A STUDY OF THE PATTERN OF LEARNING
STYLE CHARACTERISTICS FOR ADULT
DEPENDENT DECISION-MAKERS

by

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(ABSTRACT)

The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. Then, use those identified characteristics and their associated instructional/learning strategies to suggest instructional interventions for "Dependent" decision-makers.

One hundred and forty-four adult Community College students were used as subjects for this study. All subjects were enrolled in a career/life planning course, where measurement of their decision-making styles and learning style characteristics were obtained. Three instruments were used: (a) the Assessment of Career Decision Making (ACDM), (b) Productivity Environmental Preference Survey (PEPS), and, (c) Kolb's Learning-Style Inventory (LSI).

Each subject was identified as belonging to one of five decision-making style groups: (a) Rational, N=25; (b) Intuitive, N=30; (c) Dependent, N=31; (d) Combination, N=23; and, (e) Unclassified, N=35.
The "Dependent" decision-making group had a mean age of 33.42 years and was predominantly white (87%). Even though this group had more females (61.3%), this group was less dominated by females than the total sample (74.3%).

Using the raw scores from each of the twenty learning-style characteristic elements of the PEPS, a one-way analysis of the variance (ANOVA) was used in analyzing the data for the five decision-making groups. A significance level of .05 was selected for the ANOVA. The same procedure was used to analyze the raw scores for the four learning modes of Kolb's LSI. The Fisher's LSD multiple comparison test was run on all PEPS and LSI elements that were identified by the ANOVA as showing a significant difference between groups.

The summary of the PEPS data analysis indicated that four of the PEPS elements (Sound, Motivation, Persistent, and Responsible) are significantly lower for the "Dependent" decision-making group. None of the four LSI learning modes were shown to be significantly higher or lower for the "Dependent" decision-making group.

The results of the study suggest that any model of instructional/learning strategies designed for "Dependent" decision-makers should take into account the four PEPS elements of (a) Sound, (b) Motivation, (c) Persistent, and (d) Responsible. Instructional/learning strategies used to assist "Dependent" decision-makers should stress motivational factors such as a supportive learning environment. Special emphasis should be placed on ways to help "Dependent" decision-makers become more persistent and responsible about their own learning.
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CHAPTER I

INTRODUCTION

As a career counselor, this author is aware of the importance of decision-making skills for clients who are actively working on their own career planning/development concerns. Gambino and Super (1982) described the career decision-making process as an encounter with a series of complex decisions as one moves through life. If effective decision-making skills are important for the career planning/development process, then ways of improving or strengthening these skills are important elements of career counseling.

Career decision-making is like other decision-making processes in that skills are used to set goals, seek information, generate alternatives, etc. Smith (1979) saw decision-making as a learnable skill that could be taught as long as the learner is provided with a decision-making model. Others, such as Arroba (1977), suggested that the prerequisite to teaching decision-making skills was to identify different decision-making styles. Some researchers (Arroba, 1977; Harren, 1979) have investigated the idea that people have different decision-making styles. Harren (1980) identified three different decision-making styles: (a) Rational, (b) Intuitive, and (c) Dependent and he developed an instrument (ACDM) to measure and identify such styles.

Researchers have looked at the relationship between learning decision-making skills and different decision-making styles. Rubinton
(1980) found that "Rational" and "Intuitive" decision-makers learned decision-making skills effectively and that both styles responded to instruction if the instructional content matched their decision-making styles. The "Dependent" decision-maker was less effective and not amenable to instruction. The ineffectiveness of the "Dependent" decision-maker in learning decision-making skills was further documented by the research of Phillips, Pazienza and Walsh (1984).

It can be seen from this brief discussion of the relationship between learning decision-making skills and decision-making styles that no single instructional strategy works with all decision-making styles. Krumboltz (1979a) found in his research that the effect of training students in "Rational" decision making may not produce the expected results of increasing their knowledge of decision-making practices. In fact, students with "Intuitive" decision-making styles may make "worse" decisions after receiving training in "Rational" decision-making.

If no one instructional/learning strategy will work for all decision-making styles, then different instructional/learning strategies are needed to facilitate the improvement of decision-making skills. It is critical that interventions be developed to assist "Dependent" decision-makers (Rubinton, 1980). One way to develop effective instructional/learning strategies for "Dependent" decision-makers is to identify the preferred pattern of learning style characteristics of this group. Then, using the current literature on adult instructional/learning strategies, identify those strategies
associated with the learning style characteristics of "Dependent" decision-makers.

The preferred learning style characteristics of individuals make up an individual's "learning style." The concept of learning style is concerned with the cognitive, affective, and the physiological dimensions of behavior as it relates to learning. One of the most comprehensive definitions of learning style was given by Keefe (1982) who wrote that "learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p. 44).

The Problem

The teaching of career decision-making skills is an essential component of any effective career planning/development program (Baldwin, 1981). Instructional/learning strategies that seem effective across different decision-making styles has not been reported in the research literature. This is especially true of people with the "Dependent" decision-making style (Phillips et al., 1984; Rubinton, 1980).

One common theme found in the literature regarding learning styles was that matching or mismatching of learning style characteristics with instructional/learning strategies had an impact on learning (Gorham, 1986). Dunn (1982) reported twelve studies "corroborating that students learn more, more easily, and remember better when they are
taught through their preferred learning styles" (p. 143). Farr's (1970) study of college students concluded that students were able to predict their preferred learning modality and it was advantageous for students to learn and be tested in their preferred modality.

The problem is that instructional/learning strategies have not been identified which are effective for people who have different decision-making styles. This is especially true for people with a "Dependent" decision-making style (Phillips et al., 1984; Rubinton, 1980). So adult learners who are "Dependent" decision-makers may be helped by identifying instructional/learning strategies associated with their preferred learning style characteristics.

**Purpose Statement**

Brown (1984), Gambino and Super (1982) emphasized the importance of decision-making skills for adults involved in career planning/development. The literature (Krumboltz, 1979a; Phillips, Pazienza & Walsh, 1984) suggested that no one instructional/learning strategy is effective across different decision-making styles. Even though Rubinton (1980) found that "Rational" and "Intuitive" decision-makers responded to instructional content that was consistent with their styles, the "Dependent" decision-maker was not amenable to instruction. Rubinton's (1980) study did not take into account the learning characteristics of the learners. He also did not have an instructional content designed for the "Dependent" decision-maker.
It is important that instructional/learning strategies be developed that will help improve decision-making skills of adults, regardless of their individual decision-making styles. But the need is especially critical for people with a "Dependent" decision-making style (Phillips et al., 1984; Rubinton, 1980). The purpose of this study was to determine whether there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers; then to identify from a careful study of the current literature those instructional/learning strategies associated with those preferred learning style characteristics. The identified instructional/learning strategies could then be used in the future to design and implement more effective instructional or learning environments for "Dependent" decision-makers.

**Research Questions**

1. What are the preferred learning style characteristics associated with each of the adult decision-making styles?

2. Based on the identified preferred learning style characteristics for the "Dependent" decision-making group, what are the associated instructional/learning strategies identified in the literature on adult learning?

To strengthen this study, the following hypotheses were made before data was collected and analyzed. These hypotheses relate to
research question #2 and were based on Harren's description of a "Dependent" decision-maker.

1. Because of their denial of personal responsibilities, "Dependent" decision-makers will have a preference for "Authority-oriented learning" and take less "Responsibility" for their own learning.

2. Because of their high need for social approval, "Dependent" decision-makers will have a preference for "Peer Oriented" learning.

3. Because of their need for social approval and reliance on others, the "Dependent" decision-makers will be identified as having an "Accommodator" learning style as defined by Kolb (1985).

In order to answer the research questions and check the results of the hypotheses, the following six tasks were completed.

1. Reviewed the literature as it related to the following constructs:
   o Decision-making styles
   o Learning style characteristics
   o Current instructional/learning strategies for adults.

3. Measured learning style characteristics of subjects by using the Productivity Environmental Preference Survey (PEPS) and Kolb's Learning Style Inventory (LSI).

4. Identified preferred learning style characteristics for the different decision-making styles.

5. Identified from the literature instructional/learning strategies associated with each of the learning style characteristics.

6. Matched instructional/learning strategies associated with the preferred learning style characteristics of the "Dependent" decision-making group.

Background

This study focuses on the constructs of decision-making and learning styles. These constructs are relatively new concepts that have developed from a long history of research dealing with psychological types. The American psychologist, philosopher, and educator William James wrote, in 1890, how people can come to the same
conclusion by using different processes (cited in Guild & Garger, 1985). Early in this century Carl Jung (cited in McCarthy, 1980) wrote extensively about people's behavior patterns and their psychological types. Herman A. Witkin's work, from the late 1940s to the late 1970s, dealt with people's different perceptual tendencies and cognitive styles (Witkin & Goodenough, 1981). More recent theory and research using the Myers-Briggs Type Indicator (Keirsey & Bates, 1978; Myers, 1980) and characteristics of learning styles (Keefe, 1982) have demonstrated the continuing development of the construct of psychological type.

**Assumptions**

This study assumed that adults have different decision-making styles which can be identified and measured. The assessment instrument used was Harren's Assessment of Career Decision Making-ACDM (Buck & Daniels, 1985). This study also assumed that adults have different learning style characteristics which can be identified and measured. The assessment instruments used were the Productivity Environmental Preference Survey (PEPS) (Dunn, Dunn & Price, 1986) and Kolb's Learning Style Inventory (LSI) (Kolb, 1985).

**Limitations**

The sample used in this study was limited to students enrolled in a Career Planning course at the Alexandria Campus of Northern Virginia
Community College (NOVA). NOVA is a five campus community college located in the metropolitan area of Washington, D.C. The Alexandria Campus enrolled over ten thousand students in the fall quarter of 1987. The median age of students at the Alexandria Campus was 28.1 years. The demographic characteristics of the sample of students used in this study are described in Chapter IV. The results of this study should only be generalized to populations with similar demographics.

Definitions

In the context of this study, the following definitions apply:

Decision-making Styles: In this study, the decision-making styles of Harren (1979, 1980) are used; "Style refers to the individual's characteristic mode of perceiving and responding to decision-making tasks, or the manner in which the person goes about making decisions" (Harren, 1979, p. 124). The three styles described by Harren were "Rational," "Intuitive," and "Dependent." The most current version of the ACDM includes a fourth style identified as "Combination" (Buck & Daniels, 1985).

So, the four decision-making styles used in this study are defined as: (a) "Rational" - people who make decisions deliberately and logically; (b) "Intuitive" - people who are concerned with present feelings and emotional satisfaction; (c) "Dependent" - people who base their decisions on the expectations and opinions of others; and, (d) "Combination" - people that use a combination of "Intuitive" and
"Dependent" decision-making styles (Buck & Daniels, 1985). The decision-making style of subjects were measured by the Assessment of Career Decision Making - ACDM (Buck & Daniels, 1985). The ACDM is described in Chapter III.

