite important	very important

Its important that I have human assistance in helping me:

Learn about my interests or skills that can lead to learning.	1	2	3	4	5
Estimate the costs, time and problems involved in the projects.	1	2	3	4	5
Deal with difficult or confusing parts of projects.	1	2	3	4	5
Consider the pros and cons of undertaking projects.	1	2	3	4	5
Find available resources, for example, people and materials with the information needed for projects.	1	2	3	4	5
Decide what to do next in learning projects.	1	2	3	4	5
Convince me that the projects are possible to accomplish.	1	2	3	4	5
Decide which is the best way to go about learning a project.	1	2	3	4	5
Receive encouragement or support to continue learning projects.	1	2	3	4	5
Understand myself or my lifestyle so I know what I need to learn.	1	2	3	4	5
Set the goals or "hoped-for-outcome" of learning projects.	1	2	3	4	5
Judge the outcome of learning projects.	1	2	3	4	5

NONHUMAN ASSISTANCE DURING LEARNING Checklist 3

Following is a list of several kinds of help adults receive from nonhuman resources during their learning efforts.

Please circle the number that best indicates how important it is to you to receive this type of help from nonhuman sources during your learning efforts. Use the following scale as guide.

1	2	3	4	5
not important	slightly important	somewhat important	quite important	very important

Its important to have nonhuman assistance in helping me:

Learn about my interests or skills that can lead to learning.	1	2	3	4	5
Estimate the costs, time and problems involved in projects.	1	2	3	4	5
Deal with difficult or confusing parts of projects.	1	2	3	4	5
Consider the pros and cons of undertaking projects.	1	2	3	4	5
Find available resources, for example, people and materials with the information needed for projects.	1	2	3	4	5
Decide what to do next in learning projects.	1	2	3	4	5
Convince me that the projects are possible to accomplish.	1	2	3	4	5
Decide which is the best way to go about learning a project.	1	2	3	4	5
Receive encouragement or support to continue learning projects.	1	2	3	4	5
Understand myself or my lifestyle so I know what I need to learn.	1	2	3	4	5
Set the goals or "hoped-for-outcome" of learning projects.	1	2	3	4	5
Judge the outcome of learning projects.	1	2	3	4	5

APPENDIX D.

DATA SHEET

Adult Learning
Data Sheet

Description	Col.	
Card number	1	__
Interview ID	2-3	____
Sex 1=male 2=female	4	__
Age Actual	5-6	____
Years of education 1=under 8 grades 2=some high school 3=high school graduate 4=some college 5=college graduate 6=graduate training 7=graduate degree	7	__
Years in community 1=less than 1 year 2=1 - 5 years 3=6 - 10 years 4=over 10 years	8	__
Field-dependence/independence score	9-13	_____
Q1 Degree of satisfaction 1 . . . . . 10 not satisfied extremely satisfied	14-15	____

Q2 Sources of help in self-planned learning

Coding for Q2a to Q2t:

1	2	3	4	5
not important	slightly	somewhat	quite	very important

how important is each source to your self-planned learning:

Q2a	spouse or partner	16	__
Q2b	neighbor	17	__
Q2c	family relative	18	__
Q2d	expert who is a friend	19	__
Q2e	paid professional	20	__
Q2f	store clerk	21	__
Q2g	private lessons	22	__
Q2h	group, demonstration or class	23	__
Q2i	study group	24	__
Q2j	public speech	25	__
Q2k	books	26	__
Q2l	magazines	27	__
Q2m	television	28	__
Q2n	newspaper	29	__
Q2o	records	30	__
Q2p	exhibits, museums	31	__
Q2q	pamphlets or newsletters	32	__
Q2r	correspondence course	33	__
Q2s	video tape	34	__
Q2t	computer program	35	__

Q3 Human assistance during self-planned learning.

Coding for Q3a to Q31:

1	2	3	4	5
not important	slightly	somewhat	quite	very important

Its important that I have human assistance in helping me:

Q3a	learn about my interests or skills that can lead to learning	36	__
Q3b	estimate the costs and problems involved in projects	37	__
Q3c	deal with difficult or confusing parts of projects	38	__
Q3d	consider the pros and cons of undertaking projects	39	__
Q3e	find available resources, for example, people and materials with information needed for projects	40	__
Q3f	decide what to do next in learning projects	41	__
Q3g	convince me that projects are possible to accomplish	42	__
Q3h	decide which is the best way to go about learning a project	43	__
Q3i	receive encouragement or support to continue learning projects	44	__
Q3j	understand myself or my lifestyle so I know what I need to learn	45	__
Q3k	set the goals or hoped-for-outcome of learning projects	46	__
Q31	judge the outcome of learning projects	47	__

Q4 Nonhuman assistance during self-planned learning

Coding for Q4a to Q4l:

1	2	3	4	5
not important	slightly	somewhat	quite	very important

Its important that I have nonhuman assistance in helping me:

(description of Q4 identical to Q3)

Q4a	48	—
Q4b	49	—
Q4c	50	—
Q4d	51	—
Q4e	52	—
Q4f	53	—
Q4g	54	—
Q4h	55	—
Q4i	56	—
Q4j	57	—
Q4k	58	—
Q4l	59	—
Number of learning projects	60-61	—

APPENDIX E.

CONSENT FORM AND

HUMAN SUBJECTS REVIEW

Consent Form

Purpose and procedure

This research is about adult learning. Everyone learns, but different people learn different things and in different ways. I am interested in interviewing you for about one and one-half hours to find out the things you have learned during the past year so that adult education programs might be better prepared to help adult learners of Iowa.

First, I will ask you several questions regarding your adult learning this past year. Then, I will ask you to complete three short checklists that look at the kinds of help you use in your learning. Finally, I will ask you to complete the Embedded Figures Test which will identify some of the ways you prefer to learn.

The information you give will be completely confidential. Your name will never be used in the study. Your participation is voluntary and you may decide to withdraw at any time. This project has been reviewed by Iowa State University's Committee on the Use of Human Subjects. If you have any questions as we go along, please feel free to ask at any time.

I have read the above statements and voluntarily agree to participate.

Name _____

Date _____

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

1. Title of project (please type): The Relationship Between Cognitive Style and Assistance to Adults in Self-Planned Learning

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.

Randy R. Weigel — 5/8/85 — Randy R. Weigel
Typed Named of Principal Investigator — Date — Signature of Principal Investigator

213 Child Development — 294-8754
Campus Address — Campus Telephone

3. Signatures of others (if any) — Date — Relationship to Principal Investigator

[signature] — 5/8/85 — 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

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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 5 Day 20 Year 85

Anticipated date for last contact with subjects: 7 15 85

7. If Applicable: Anticipated date on which audio or visual tapes will be erased and(or) identifiers will be removed from completed survey instruments: 9 (Month) 1 (Day) 85 (Year)

8. Signature of Head or Chairperson — Date — Department or Administrative Unit

[signature] — 5/11/85 —

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 — 5/16/85 — [signature]
Name of Committee Chairperson — Date — Signature of Committee Chairperson