**Learning Style Characteristics:** In this study, learning style characteristics are defined as characteristics of individuals and their environment that are utilized during the learning process. A learner's preference for the "visual" sensory mode over the "auditory" sensory mode is an example of a preferred learning style characteristic for that learner. There does not seem to be agreement within the literature of the number, or importance of individual learning style characteristics (Dunn & Debello, 1981) nor does the literature reflect any agreement on the definition of "learning styles" (Bonham, 1988a). This study used the learning style characteristics measured by the PEPS (Dunn, Dunn, & Price, 1986); and, Kolb's (1985) LSI. The rationale for using these instruments and their learning style characteristics are described in Chapter III.

**Instructional/learning strategies:** In this study, instructional/learning strategies are techniques or tactics used by teachers or learners to facilitate the learning process in a specific learning situation (Conti & Welborn, 1986). Cornett (1983) gives examples of instructional/learning strategies that are useful for a variety of learning styles. She lists techniques as structured overviews,
advanced organizers, brainstorming, fantasy journeys, etc. Other instructional/learning strategies would be to present information to the learner through the learner's preferred sensing modality (oral, visual, touch) (Guild & Garger, 1985). An example of adult instructional/learning strategies would be to suggest to a learner with preference for the visual sensory mode to take "patterned" or "diagrammed" notes in class (Buzan, 1976).

Career planning/development: In this study, the term career planning/development is used to define processes and factors that interact to influence different career decisions as people progress through life. The term "career" is more contemporary than older terms such as "vocational" or "occupational." The word "planning" is used to define the decision-making process. "Development" is used to give a life span parameter to the concept of "career planning/development." A number of words are used in the literature to modify the words career, vocational or occupational. The modifiers are usually used after the word career, vocational or occupational (C/V/O) and are used for content focus. The following list is an example of C/V/O modifiers found in the literature.

- C/V/O adjustment
- C/V/O behavior
- C/V/O choice
- C/V/O decisions
- C/V/O decision-making
- C/V/O decision-making process
- C/V/O guidance
- C/V/O psychology
The concept of career planning/development used in this study is broad enough to cover most aspects of career, vocational or occupational counseling.

Need For The Study

The U.S. Government has emphasized the development of decision-making skills by including them in the ten general employability/adaptability/promotability skills identified by the U.S. Department of Education (Gambino & Super, 1982). The teaching of career decision-making skills has been seen as an essential component of any effective career planning/development program (Baldwin, 1981; Hazler & Roberts, 1984).

Research to date has not identified instructional strategies that are effective across the different decision-making styles (Phillips et al., 1984; Rubinton, 1980). Rubinton (1980) suggests that research be carried out to find an effective intervention for the "Dependent" decision-maker.

Organization Of The Study

This chapter has outlined the background material to support the need for a study to identify the variety of learning style characteristics associated with adults who are "Dependent" decision-makers.
Chapter II has a complete and comprehensive review of the literature dealing with the major constructs of (a) decision-making styles, (b) learning style characteristics, and (c) current instructional/learning strategies for adults. Chapter III describes the design and methodology for this study. Included in Chapter III is information on the sample population, instruments used, data collection and analysis procedures.

Chapter IV presents detailed findings of this study by detailing the answer to each of the research questions. Chapter V presents the conclusions, discussion, and recommendations.
CHAPTER II

LITERATURE REVIEW

This chapter contains a review of the literature dealing with the major constructs of (a) decision-making styles, (b) learning style characteristics, and (c) current instructional/learning strategies for adults. This review also indicates research information related to the major constructs of this study.

Decision-Making Styles

The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. The "Dependent" decision-maker is one of the decision-making styles identified by Harren (1979) in his model of career decision-making. This section reviews the theoretical background of decision-making theory and theories of career decision-making. Several models of career decision-making are reviewed plus decision-making styles. Research related to decision-making styles is also documented.

Theoretical Overview

Gelatt (1962) pointed out that much of the early work on decision-making theory was formulated in the fields of economics and mathematics. Edwards (1961) reviewed the psychological and economic
theories of decision-making and indicated that in the early fifties there was little written about how personality variables might influence the decision-making process.

In the early 1960's, Gelatt (1962) suggested that because of a lack of theoretical framework for secondary school counseling, a framework of "decision-making" theory should be implemented for school counseling. Hilton (1962) was one of the early writers who tried to summarize some of the theoretical models dealing with career decision-making. Decision-making theory has had a diverse influence as it relates to career decision-making models.

**Career Decision-Making Models**

Theories related to career decision-making and career development can be traced to the beginning of the twentieth century. Crites (1981) cited the publication in 1909 of Frank Parsons' *Choosing a Vocation*, as one of the major events in the genesis of the career planning/development field. Wrenn (1984) reviewed the evolution of the career planning/development field from the early 1900's until 1983, with special emphasis on the development of the National Vocational Guidance Association (NVGA), now known as the National Career Development Association (NCDA). The history and heritage associated with NVGA/NCDA was highlighted in a special diamond anniversary issue of *The Career Development Quarterly* (Jepsen, 1988). Brown and Brooks (1984) wrote about the origins and evolution of career planning/development theory. They pointed out how the career planning/development needs of society
have changed over the years and the resulting need for a sound theoretical framework for career planning/development.

Over the years there have been a number of theories promoted in the field of career planning/development. Such writers as Brown, Brooks and Associates (1984), Crites (1981) and Osipow (1983) have reviewed, summarized and synthesized the many theories or models relating to career planning/development. These writers did not always agree on how to categorize the different theories or models. Osipow (1983) used four major categories of (a) personality approaches, (b) trait-oriented approaches, (c) developmental theories, and (d) social systems. Crites (1981) used similar categories but included client-centered as one of his categories. Brown, Brooks and Associates (1984) included nine different theoretical models in their book. Osipow (1983) listed a summary comparison of twelve different theories or subtheories.

Not only are there a number of current theoretical models for career planning/development but the part that "decision-making" has played in each model also varies. Jepsen and Dilley (1974) reviewed eight different career decision-making models and compared the models against psychological decision-making theories. They found a significant overlap between the steps in most of the models even though the theoretical assumptions varied. The career decision-making models seemed more complementary than competitive. Jepsen and Dilley (1974) divided the models that they reviewed into two groups. The "descriptive" group were models that had as their focus how people
generally make career decisions. The "prescriptive" group were models that focused on helping people make better career decisions.

A comprehensive review of career/development models was not undertaken for this study. Rather, four career planning/development models were chosen for review because of their emphasis on the career decision-making procedure or their relationship to Harren's model of career decision-making and the instrumentation which he developed to measure it. These four models are those developed by Krumboltz, Katz, Tiedeman and O'Hara, and Harren.

Krumboltz's Social Learning Theory of Career Decision Making (1979b) was reviewed because it is a comprehensive model that takes into account a large number of factors including decision-making skills. The Katz (1963) model was included as an example of Jepsen and Dilley's (1974) "prescriptive" type model. The Tiedeman and O'Hara model (1963) was reviewed because the Harren (1979) model was founded on the work of Tiedeman and O'Hara. Also, the Tiedeman and O'Hara model is a good example of Jepsen and Dilley's (1974) "descriptive" type models. The Harren model was included because this study used Harren's (1979) construct of "decision-making styles."

Review of Career Decision-Making Models

Krumboltz's Social Learning Theory of Career Decision Making

Krumboltz's (1979b) model "identifies the interactions of genetic factors, environmental conditions, learning experience, cognitive and emotional responses and performance skills that produce movement along
one career path or another" (p. 19). The combinations of different factors interact in ways to produce unique career decision patterns.

Krumholtz (1979b) saw four major categories or factors that influence the decision-maker and the career decision-making process. The four categories of influences are listed below:

1. **Genetic Endowment and Special Abilities:**
   These factors would include such things as race and gender plus physical and psychological characteristics.

2. **Environmental Conditions and Events:**
   These factors would include such things as number and nature of job or training opportunities, educational opportunities, and one's family/social environment.

3. **Learning Experiences:**
   These would include all the formal and informal learning experiences one has experienced in his/her life.

4. **Task Approach Skills:**
   Task approach skills would be all the skills that one has developed by the interaction between the genetic factors, environmental influences, and one's learning experience. These task approach skills are used to solve problems. Task
approach skills are defined in relation to decision-making as:

the abilities of (1) recognizing an important decision situation, (2) defining the decision or task manageably and realistically, (3) examining and accurately assessing self-observations and world-view generalizations, (4) generating a wide variety of alternatives, (5) gathering needed information about the alternatives, (6) determining which information sources are most reliable, accurate, and relevant, and (7) planning and carrying out the above sequence of decision-making behaviors (Mitchell & Krumboltz, 1984, p. 250).

Thoresen and Ewart (1976) suggested that one of the advantages of a social learning theory is that the theory allows one to look at ways people develop their self-attitudes and behaviors. It looks at a number of factors that influence how attitudes and behaviors are acquired, supported, and/or changed.

**Katz's Career Decision-Making Model**

Katz's (1963, 1966) model is a good example of what Jepsen and Dilley (1974) called a "prescriptive" model where the focus is on trying to help people make better career decisions. The model that Katz (1963, 1966) used differs from others in that Katz stressed the identification of values. Katz (1981) wrote that "values serve as a major synthesizing element in an individual's self-concept and a dynamic force in decision making" (p. 5). Katz's (1966) model attempts to combine three systems of values, information and prediction with the initial step being the identification of one's values.
Katz's (1979) emphasis on the use of identifying values can be seen in his computer-based career decision-making package called System of Interactive Guidance and Information or SIGI for short. Katz (1979) also stressed the need for the decision-maker to make decisions freely and that freedom comes from developing skills in the decision-making process. The decision-maker needs, (a) to know what information is wanted, (b) how to get the wanted information, and (c) how to use the information received.

Tiedeman and O'Hara's Career Decision-Making Model

The Tiedeman and O'Hara (1963) model is a good example of what Jepsen and Dilly (1974) called a "descriptive" model where the focus is on describing how people generally make career decisions. The work of Tiedeman and O'Hara (1963) was used by Harren (1979) in the development of his model of career decision-making.

The career decision-making model of Tiedeman and O'Hara (1963) can be seen as a developmental model of differentiation and integration of one's ego identity. As described by Tiedeman and O'Hara (1963), the start of the process of differentiation is the awareness of a problem, or the awareness by an individual that his or her present situation is not satisfactory. This leads to the stage of anticipation or pre-occupation with substages of exploration, crystallization, choice and clarification. The stage of anticipation is followed by the stage of implementation with substages of induction, reformation and integration.
The Tiedeman and O'Hara model can be viewed as the development of a life process of growth and choices that develop through a number of stages. Tiedeman and O'Hara did not see their model as working in lockstep method through the different stages but as a process of ego identity. The decision-maker moves forward and backward through the decision-making process as the decision-maker experiences his or her life situation (Tiedeman and Miller-Tiedeman, 1984). Table 2.1 is a summary of the Tiedeman and O'Hara model.

Other theorists such as Harren (1979) and Crites (1981) have relied on the work of Tiedeman and O'Hara. Crites (1981) suggested that a special application of his model of Comprehensive Career Counseling designed for higher education might use a process of narrowing one's range of career options. A student's development through a four-year college experience might progress through the Tiedeman and O'Hara stages of exploration, crystallization, specification and implementation. The stages would be accelerated for students in a two-year college or students who do not choose a post secondary education.

Gerstein (1982) also used the conceptual framework of Tiedeman and O'Hara (1963) to develop a model for organizing career counseling strategies and techniques to meet client's needs at different stages. At the "anticipation" state a client might use interest inventories for personal exploration, while a client at the "implementation" stage might attend a workshop that focuses on job search skills (Gerstein, 1982).
Table 2.1

Summary Of Tiedeman & O'Hara Model

<table>
<thead>
<tr>
<th>STAGES</th>
<th>SUBSTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipation or Preocc.</td>
<td>Exploration:</td>
</tr>
<tr>
<td></td>
<td>Crystallization:</td>
</tr>
<tr>
<td></td>
<td>Choice:</td>
</tr>
<tr>
<td></td>
<td>Clarification:</td>
</tr>
<tr>
<td>Implementation or Acc.</td>
<td>Induction:</td>
</tr>
<tr>
<td></td>
<td>Reformation:</td>
</tr>
<tr>
<td></td>
<td>Integration</td>
</tr>
</tbody>
</table>

Source: Tiedeman and O'Hara, 1963
Harren's Career Decision-Making Model

Harren's (1979) career decision-making model is comprehensive. It assumes "that progress through the stages of the decision-making process depends upon the characteristics of the decision maker, the type of decision involved, and the decision-making context" (p. 128). Harren (1979) cited the influence of the work of Tiedeman and O'Hara (1963), and the decision-making theory of Janis and Mann (1977) on his model.

Harren (1979) wrote that "a decision-making model is a description of a psychological process in which one organizes information, deliberates among alternatives, and makes a commitment to a course of action" (p. 119). Harren (1979) differentiated between career decision-making models and career development models. The latter is concerned with the characteristics and the developmental tasks of individuals as they move through life stages.

Harren's (1979) career decision-making model consists of four major parameters: (a) the decision-making process, which includes awareness, planning, commitment, and implementation; (b) the characteristics of the decision-maker, which includes self-concept and decision-making style; (c) the environmental tasks; and, (d) decision-making conditions which include task and context conditions. Table 2.2 presents a summary of the major parameters of Harren's model.

Harren's (1966) career decision-making model was developed while investigating the career decision-making process set forth by Tiedeman
Table 2.2

Summary of Harren's Model of Career Decision-Making

<table>
<thead>
<tr>
<th>The Decision Making Process:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Appraisal of self-in-situation</td>
</tr>
<tr>
<td>Planning</td>
<td>Exploration-crystallization</td>
</tr>
<tr>
<td>Commitment</td>
<td>Integration of self-concept system; bolstering; action planning</td>
</tr>
<tr>
<td>Implementation</td>
<td>Success and satisfaction outcomes; Conformity-Autonomy-Interdependence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Characteristics of the Decision-maker:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Concept:</td>
<td></td>
</tr>
<tr>
<td>Identity</td>
<td>Degree of differentiation and integration</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>Evaluative aspect: level of satisfaction with self and degree of self-confidence</td>
</tr>
<tr>
<td>Decision Making Style:</td>
<td></td>
</tr>
<tr>
<td>Rational</td>
<td>Objective deliberation and self-appraisal</td>
</tr>
<tr>
<td>Intuitive</td>
<td>Emotional self-awareness and fantasy</td>
</tr>
<tr>
<td>Dependent</td>
<td>Denial of responsibility; projected to others; perception of restricted options</td>
</tr>
</tbody>
</table>

(continued)
Table 2.2 (Continued)

**Summary of Harren's Model of Career Decision-Making**

<table>
<thead>
<tr>
<th>Developmental Tasks:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autonomy</strong></td>
<td>Limited need for emotional support; instrumentality; cooperative interdependence</td>
</tr>
<tr>
<td><strong>Interpersonal Maturity</strong></td>
<td>Tolerance; interpersonal trust; intimacy</td>
</tr>
<tr>
<td><strong>Sense of Purpose</strong></td>
<td>Adjustment to college; educational, career, and lifestyle planning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decision Making Condition:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpersonal Evaluations</strong></td>
<td>Positive and negative feedback from others</td>
</tr>
<tr>
<td><strong>Psychological State</strong></td>
<td>Level of state anxiety in decision maker; avoidance behaviors under high anxiety</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task Conditions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immanence</strong></td>
<td>Amount of time available before implementation</td>
</tr>
<tr>
<td><strong>Alternatives</strong></td>
<td>Number of available different courses of action</td>
</tr>
<tr>
<td><strong>Consequences</strong></td>
<td>Positive and negative effects on self and others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Context Conditions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mutuality</strong></td>
<td>A significant other must co-decide</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>Emotional and financial support from others</td>
</tr>
<tr>
<td><strong>Probability</strong></td>
<td>Decision by others necessary for implementation</td>
</tr>
</tbody>
</table>

Harren (1979)
and O'Hara (1963). He investigated the stages of Exploration, Crystallization, Choice and Clarification. A Q-sort instrument was used in his research; that instrument eventually was developed into the Harren's Assessment of Career Decision-Making (ACDM) (Buck & Daniels, 1985). The development of the ACDM is detailed in Chapter III.

Harren's (1979) concept of decision-making styles was a major construct of this study. According to Harren (1979), decision-making style refers "to the individual's characteristic mode of perceiving and responding to decision-making tasks, or the manner in which the person goes about making decisions" (p. 124). Harren's (1979) three decision-making styles are summarized in Table 2.3.

Research on Decision-Making Styles

A number of researchers have investigated the concept that people have and use different decision-making styles (Arroba, 1977; Harren, 1979). Arroba (1977) studied 64 men and women of varying ages and identified the following decision-making styles: (1) compliant, (2) no thought, (3) emotional, (4) intuitive, (5) logical decisive, and (6) logical hesitant. Her major finding was that any given person may use a different decision-making style for different situations.

Using the Harren (1979) model of decision-making styles, researchers have looked at the relationship between sex role self-concept and decision-making styles (Moreland, Harren, Krimsky-Montague, & Tinsley, 1979). This study used a sample of college undergraduates
Table 2.3

Harren’s Decision-Making Styles

**Rational.** This style is characterized by the ability to recognize the consequences of earlier decisions for later decisions. It requires an extended time perspective in which several sequential decisions are viewed as a means-end chain. The individual anticipates the need to make decisions in the future and prepares for them by seeking information about self and the anticipated situation. The individual’s decisions are carried through deliberately and logically. They are effective to the degree that accurate information about the situation is acquired and the individual’s self-appraisal is realistic. This style represents the ideal of the self-actualizing decision maker; one who is the architect of one’s own future as one lives it.

**Intuitive.** As in the rational style, the intuitive decision maker accepts responsibility for decision making. The intuitive style, however, involves little anticipation of the future, information-seeking behavior, or logical weighing of factors. Rather, it is characterized by the use of fantasy, attention to present feelings, and an emotional self-awareness as the basis for decision making. Commitment to a course of action is reached relatively quickly, and its basic “rightness” is felt internally. Often the individual cannot state explicitly how he or she decided. This style is less likely to result in effective decision making than the rational style, due to fluctuations over time in the individual’s internal state and to limited capacity to accurately represent an unfamiliar situation in fantasy.

**Dependent.** Unlike the rational and intuitive styles, the dependent style is characterized by a denial of personal responsibility for decision making and a projection of that responsibility outside of self. The individual is heavily influenced by the expectations and desires authorities and peers have of him or her. One tends to be passive and compliant, to have a high need for social approval and to perceive the environment as providing restricted or limited options. While this style may reduce the immediate anxiety associated with decision making, it is likely to ultimately result in lack of fulfillment or personal satisfaction.

Harren (1979)
and found that both female and male freshmen scored higher on the rational decision-making style scale than did senior students. This study suggested that nonvocational or emotional factors might play an increasing part in the decision-making processes as students advance through college.

Harren, Kass, Tinsley and Moreland (1978) investigated the relationship between gender, cognitive styles, sex role attitudes and decision-making styles. They found that the rational style of decision-making was more effective while the intuitive and dependent styles were inversely related to decision-making progress.

The Harren (1979) model of decision-making styles has also been used to investigate the effects of a college career education course on career maturity of students with various decision-making styles (Baldwin, 1981). Harren's (1979) model was used as an element to examine the impact of employee career development workshops (Chapin, 1984).

Learning Style Characteristics

The learning style characteristics of adults was also a major construct for this study. A purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. This section reviews the theoretical background of learning style characteristics and how different researchers have categorized learning style characteristics.
Research related to adult learning style characteristics is also reviewed.

Theoretical Overview

Rita and Kenneth Dunn were early researchers investigating learning characteristics of students and how these characteristics made a difference for the learner (Dunn & Dunn, 1978). The Dunn's are given credit for first using the term "learning styles" (Fizzell, 1984). Learning styles have been defined differently by researchers. Smith (1982) described learning style as the "acquired preferred patterns of perceiving, remembering, thinking, and problem solving" (p. 61). Keefe (1982) wrote that "learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p. 49). James and Galbraith (1985) suggested that learning styles may include modalities of perception, cognition, emotion and social factors with a number of elements or subunits associated with each modality. Claxton and Murrell (1987) suggested that learners' preferences might be viewed at "four levels; personality, information processing, social interaction, and instructional methods" (p. 77). Although the above writers seem to be confident in their own definition of "learning style," the literature does not reflect any agreement on the definition (Bonham, 1988a). It does seem clear that an individual's learning style is made up of a number of personality and environmental characteristics.
Dunn and Debello (1981) compared the learning style research of eight different researchers. Although different researchers define learning styles differently and use different instruments to measure learning styles, the concept of individual learning styles is important in "understanding how students learn" (Dunn & Debello, 1981, p. 374).

**Categorizing Learning Style Characteristics**

It is helpful to look at the different ways that researchers distinguish characteristics related to learning styles. Some writers identified the three major categories of learning style characteristics as cognitive, affective, and physiological (Cornett, 1983; Keefe, 1982). Price, Dunn and Dunn (1982) identified four major categories with four to six elements in each category for a total of twenty characteristics affecting learning style. Keefe (1979) reviewed some thirty-two cognitive, affective and physiological learning styles and suggested that his list was just tentative.

Figure 1 is the author's attempt to develop a conceptual model of six major categories of learning style characteristics and the elements associated with each category. The conceptual model of one's unique pattern of learning style characteristics includes, but is not limited to the categories of perceptual preference, physical environment needs, social environment preference, cognitive style, time of day, and motivation/values. These six categories of learning style characteristics are similar to the ones used by Price, Dunn and Dunn (1982). Price, Dunn and Dunn did not use a category related to
One's Unique Learning Style Characteristics

**Categories of Learning Style Characteristics**

- **Perceptual Preference**
  - Visual
  - Auditory
  - Tactile

- **Physical Environment Needs**
  - Light
  - Sound
  - Temperature
  - Design

- **Motivation and Values**
  - Values
  - Motivation
  - Responsible

- **Time of Day**
  - Morning
  - Afternoon
  - Evening

- **Social Environment Preference**
  - Like to Learn:
    - Alone
    - Peer (pair)
    - Team/Group
    - Varied

- **Cognitive Styles**
  - Witkin's Field-Independent versus Field-Dependent
    Aspect of Cognitive Style
  - Kolb's Concrete Experience versus Abstract Conceptualization
    and Active Experimentation versus Reflective Observation
  - Hill's Modalities of Inference

**Figure 1**

Categories of Learning Style Characteristics
"cognitive styles." They also placed "perceptual preference" under the category of "physical needs" while this author sees the category of "perceptual preference" as a unique category in itself. Hill (1976) also identified similar characteristics in his model of "cognitive mapping." The following is a review of each of the six categories and the literature associated with each.

**Perceptual Preference**

The category of "perceptual preferences" refers to the sensory modes used by learners and generally fall into three areas: visual, auditory, and kinesthetic (Doyle & Rutherford, 1984). James and Galbraith (1985) used the term "tactile" to describe learners who preferred the sense of touch (hands) and "kinesthetic" to describe learners who preferred to use their whole body in the learning process. Price, Dunn and Dunn (1982) placed the perceptual preferences of learners under the category of physical need and used both "tactile" and "kinesthetic" as elements.

**Physical Environment Needs**

The category of "physical environment needs" would include physical environmental elements such as light, sound, temperature and the physical design of the classroom or place where one studies (Dunn & Dunn, 1978).
Social Environment Preference

The category of "social environment preference" includes the learner's relationship and interaction with others while learning. Dunn and Dunn (1978) wrote that "Students learn in a variety of sociological patterns that include working alone, with one or two friends, with a small group or as part of a team, with adults, or, for some, in any variation thereof" (p. 12).

Cognitive Styles

The category of "cognitive style" can be confusing because the terms learning style and cognitive style are sometimes used interchangeably in the literature. Price and Griggs (1985) wrote that "learning style refers to how a person prefers to learn, while cognitive style refers to how the brain processes information" (p. 6). As with the construct of learning style, the concept of cognitive styles have been defined differently by researchers. Claxton and Ralston (1978) listed eleven different models of cognitive styles.

The concept of cognitive style is seen in this study as just one of the categories of learning style characteristics. The characteristics of thinking patterns or cognitive modalities can be seen in the work of Herman Witkin, Joseph Hill and David Kolb. Herman Witkin has long been associated with research dealing with the concept of field-dependent versus field-independent cognitive styles (Witkin & Goodenough, 1981). The field-dependent and field-independent model of Witkin is probably the most widely known and researched of the
cognitive style models. Oltman (1982) described field-dependent and field-independent as contrasting ways of processing information. The field-independent person "tends to use internal sources of information in perception and problem solving, while relatively field-dependent people tend to refer more to external sources of information" (p. 58).

Another example of a model or concept of cognitive style can be seen in the work of Joseph Hill (1976). Hill's model contains twenty-seven different variables or learning style characteristics. These variables are identified under the three major headings of: (a) symbols and their meanings, (b) cultural determinants, and (c) modes of inference (Strother, 1982). Hill's (1976) modes of inference are really modes of "cognitive styles" and included reasoning processes that Hill called (a) Magnitude, (b) Differences, and (c) Relationship.

Kolb's theory of experiential learning and learning styles is another model of cognitive style. The model was founded on the early work of Dewey who emphasized the experiential aspect of learning and Lewin who emphasized the importance of the learning being active in the learning process (cited in Claxton & Murrell, 1987). Kolb's model of cognitive styles rests on the concept that learners use four different learning modes: (a) concrete experience (CE) or feeling; (b) reflective observation (RO) or watching; (c) abstract conceptualization (AC) or thinking; and, (d) active experimentation (AE) or doing.

As Figure 2 shows, Kolb's (1976) experiential learning model consists of a four-stage learning cycle. The learner is involved in an immediate "concrete experience" that is used as a basis for "reflective
(1) Concrete Experience (CE) (Feeling)
(2) Reflective Observation (RO) (Watching)
(3) Abstract Conceptualization (AC) (Thinking)
(4) Active Experimentation (AE) (Doing)

Adapted from Kolb, 1976

Figure 2
Kolb’s Experiential Learning Model
observations." From the reflective observations the learner may draw logical conclusions and develop theoretical constructs (abstract conceptualization). The theoretical constructs and conclusions can then be tested through "active experimentation" which may then lead to more "concrete experiences" (Kolb, 1976).

Kolb (1976) used the experiential learning model to develop a learning style inventory (LSI) which gives the learner a way to measure his or her learning style. The LSI can identify four learning styles which are called: (a) converger, (b) diverger, (c) assimilator, and (d) accommodator. Kolb's cognitive style mode is used to identify cognitive styles of the participants in this study. Kolb's four learning styles are described in more detail in Chapter III.

The concept of cognitive styles can also be found in the literature dealing with the field of cognitive/educational psychology but the concept in that field stresses a more physiological conceptualization (Miller, 1987).

Time of Day Preference

The category of "time of day" refers to the concept that learners work or learn better at different times of day. Price, Dunn & Dunn's (1982) three elements of "time of day" are; evening/morning, late morning and afternoon.
Motivation and Values

The category of "motivation and values" is another category that was defined differently by researchers. Guild and Garger (1985) wrote about the affective domain of styles and stated that "differences in motivation, judgments, values, and emotional responses also characterize individual style" (p. 8). Price, Dunn and Dunn (1982) listed the following elements as part of their emotionality category; (a) motivation, (b) responsibility, (c) persistence, and, (d) need for structure.

Summary of Learning Style Characteristics

The six major categories of learning style characteristics cover much of what was described in the literature on learning styles. The concept of learning style characteristics is relatively new. Curry (1983) wrote that "learning style researchers have not yet unequivocally established the reality or utility of the concept" (p. 6). One concern was that different writers and researchers use the word "style" to mean different things. This difference was most evident between the concepts of "cognitive styles" and "learning styles."

Not only is there a wide variation in how researchers define learning style characteristics but there is also a wide variety of learning style assessment instruments. Freeley (1983) identified fourteen different learning style assessment instruments. Curry (1983) reviewed 21 models of learning style for psychometric
acceptability and found only 10 instruments that he thought could seriously be considered for use. Appendix A lists some of the available learning style instruments.

Research on Learning Style Characteristics

Kolb's experiential learning model has been used to structure career/self exploration (Atkinson & Murrell, 1988); look at learning styles versus college course selection (Holtzclaw, 1985); suggest guidelines for liberal arts education (Fry & Kolb, 1979); personalize the learning process (Kolb & Lewis, 1986); and, as a theory to guide effective teaching (Murrell & Claxton, 1987). Kolb's model has also been used to look at how age or prior experience might influence learning style (Dorsey & Pierson, 1984); learning style preferences related to math anxiety (Hinkle, 1986); and, the interaction of learning style and learning environment (Korhonen & McCall, 1986). A study of County Extension Agents (Pigg, Busch & Lacy, 1980) found that the agents had a variety of Kolb's learning styles but forty-four percent had the "Accommodator" style as was predicted by the researchers.

Farr's (1970) study of college students concluded that students were able to predict their preferred learning modality and it was advantageous for students to learn and be tested in their preferred modality.

Price, Dunn and Dunn (1982) summarized the research using the PEPS which included looking at differences between: (a) young adults and the aged, (b) right- and left-handed individuals, (c) graduate students
and their cumulative GPA, (d) undergraduates and their cumulative GPA, and other research. Much of the research completed or currently being conducted using the PEPS is being reported through the Learning Style Network's newsletter. The Learning Style Network is located at St. John's University, Jamaica, New York, and is co-sponsored by the National Association of Secondary School Principals.

**Adult Instructional/learning Strategies**

This study looks at the preferred learning style characteristics for adult "dependent" decision-makers. Once preferred learning style characteristics are identified then instructional/learning strategies associated with these characteristics can be reviewed. This section reviews the current literature for information on adult instructional/learning strategies associated with the adult learning style characteristics defined in this study.

In this study, adult instructional/learning strategies are those well-defined, specific techniques and tactics used by teachers or learners to facilitate the learning process (Miller, Alway & McKinley, 1987). This review includes the most current material in the literature base which focuses on adult instructional/learning strategies.

**Literature Overview: Adult Learning**

The literature base dealing with the construct of adult learning is massive in its breadth and depth but has been delineated for this
study. A researcher might focus on such concepts as adult learning
theories or models, the concept of lifelong learning, adult education
or training, need and outcome assessments, program design and
administration, learning style characteristics, plus many more.

Merriam (1987) suggested that as of now there probably is not a
universally accepted explanation of how adults learn, specifically as
that learning relates to other populations, types of learning, etc..
This review does not try to address the topic of adult learning theory
or models as so many writers have already addressed (Cross, 1981; Kidd,
nevertheless see the relationship between the learning style
characteristics in this study and some models of adult learning. For
example, the Characteristics of Adults as Learners (CAL Model) by Cross
(1981) used a framework of personal characteristics and situational
characteristics of the adult learner. Some of the psychological,
sociocultural and physiological factors defined by Cross (1981) are
the same learning style characteristics defined in this study. Knox
(1986) suggested that knowledge about learning style characteristics
could be "useful in recognizing and selecting conditions under which
adults with various characteristics are likely to learn effectively"
(p. 26).

This review does not try to look at such adult learning concepts
as "lifelong learning" (Cross, 1981), self-directed learning (Knowles,
1975; Rogers, 1969; Tough, 1979), teaching styles (Conti, 1985; Conti &
Welborn, 1986), adult development (Daloz, 1987), etc.. Some of these
major topics concerning adult learning have sub-topics such as the relationship between "lifelong learning" and "community education" (Boucouvalas, 1979).

This review focused on identifying specific instructional/learning strategies and techniques that are associated with the learning style characteristics used in this study. Learning style characteristics are unique characteristics preferred by the learner to facilitate the learning process. Adult learning style characteristics can be matched to specific instructional/learning strategies and techniques. The following literature review focuses on specific instructional/learning strategies and are grouped by the six different categories of learning style characteristics identified in the previous section. The elements reviewed for each of the categories are those elements identified by the PEPS and Kolb's LSI.

Instructional/learning Strategies for Adults

Perceptual Preferences: Auditory, Visual, Tactile, Kinesthetic

Auditory: Instruction for learners with an auditory preference might consist of audio or videotapes, records, radio, etc., plus oral directions for assignments and lessons (Price, Dunn & Dunn, 1982). Lecture is an effective mode when presenting information to learners with an auditory preference (James & Galbraith, 1985). For older adults, the acoustic environment can be improved by moving furniture for better face-to-face contacts and the removal of environmental noise such as appliances and air conditioner fans (Schaie & Willis, 1986).
Instruction for learners with a visual preference might be provided instructional material by means of pictures, filmstrips, films, graphs, charts, T.V., transparencies, drawings, etc.. Directions and assignments should be given in writing while using resources that require reading and seeing (Price, Dunn & Dunn, 1982). The visual learner should use study and learning techniques that require reading and seeing the material being learned. Learners may want to use "patterned" or "diagrammed" note taking techniques (Buzan, 1976; Ellis, 1985).

Tactile and Kinesthetic: Learners who have preference to learn through the sense of touch may be called "tactile" learners while those who need to include their whole body may be called "kinesthetic" learners (James & Galbraith, 1985). Learners with tactile preference might need to underline as they read and take notes during lecture so that they can keep their hands busy (Price, 1987). Instructional strategies that use a "hands on" approach to assimilate information may be very effective for the tactile or kinesthetic learners (James & Galbraith, 1985). The "kinesthetic" learners require whole-body movement and/or real-life experiences so some effective learning techniques might be acting, visiting, interviewing, and role playing (Price, 1987).

Physical Environment: Light, Sound, Temperature, Design:

Light: Learners with preference for "light" need an environment with bright illumination while students with preference for less
"light" may need space with indirect or subdued lighting (Price, Dunn, & Dunn 1982). The average classroom lighting should spread evenly over the room and should produce around eighty foot-candles at table or desk top (Finkel, 1984). The decline of visual functions for older adults should be taken into consideration for the physical environment. The physical environment needs adequate illumination to make sure chalkboard or other visual materials are readable (Dickinson, 1973).

**Sound:** Learners with a preference for "sound" may study or learn better with soft background music while learners with a preference for less "sound" may want little or no background noise (Price, Dunn & Dunn, 1982). Learners who need sound may turn on a radio, stereo, or T.V. when they study to screen out random background noise (Price, 1987). The most significant noise in most learning environments is background noise. It is important for instructors not to ignore the distraction that can be caused by noise (Davies, 1981; Ostwald & Williams, 1985).

**Temperature:** Learners have a preference for certain temperature ranges. Some learners want warm areas to study or learn while others may prefer cooler areas (Price, Dunn & Dunn, 1982). The best temperature for effective learning for most learners is around 68°F with the relative humidity around 50 percent (Davies, 1981). Older adults may be sensitive to extremes in temperatures (Ostwald & Williams, 1985).

**Design:** The concept of "design" refers to the need for a "formal climate" with straight chairs or rows of desks versus an "informal
climate" with soft chairs, couches, etc. (Price, Dunn & Dunn, 1982). The learner with a need for a "formal design" environment may feel comfortable in a conventional classroom with wooden or metal chairs/desks while other learners may learn better in an "informal" environment with lounge chairs or couches (Price, 1987).

**Social Environment: Learn Alone/Peer, Authority Oriented, or Combinations**

Some adult learners prefer to study or work by themselves while others prefer to learn or work with a friend or peer. When working with someone else, discussion and interaction play a part in the learning process (Price, 1987). Some learners feel more comfortable if they receive instruction from someone who is seen as an "authority" on that subject or who may have special knowledge or insight about a subject (Price, 1987). Some learners may need or want a social environment where at times they may need to study alone and at other times might need to study with others.

**Cognitive Styles: Kolb's Model**

Svinicki and Dixon (1987) used the Kolb model to suggest instructional activities that may support Kolb's experiential learning cycle. For example, field experiences and laboratory observations would give a learner concrete experience with content, while discussion groups and brainstorming would allow learners to reflect on their experiences. Lecture and research papers would allow learners to build
a model for abstract conceptualization, while simulation projects and case studies would let students apply the content to problem situations. Table 2.4 lists the instructional activities associated with each of Kolb's learning modes.

McCarthy (1980) has developed the 4MAT System that uses the learning style model of David Kolb. Kolb's (1985) four learning styles are called: (a) converger, (b) diverger, (c) assimilator, and (d) accommodator. McCarthy (1980) used different names for Kolb's four learning-styles but her model described techniques that might be used for each of the four types. McCarthy (1980) sees the four learning modes as a learning cycle that begins with concrete experience and ends with application. She suggested that all learners be taught by using instructional/learning techniques that apply to all four learning modes.

**Time of Day: Morning, Afternoon, Evening**

People need to be aware of their best time of day for learning and/or studying (Ellis, 1985). Some people are aware that they function better during the daylight hours while others do better at night. It is not unusual to hear someone say that he or she is a "morning person" or to hear another person say that he or she is a "night person." When a person becomes aware of his/her "best" time of day, then that person may schedule classes and/or study time to coincide with his/her most productive time of day.
Table 2.4

### Instructional Activities For Kolb's Learning Modes

<table>
<thead>
<tr>
<th>Kolb's Learning Modes</th>
<th>Instructional Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Experience (CE)</td>
<td>- Laboratories</td>
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<tr>
<td>(Feeling)</td>
<td>- Observations</td>
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<tr>
<td></td>
<td>- Field work</td>
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<td>- Trigger films</td>
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<td></td>
<td>- Primary text reading</td>
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<td></td>
<td>- Readings</td>
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<td></td>
<td>- Problem sets</td>
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<td></td>
<td>- Examples</td>
</tr>
<tr>
<td>Reflective Observation (RO)</td>
<td>- Logs</td>
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<tr>
<td>(Watching)</td>
<td>- Journals</td>
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<td></td>
<td>- Discussion</td>
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<td></td>
<td>- Brainstorming</td>
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<td></td>
<td>- Thought questions</td>
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<tr>
<td></td>
<td>- Rhetorical questions</td>
</tr>
<tr>
<td>Abstract Conceptualization (AC)</td>
<td>- Lecture</td>
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<tr>
<td>(Thinking)</td>
<td>- Papers</td>
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<td></td>
<td>- Model building</td>
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<td></td>
<td>- Projects</td>
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<td></td>
<td>- Analogies</td>
</tr>
<tr>
<td>Active Experimentation (AE)</td>
<td>- Simulations</td>
</tr>
<tr>
<td>(Doing)</td>
<td>- Case study</td>
</tr>
<tr>
<td></td>
<td>- Laboratory</td>
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<td></td>
<td>- Field work</td>
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<td></td>
<td>- Projects</td>
</tr>
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<td></td>
<td>- Homework</td>
</tr>
</tbody>
</table>

Adapted from Svinicki and Dixon (1987)
**Motivation: Persistent, Responsible, Structure**

**Motivation:** Motivation has always been a key factor in the learning process. It has been suggested that when there is little or no motivation to learn, then little or no learning will take place (Knox, 1986). Wlodkowski (1986) offered four assumptions about adult motivation to learn. First, adults are always motivated; they may not be motivated to learn but they are motivated to do something. Second, adults are responsible for their own motivation and so cannot be directly motivated. Third, the assumption is made that if something can be learned, it can be learned in a motivated way. Fourth, it is assumed that there is no one correct or best way to teach.

Wlodkowski (1986) described sixty-eight well-defined specific instructional/learning strategies to impact the motivation factors of attitudes, needs, stimulation, affect, competence and reinforcement. Kidd (1973) suggested that adult learners in or out of a classroom, bring to the learning experience such feelings as self-esteem, jealousies, respect or disrespect for authority, status needs, etc..

Some specific instructional/learning strategies to impact motivational factors would be for the teacher to display enthusiasm for what he/she is teaching and show concern for the learner as a person (Knox, 1986). The psychological climate of acceptance and support is very important when working with older adults (Ostwald & Williams, 1985). Instructors can start to establish a positive learning environment by warming up a group of adults by using an effective
"icebreaker" (Brue, 1985). The use of humor can also be effective in developing a comfortable learning environment for adult students (Whitman, Spendlove & Clark, 1986). Cole (1982) reviewed the literature on instructional improvement and suggested that the instructor's personality was a crucial factor in effective instruction, regardless of the teaching method used.

Price (1987) described motivation as the desire to achieve academically and in a study that compared learning style characteristics of different age groups of adults, older groups were more motivated, preferred auditory sense, liked formal design, preferred learning in the morning, liked sound present, and preferred to learn in several ways. Price (1987) suggested that people responsible for developing learning or work environments for adults should be aware of individual differences in learning styles and should make an effort to design a flexible environment to accommodate individual preferences.

Persistent: For students with low "persistence," Price, Dunn and Dunn (1982) suggested that these students be provided with short-range motivators and reinforcers. Have students "develop colleague relationships with able, persistent individuals; and praise during process of successful completion of tasks" (p. 8).

Responsible: For students with low scores on the PEPS's "Responsible" element, Price, Dunn and Dunn (1982) suggested "short-term, limited assignments with only single or dual goals" (p. 8). Instructors should base assignments on the interest of the student and
should "use interim praise or rewards during the successful completion of tasks and objectives" (p. 9).

**Structure:** The "Structure" element of the PEPS deals with the need for directions and/or explanations prior to undertaking an assignment (Price, 1987). Some students may need a lot of directions and instructions before they feel comfortable with doing an assignment or task, while other students need very little guidance.

**Summary**

This chapter has reviewed the literature dealing with the constructs of (a) decision-making styles, (b) learning style characteristics, and, (c) current literature on instructional/learning strategies for adults.

From the early 1900s, there has been a growing emphasis on developing theoretical models for career planning/development. The part that decision-making has played in the emerging career planning/development models has varied. Harren's (1979) career decision-making model, used in this study, has placed special emphasis on decision-making styles.

The literature was rich with information dealing with the construct of learning style characteristics, even though different writers and researchers use the word "style" to mean different things. The literature does support the concept of categories of learning style characteristics. The six major categories used in this review were (a) perceptual preference, (b) physical environment needs, (c) social
environment preference, (d) cognitive styles, (e) time of day preference, and, (f) motivation/values.

This chapter has reviewed adult instructional/learning strategies associated with adult learning style characteristics defined in this study. The adult instructional/learning strategies that have been identified will be used in Chapter V to develop strategies to influence "Dependent" decision-makers.
CHAPTER III

METHODODOLOGY

It is important that instructional/learning strategies be identified to assist adult decision-makers to improve their decision-making skills. Research demonstrates this need to be especially critical for adults with "Dependent" decision-making style (Phillips et al., 1984; Rubinton, 1980). The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. This chapter contains information about the subjects, setting, instrumentation and design of this study.

Subjects and Setting

The subjects for this study were 144 students enrolled in a Career/Life Planning Course at Northern Virginia Community College's Alexandria Campus. Northern Virginia Community College is a two-year comprehensive institution of higher education and is the largest of the 23 two-year Community Colleges that make up the Virginia Community College System (VCCS). Northern Virginia Community College is known as NOVA and has five campuses, one each in Alexandria, Annandale, Loudoun, Manassas and Woodbridge.

The Career/Life Planning Course (Psyc 119) was a three quarter hour course designed to provide a model for the career/life planning
process. The course allowed students to identify and investigate possible career options through self-assessment, classroom experience, career research and informational interviews. Students also examined their individual characteristics including interests, skills and abilities, values, and life style preferences. The textbook used was *Training for Life* (Hecklinger & Curtin, 1984).

The students enrolled in the Career/Life Planning Course were ideal subjects because they were adults who were currently working on making major career planning/development decisions. This researcher obtained data from eight Career/Life Planning classes during the 1986/87 and 1987/88 academic year. Each class was visited twice, once to distribute the measurement instruments and the second time to give a group interpretation of the results. All students who participated were asked to sign a "Permission Form" (Appendix A).

**Instrumentation**

Three instruments were used in this study to obtain data. They are; (a) the Assessment of Career Decision Making (ACDM), (b) Productivity Environmental Preference Survey (PEPS), and, (c) Kolb's Learning-Style Inventory (LSI). The rationale for instrument selection and the descriptions of each instrument follow.

**Rationale for Instrument Selection**

Harren's Assessment of Career Decision Making (ACDM) has been widely used in studies of career decision-making style (Baldwin, 1981;
There is research to support the content validity, criterion-related validity, and construct validity of the ACDM (Buck & Daniels, 1985). The concept of decision-making styles used in this study was predicated on Harren's ACDM.

There are a number of instruments designed to measure learning style characteristics (Appendix B). Few of these are designed for the adult population. This researcher wanted to identify as many learning style characteristics as possible but limit the number of instruments used. The Productivity Environmental Preference Survey (PEPS) was selected because of the twenty different characteristics that it measures and its extended use with adults in past research. One area not measured by the PEPS is the category of cognitive styles (See Figure I, page 31). The Kolb Learning Style Inventory (LSI) is one approach to measuring cognitive styles, so the LSI was selected because of its use with the adult population and its extended use in past research dealing with adult cognitive styles (Kolb, 1976).

Assessment of Career Decision Making (ACDM)

The development of the ACDM spans a period of more than twenty years. The early work on the ACDM was done by Dr. Vincent A. Harren, who started in 1964 and continued until his death in 1980 (Buck & Daniels, 1985). Harren's (1966) early research in the investigation of a career decision-making process focused on the assumptions set forth by Tiedeman and O'Hara (1963). Harren's (1966) study of career
decision-making processes among college males used a Q-sort instrument to look at Tiedeman and O'Hara's stages of Exploration, Crystallization, Choice and Clarification. The result of Harren's (1966) study seemed to verify the existence of the four stages in the Tiedeman and O'Hara (1963) paradigm. This Q-sort instrument used by Harren was the start of what would become the ACDM (Assessment of Career Decision-Making) instrument.

The Q-sort technique was changed in 1968 to a checklist format and renamed the Vocational Decision-Making Checklist (VDMC). Harren's VDMC provided three scores (College Major, Occupation and Total) that could be used to measure vocational maturity. The checklist was used by researchers in the late sixties and seventies to measure the change in vocational maturity of women returning to college (Berman, Gelso, Greenfeig & Hirsch, 1977) and the evaluation of the vocational development of college students (Evans & Rector, 1978; Smith & Evans, 1973).

In the mid seventies, the VDMC was changed again and became the Assessment of Career Decision Making (ACDM). The ACDM evolved through a number of revisions and changes such as the addition of the Decision-Making Styles scale (Buck & Daniels, 1985). After the death of Dr. Harren, the ACDM was further developed by Buck and Daniels (1985). The ACDM used in this study is published by the Western Psychological Services and was copyrighted in 1984. The current version of the ACDM contains 94-items to measure a student's career decision-making style and progress on three career decision-making tasks. This study only
uses the thirty true/false items of the decision-making scale on the ACDM. A copy of the ACDM answer sheet and report form are found in Appendix C.

This study only used the Decision-Making Style scale of the ACDM. The thirty item decision making scale assesses the following four decision-making styles: (a) Rational, (b) Intuitive, (c) Dependent, and (d) Combination. The current ACDM computerized report gives the raw percentile scores for the three decision-making styles (Rational, Intuitive and Dependent) and also reports an analysis of predominant decision-style pattern. This analysis compares an individual’s scores to four prototypes. These prototypes are High Rational, High Intuitive, High Dependent and Combination. The "Combination" prototype has High Intuitive and High Dependent scores. The ACDM report also reports the probability that a person is in one of the above four prototype groups. This probability percentage was used to place subjects into one of the five groups for data analysis as described later under "Research Procedures."

ACDM Psychometric Properties

Studies that support the content validity, criterion-related validity, and construct validity of the ACDM are documented by Buck and Daniels (1985). They report internal consistency with alpha coefficients for the ACDM ranged from .49 to .84 for the Decision-Making Styles scale. They also reported test-retest Pearson product-moment correlations ranging from .76 to .85 for the Decision-Making scale.
The current version of the ACDM was standardized using four studies that included 550 high school students and six studies that included 2,495 college students (Buck & Daniels, 1985). The normative group of college students were predominately white with about equal number of males and females.

Productivity Environmental Preference Survey (PEPS)

The Productivity Environmental Preference Survey (PEPS) was used to assess the personal preferences of adults for each of twenty different learning style characteristics (Price, Dunn & Dunn, 1982). PEPS identifies twenty different learning style characteristics (elements) in four major categories as shown in Table 3.1. The PEPS is a comprehensive survey that can be used to identify how adults prefer to learn and work. The PEPS was developed using content and factor analysis (Price, 1987).

The PEPS (Dunn, Dunn, & Price, 1986) was designed for adults and was based on the early work from the Dunn/Price Learning Style Inventory (LSI). The Dunn/Price LSI was the first comprehensive instrument used to assess learning style characteristics of young students (grades 3 to 12) (Price, 1987). The 1975 version of the Dunn/Price LSI was based on a learning style questionnaire used by Rita Dunn in the early 1970's (Chiarelott & Davidman, 1983).

The current version of the PEPS (Dunn, Dunn, & Price, 1986) is published by Price Systems, Inc. The PEPS is a self-reporting survey that requires rank ordering choices for each of one hundred items. The
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate</td>
<td>1. Noise Level</td>
</tr>
<tr>
<td>Environment</td>
<td>2. Light</td>
</tr>
<tr>
<td></td>
<td>3. Temperature</td>
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<tr>
<td></td>
<td>4. Design</td>
</tr>
<tr>
<td>Emotionality</td>
<td>5. Motivation</td>
</tr>
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<td></td>
<td>6. Persistent</td>
</tr>
<tr>
<td></td>
<td>7. Responsible</td>
</tr>
<tr>
<td></td>
<td>8. Structure</td>
</tr>
<tr>
<td>Sociological Needs</td>
<td>9. Learning Alone/Peer Oriented</td>
</tr>
<tr>
<td></td>
<td>10. Authority-Oriented Learner</td>
</tr>
<tr>
<td></td>
<td>11. Learn In Several Ways</td>
</tr>
<tr>
<td></td>
<td>13. Visual Preference</td>
</tr>
<tr>
<td></td>
<td>14. Tactile Preference</td>
</tr>
<tr>
<td></td>
<td>15. Kinesthetic Preference</td>
</tr>
<tr>
<td></td>
<td>16. Requires Intake</td>
</tr>
<tr>
<td></td>
<td>17. Evening/Morning</td>
</tr>
<tr>
<td></td>
<td>18. Late Morning</td>
</tr>
<tr>
<td></td>
<td>19. Afternoon</td>
</tr>
<tr>
<td></td>
<td>20. Needs Mobility</td>
</tr>
</tbody>
</table>

(Price, Dunn & Dunn, 1982)
PEPS can be completed in twenty to thirty minutes. A copy of the PEPS answer sheet and a profile report is found in Appendix D.

**PEPS Psychometric Properties**

Studies supporting the reliability and validity of the PEPS were documented by Price, Dunn and Dunn (1982). They summarized the reliability of the PEPS by pointing out that the majority of the PEPS elements have excellent reliabilities with sixty-eight percent of the reliabilities being equal to or greater than .60. Even though the majority of the PEPS elements have excellent reliabilities, some elements such as Temperature, Persistent, and Kinesthetic show weak discriminating powers. These elements should be helped by the change of the response format to a Likert scale (Price, Dunn & Dunn, 1982). The authors of the PEPS state that many of the questions on the instrument may be seen as subjective and relative but the scale was not designed to "measure underlying psychological motivation, value systems, or the quality of attitudes" (Price, Dunn & Dunn, 1982, p. 2).

**Kolb's Learning Style Inventory (LSI)**

The Learning Style Inventory (LSI) was used to assess the learning styles of individuals. The learning styles are based on experimental learning theory and measures the emphasis that individuals place on four learning modes (Kolb, 1976, 1984). The four learning modes are:
(a) Concrete Experience—CE—(feeling); (b) Reflective Observation—RO—(watching); (c) Abstract Conceptualization—AC—(thinking); and, (d) Active Experimentation—AE—(doing).

Kolb (1976, 1984) sees the four learning modes as making up two dimensions that are "polar opposites." One dimension is represented at one end by Concrete Experience—CE—(feeling) and at the other end by Abstract Conceptualization—AC—(thinking). The other dimension is made up of Active Experimentation—AE—(doing) on one end and Reflective Observation—RO—(watching) on the other end. The dimension of concrete/abstract involvement and the active/reflective dimension can be combined to produce a four quadrant learning style model. The four quadrants represent the four learning styles labeled (a) Accommodator; (b) Diverger; (c) Converger; and, (d) Assimilator as shown in Table 3.2.

The current LSI consists of twelve sentences with four different endings for each sentence. Respondents are asked to rank-order the endings to each sentence and to match their own self-description of how they learn (Kolb, 1985). For example the sentence "I learn by:" has the four endings of "feeling," "watching," "thinking," and "doing" that are rank-ordered. One can see how these responses match the four learning modes of: (a) Concrete Experience (feeling); (b) Reflective Observation (watching); (c) Abstract Conceptualization (thinking); and, (d) Active Experimentation (doing).

The current version of Kolb's LSI (1985) is published by McBer and Company. The LSI is a self-scoring instrument that produces four raw
<table>
<thead>
<tr>
<th>Concrete Experience (CE)</th>
<th>Reflective Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACCOMMODATOR:</strong> This learning style has the ability to learn primarily from &quot;hands-on&quot; experience. May enjoy carrying out plans and getting involved in new and challenging experiences. May rely more on people for information than on one's own technical analysis.</td>
<td><strong>DIVERGER:</strong> This learning style is best at viewing concrete situations from many different points of view. May enjoy situations that call for generating a wide range of ideas. May have imaginative ability and sensitivity to feelings.</td>
</tr>
<tr>
<td><strong>CONVERGER:</strong> This learning style is best at finding practical use for ideas &amp; theories. Would rather deal with technical tasks and problems than with social and interpersonal issues.</td>
<td><strong>ASSIMILATOR:</strong> This learning style is best at understanding a wide range of information and putting it into concise, logical form. Less focused on people and more interested in abstract ideas and concepts.</td>
</tr>
<tr>
<td>Active Experimentation (AE)</td>
<td>Reflective Observation</td>
</tr>
</tbody>
</table>

Adapted from Kolb (1985)
scores that relate to the four learning modes, CE, RO, AC & AE. The four learning mode scores can be used to develop two combination scores of AC-CE and AE-RO. These two combination scores can be used to plot a point on a grid to identify one's learning style. The four quadrant learning style model was described earlier and can be seen in Table 3.2. The four learning mode scores plus the two combination scores were used in this study to analyze the data. Data analysis is presented in Chapter IV.

Kolb's LSI Psychometric Properties

Curry's (1983) psychometric evaluation of cognitive style inventories reported that the LSI has a test-retest reliability of .58 with an internal consistency of .69. These findings are supported by the psychometric analysis reported by Kolb (1976). Sims, Veres, Watson and Buckner (1986) looked at the current version of Kolb's LSI and found internal consistency of the four scales between an alpha of .76 for the CE scale and .85 for the AC scale. The test-retest reliability was low, with a range from .24 to .66. Sugarman (1985) reviewed some of the criticisms of the LSI such as the validity of Kolb's cyclical model and the volatility of individual's scores on test-retest conditions. Bonham (1988b) also pointed out some weaknesses of Kolb's LSI, such as the use of a ranking format, use of normed table instead of norm midpoints, and the use of limited subject groups.
Type of Study

The type of study employed in this research falls into the general category of "descriptive" research, where the focus is on describing the way things are as they exist at this time (Cook & LaFleur, 1975). This type of study is often called "Ex Post Facto" or "Nonexperimental" and is defined by Kerlinger (1986) as follows:

Nonexperimental research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables (p. 348).

Kerlinger (1986) listed the following three weaknesses of "non-experimental" research: (a) unable to manipulate independent variables; (b) lose the ability to randomize samples; and, (c) the improper interpretation of the results. Kerlinger (1986) also pointed out that some of the weaknesses of "nonexperimental" research can be reduced by making hypotheses about the results at the beginning of the study.

Kerlinger (1986) saw the value of "nonexperimental" research being in the controlled inquiry of human variables that are not manipulable. Such characteristics as intelligence, achievement, learning style, etc. are important human variables that already exist and cannot be manipulated by the researcher. Kerlinger (1986) did not see "non-experimental" research as being any less useful than experimental research; it is just that they are different.
In order to strengthen this study, the following hypotheses are made about the preferred learning style characteristics of "Dependent" decision-makers. These hypotheses are based on Harren's description of a "Dependent" decision-maker (Table 2.3, pg. 27).

1. Because of their denial of personal responsibilities, "Dependent" decision-makers will have preference for "Authority-oriented learning" and take less "Responsibility" for their own learning.

2. Because of their high need for social approval, "Dependent" decision-makers will have preference for "Peer Oriented" learning.

3. Because of their need for social approval and reliance on others, the "Dependent" decision-makers will be identified as having an "Accommodator" learning style as defined by Kolb (1985).

Research Procedures

The first task was to review the literature as it relates to the major constructs in this study. Next the decision-making styles of the subjects in this study were measured using the Assessment of Career Decision Making (ACDM). Each subject was identified as belonging to
one of five different groups for data analysis. The five groups were made up of the four different decision-making styles (Rational, Intuitive, Dependent and Combination) plus a fifth group called "Unclassified."

The subjects were placed in one of five groups by using the following procedure. The identification of the individual's decision-making style was obtained from the ACDM report of each subject. The ACDM report gives an "analysis of predominant decision-style pattern" (Buck & Daniels, 1985, p. 25). The ACDM report gives a probability stated in percentage that a subject has a given decision-making style. Subjects were identified as having a given decision-making style when the ACDM report showed that the probability was 90 percent or higher for one of the four styles. All subjects not having a 90 percent or higher probability were placed in a fifth group and that group was called "Unclassified."

The next task was to measure the learning style characteristics of all subjects. The learning style characteristics were measured by the Productivity Environmental Preference Survey (PEPS) and Kolb's Learning Style Inventory (LSI).

Data Analysis

Using the raw scores from each of the twenty PEPS elements, a one-way analysis of variance was carried out in analyzing the data for the five groups: (a) Rational, (b) Intuitive, (c) Dependent, (d) Combination (high intuitive & dependent), and, (e) Unclassified.
The one-way ANOVA was run on a personal computer using the Number Cruncher Statistical System (NCSS) (Hintze, 1987). A significance level of .05 was selected. Chapter IV describes the results of the analysis.

Using the raw scores from the four learning (AC, CE, AE, and RO) modes from Kolb's LSI, a one-way analysis of variance (ANOVA) was carried out in analyzing the data from the five decision-making groups. As with the PEPS scores, a significance level of .05 was selected. Chapter IV also describes the results of this analysis.

The final task was to identify adult instructional/learning strategies associated with any preferred learning style characteristics of "Dependent" decision-makers. The adult instructional/learning strategies for different learning style characteristics was developed from the literature review in Chapter II. Chapters IV and V discuss how the instructional/learning strategies associated with the preferred learning style characteristics of "Dependent" decision-makers might be used to influence the learning of this group.
CHAPTER IV

RESULTS

The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. If a preferred pattern of learning style characteristics does exist for "Dependent" decision-makers, then what are the instructional/learning strategies which might influence the learning of these adult "Dependent" decision-makers.

The first part of this chapter presents the demographic characteristics of the participants in this study as pertaining to ethnic groups, gender and mean age of the five different groups analyzed. The second part of the chapter looks at the results of this study. The results are described as they relate to the two research questions presented in Chapter I.

Demographics/Decision-Making Styles

This study used adult Community College students enrolled in a Career Planning course. Usable data was obtained from one hundred forty-four students. Demographic characteristics pertaining to age, gender and ethnic group is presented as these characteristics relate to the decision-making style groups. As outlined in Chapter III, the decision-making styles were measured using the Assessment of Career Decision Making (ACDM). Each subject was identified as belonging to
one of five groups: (a) Rational, (b) Intuitive, (c) Dependent, (d) Combination, and (e) Unclassified. How each subject was placed in a certain decision-making style group is described in Chapter III.

Table 4.1 shows the frequency distribution of decision-making styles, ethnic groups (white & other), and gender. As can be seen in Table 4.1, the ethnic identity of the total sample was predominantly white, with 112 or 77.8% of the total sample being white. The percentage of whites ranged from a high of 87% for the "Dependent" group, to a low of 68% for the "Rational" group. An examination of the gender identity revealed that the total sample (N=144) was predominantly female. Of the total sample, over 74% were female but ranged from a low of 61.3% female in the "Dependent" group to a high of 83.3% female for the "Intuitive" group.

The "Dependent" decision-making group was made up of thirty-one students or 21.5% of the total sample. So the study sample of the "Dependent" decision-making group was predominantly white females but the gender distribution was lowest for this group with only 61.3% female. Appendix E gives more details about frequency distribution for different ethnic groups.

Table 4.2 shows the mean age for the decision-making style groups by gender and ethnic groups. The mean age for the total sample (N=144) was 32.56 years. The mean age of the "Dependent" group (N=31) was 33.42 years and there was little difference between the mean age for male and female "Dependent" decision-makers. With the female "Dependent" decision-makers having a mean age of 33.53 while males
Table 4.1  
FREQUENCY DISTRIBUTION BY DECISION-MAKING STYLES, ETHNIC GROUPS, AND GENDER  

<table>
<thead>
<tr>
<th>DECISION-MAKING STYLES</th>
<th>ETHNIC GROUPS</th>
<th>GENDER</th>
<th>PERCENT OF TOTAL SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PERCENT OF WHITE n/%</td>
<td>PERCENT OF OTHER n/%</td>
<td>PERCENT OF FEMALE n/%</td>
</tr>
<tr>
<td>DEPENDENT N = 31</td>
<td>27/87.0</td>
<td>04/13.0</td>
<td>19/61.3</td>
</tr>
<tr>
<td>INTUITIVE N = 30</td>
<td>23/76.7</td>
<td>07/23.3</td>
<td>25/83.3</td>
</tr>
<tr>
<td>RATIONAL N = 25</td>
<td>17/68.0</td>
<td>08/32.0</td>
<td>17/68.0</td>
</tr>
<tr>
<td>COMBINATION N = 23</td>
<td>18/78.3</td>
<td>05/21.7</td>
<td>18/78.3</td>
</tr>
<tr>
<td>UNCLASSIFIED N = 35</td>
<td>27/77.1</td>
<td>08/22.9</td>
<td>28/80.0</td>
</tr>
<tr>
<td>PERCENT OF TOTAL SAMPLE</td>
<td>112/77.8</td>
<td>32/22.2</td>
<td>107/74.3</td>
</tr>
</tbody>
</table>

DATA IN TABLE = n/%tdm WHERE "N" = SAMPLE SIZE & %tdm = PERCENT OF TOTAL DECISION-MAKERS
<table>
<thead>
<tr>
<th>DECISION-MAKING STYLES</th>
<th>GENDER</th>
<th></th>
<th>ETHNIC GROUPS</th>
<th></th>
<th></th>
<th>TOTAL BY GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FEMALES</td>
<td>MALES</td>
<td>WHITE</td>
<td>OTHER</td>
<td>N=144</td>
</tr>
<tr>
<td>DEPENDENT N=31</td>
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<td>12/33.25</td>
<td>27/34.70</td>
<td>04/24.75</td>
<td>31/33.42</td>
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</tr>
<tr>
<td>INTUITIVE N=30</td>
<td>25/33.48</td>
<td>05/24.60</td>
<td>23/33.30</td>
<td>07/27.71</td>
<td>30/32.00</td>
<td></td>
</tr>
<tr>
<td>RATIONAL N=25</td>
<td>17/32.94</td>
<td>08/34.38</td>
<td>17/34.00</td>
<td>08/32.13</td>
<td>25/33.40</td>
<td></td>
</tr>
<tr>
<td>COMBINATION N=23</td>
<td>18.33.89</td>
<td>05/24.80</td>
<td>18/33.17</td>
<td>05/27.40</td>
<td>23/31.91</td>
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</tr>
<tr>
<td>UNCLASSIFIED N=35</td>
<td>27/33.00</td>
<td>07/28.57</td>
<td>27/33.81</td>
<td>08/26.38</td>
<td>35/32.11</td>
<td></td>
</tr>
<tr>
<td>TOTAL N=144</td>
<td>107/33.35</td>
<td>37/30.30</td>
<td>112/33.85</td>
<td>32/28.06</td>
<td>144/32.56</td>
<td></td>
</tr>
</tbody>
</table>

DATA IN TABLE = N/MEAN AGE
in the group had a mean age of 33.25. A lower mean age is seen for all the "other" ethnic groups but the sample size for these groups is so small that it is difficult to attach any meaning to these groups. The same things can be said for some of the "male" groups where the sample size is very small.

So the "Dependent" decision-making group had a mean age of 33.42 years and was predominantly white (87%). Even though this group had more females (61.3%); this group was less dominated by females than was the total sample (74.3%).

**Research Question #1**

The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. The two research questions stated in Chapter I were used to investigate this concern. The first questions was, are there preferred learning style characteristics associated with each of the adult decision-making styles and if so, what are they? The answer to this research question can be found in the data analysis completed on the PEPS and LSI scores.

**Data Analysis of PEPS**

Using the raw scores from each of the twenty PEPS elements, a one-way analysis of variance (ANOVA) was conducted in analyzing the data for the five decision-making groups. A significance level of .05 was selected for the ANOVA. Table 4.3 shows the results of the analysis of
<table>
<thead>
<tr>
<th>No.</th>
<th>PEPS ELEMENTS</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>0433.047</td>
<td>108.261</td>
<td>5.77</td>
<td>0.0003*</td>
</tr>
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<td></td>
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<td>2608.258</td>
<td>018.764</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within Ss</td>
<td>139</td>
<td>0433.047</td>
<td>108.261</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>LIGHT</td>
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</tr>
<tr>
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<td>139</td>
<td>0045.925</td>
<td>011.481</td>
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<td></td>
</tr>
<tr>
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<td>TEMPERATURE</td>
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<tr>
<td></td>
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<td>019.872</td>
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</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>Within Ss</td>
<td>139</td>
<td>0040.361</td>
<td>010.090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>MOTIVATION</td>
<td></td>
<td>0135.882</td>
<td>033.970</td>
<td>5.00</td>
<td>0.0009*</td>
</tr>
<tr>
<td></td>
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<td>0945.111</td>
<td>006.799</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Within Ss</td>
<td>139</td>
<td>0135.882</td>
<td>033.970</td>
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<tr>
<td>6</td>
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<td>0084.476</td>
<td>021.119</td>
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<td>021.119</td>
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<td></td>
</tr>
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<td>0300.233</td>
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<tr>
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<td>050.976</td>
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</tr>
<tr>
<td></td>
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<td>139</td>
<td>0014.210</td>
<td>003.552</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>AUTHORT FIG PRES</td>
<td></td>
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<td>0.4798</td>
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<td>139</td>
<td>0019.256</td>
<td>004.814</td>
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</tr>
</tbody>
</table>

* Significant at the .05 level or lower
Table 4.3 (Continued)

ANALYSIS OF VARIANCE SUMMARIES FOR PEPS ELEMENTS AND FIVE DECISION-MAKING GROUPS: Dependent, Intuitive, Rational, Combination & Unclassified

<table>
<thead>
<tr>
<th>No.</th>
<th>PEPS ELEMENTS</th>
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<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob &gt;</th>
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<tbody>
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<td>11</td>
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<td>004.466</td>
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</tr>
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<td>Between Ss</td>
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<td>0017.867</td>
<td>004.466</td>
<td>0.97</td>
<td>0.4255</td>
</tr>
<tr>
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<td></td>
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<tr>
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<td>004.370</td>
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</tr>
<tr>
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<td>0081.480</td>
<td>004.370</td>
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</tr>
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<td>004.994</td>
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<td>0.5862</td>
</tr>
<tr>
<td></td>
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<td>139</td>
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<td>007.030</td>
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</tr>
<tr>
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<td>011.318</td>
<td>3.36</td>
<td>0.0116 *</td>
</tr>
<tr>
<td></td>
<td>Between Ss</td>
<td>4</td>
<td>0045.275</td>
<td>011.318</td>
<td>3.36</td>
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</tr>
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<td>0.6663</td>
</tr>
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</tr>
<tr>
<td></td>
<td>Between Ss</td>
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<td>0023.660</td>
<td>005.915</td>
<td>2.01</td>
<td>0.0968</td>
</tr>
<tr>
<td></td>
<td>Within Ss</td>
<td>139</td>
<td>0409.665</td>
<td>002.947</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>AFTERNOON</td>
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<td>026.885</td>
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<td>0.0266 *</td>
</tr>
<tr>
<td></td>
<td>Between Ss</td>
<td>4</td>
<td>0107.543</td>
<td>026.885</td>
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<td>0.0266 *</td>
</tr>
<tr>
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<td>Within Ss</td>
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<tr>
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<td>020.626</td>
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</tr>
</tbody>
</table>

* Significant at the .05 level or lower
variance summary for the twenty PEPS elements. Table 4.3 indicates that the following seven PEPS elements were significant at the .05 level; (a) element #1 (Sound), (b) element #5 (Motivation), (c) element #6 (Persistent), (d) element #7 (Responsible), (e) element #12 (Auditory), (f) element #15 (Kinesthetic), and (g) element #19 (Afternoon).

Once a PEPS element was identified by the one-way ANOVA as significant, the next step was to determine which of the five group's means were significantly different from the others. A number of post hoc or multiple comparison procedures are available to do this task. They range from Fisher's LSD to Scheffe's test (Huck, Cormier & Bounds, 1974). The Fisher's LSD is the most liberal, meaning this procedure will identify a significant difference between two means that may be relatively close together (Huck, Cormier & Bounds, 1974). The more liberal Fisher's LSD comparison procedure was selected for this study because once a significant ANOVA result was obtained for any learning style characteristic, then the researcher wanted the most liberal comparison to identify group significance.

The Fisher's LSD multiple comparison was run on all seven of the PEPS elements that were significant at the .05 level. Of the seven PEPS elements tested by Fisher's LSD, only four indicated that the mean of the "Dependent" group was significantly different from some or all the other groups. Table 4.4 shows the results of the Fisher's LSD on the four PEPS elements associated most with the "Dependent" group.
Table 4.4

FISHER'S LSD MULTIPLE COMPARISON TEST FOR PEPS ELEMENTS RELATED TO THE DEPENDENT DECISION-MAKING GROUP

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<th>SOUND - PEPS ELEMENT #1</th>
<th>DECISION-MAKING</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
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<td></td>
<td></td>
</tr>
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<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
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<td>B - COMBINATION</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td></td>
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<td>C - UNCLASSIFIED</td>
<td>14.428</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
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<td>16.966</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>MOTIVATION - PEPS ELEMENT #5</th>
<th>DECISION-MAKING</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - COMBINATION</td>
<td>18.609</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>18.706</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>C - RATIONAL</td>
<td>20.240</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>D - UNCLASSIFIED</td>
<td>20.543</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>E - INTUITIVE</td>
<td>21.000</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
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<table>
<thead>
<tr>
<th>PERSISTENT - PEPS ELEMENT #6</th>
<th>DECISION-MAKING</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tr>
<td>GROUPS</td>
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</tr>
<tr>
<td>A - DEPENDENT</td>
<td>16.032</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>B - COMBINATION</td>
<td>16.782</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>C - RATIONAL</td>
<td>17.720</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>D - INTUITIVE</td>
<td>17.867</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>E - UNCLASSIFIED</td>
<td>17.943</td>
<td>S</td>
<td>-</td>
<td>-</td>
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<table>
<thead>
<tr>
<th>RESPONSIBLE - PEPS ELEMENT #7</th>
<th>DECISION-MAKING</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - COMBINATION</td>
<td>22.696</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>23.065</td>
<td>-</td>
<td>-</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>C - UNCLASSIFIED</td>
<td>25.771</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>D - INTUITIVE</td>
<td>25.933</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>E - RATIONAL</td>
<td>25.960</td>
<td>S</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Four of the seven PEPS elements (Sound, Motivation, Persistent, and Responsible) were more related to the "Dependent" group than were the last three (Auditory, Kinesthetic and Afternoon). For example, in Table 4.4, the mean for the element #1 or "Sound" of the "Dependent" group was significantly lower than the "mean" of three of the other groups (Unclassified, Rational, and Intuitive). The significance was identified by the "Ss" on the right side of the "Significant Table" (Table 4.4). Looking at the "Sound" element (#1) in Table 4.4, the horizontal line for item "A" (Dependent) with a mean of 11.935, the "Significant Table" had an "S" under the letters "C," "D" and "E." These letters correspond to the letters on the left of the main table and identify the "Unclassified" (C), "Rational" (D), and "Intuitive" (E) groups. This indicated that the mean for the "Dependent" group was significantly lower than the mean for the Unclassified, Rational and Intuitive groups.

For the PEPS element "Sound" (1), the "Combination" group was the only group in which the mean was not significantly different from the "Dependent" group. But the "Combination" group was made up of those people that have a high "Dependent" and "Intuitive" characteristics as described in Chapter III. This relationship between the "Dependent" and "Combination" groups can also be seen in the results for the "Motivation" (PEPS element #5) "Persistent" (PEPS element #6) and "Responsible" (PEPS element #7) elements in Table 4.4. The mean for the PEPS elements of "Motivation" (#5) and "Responsible" (#7) for both
the "Combination" and "Dependent" groups were significantly different from all the other groups.

The "Sound" element in Table 4.4 also indicated that the "Intuitive" decision-making group's mean was significantly different from all the other groups. The mean of the "Intuitive" decision-making group was significantly higher so that group may prefer "Sound" such as background music while studying. The mean of the "Dependent" decision-making group was significantly lower so they may prefer a more quiet environment.

The three other PEPS elements (Auditory, #12; Kinesthetic, #15; and Afternoon, #19) identified by the one-way ANOVA were more associated with other groups than with the "Dependent" group. Table 4.5 shows the results of the Fisher's LSD on these three PEPS elements. The mean for the "Auditory" PEPS element (#12) for the "Intuitive" group was significantly higher than the "Dependent," "Rational" and "Unclassified" groups. For the "Kinesthetic" element (#15), the "Rational" group's mean was significantly lower than the "Unclassified" and "Intuitive" groups, while the "Intuitive" group's mean was significantly higher than the "Rational" and "Dependent" groups. The "Afternoon" PEPS element (#19) has two groups (Intuitive and Unclassified) that have means that were significantly different than two other groups.

The summary of the PEPS data analysis would indicate that four of the PEPS elements (Sound, Motivation, Persistent, and Responsible) were significantly associated with the "Dependent" decision-making group.
<table>
<thead>
<tr>
<th>Table 4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FISHER'S LSD MULTIPLE COMPARISON TEST FOR PEPS ELEMENTS RELATED TO OTHER DECISION-MAKING GROUPS</strong></td>
</tr>
</tbody>
</table>

### AUDITORY - PEPS ELEMENT 

<table>
<thead>
<tr>
<th>DECISION-MAKING GROUPS</th>
<th>MEAN</th>
<th>Significant Table at .05</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - DEPENDENT</td>
<td>12.548</td>
<td>- - - - S</td>
</tr>
<tr>
<td>B - RATIONAL</td>
<td>12.560</td>
<td>- - - - S</td>
</tr>
<tr>
<td>C - UNCLASSIFIED</td>
<td>12.800</td>
<td>- - - - S</td>
</tr>
<tr>
<td>D - COMBINATION</td>
<td>13.130</td>
<td>- - - - -</td>
</tr>
<tr>
<td>E - INTUITIVE</td>
<td>14.533</td>
<td>S S S - -</td>
</tr>
</tbody>
</table>

### KINESTHETIC - PEPS ELEMENT 

<table>
<thead>
<tr>
<th>DECISION-MAKING GROUPS</th>
<th>MEAN</th>
<th>Significant Table at .05</th>
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</thead>
<tbody>
<tr>
<td>A - RATIONAL</td>
<td>15.680</td>
<td>- - - S S</td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>16.194</td>
<td>- - - - S</td>
</tr>
<tr>
<td>C - COMBINATION</td>
<td>16.522</td>
<td>- - - - -</td>
</tr>
<tr>
<td>D - UNCLASSIFIED</td>
<td>17.000</td>
<td>S - - - -</td>
</tr>
<tr>
<td>E - INTUITIVE</td>
<td>17.267</td>
<td>S S - - -</td>
</tr>
</tbody>
</table>

### AFTERNOON - PEPS ELEMENT 

<table>
<thead>
<tr>
<th>DECISION-MAKING GROUPS</th>
<th>MEAN</th>
<th>Significant Table at .05</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - INTUITIVE</td>
<td>7.233</td>
<td>- - - S S</td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>7.581</td>
<td>- - - - S</td>
</tr>
<tr>
<td>C - RATIONAL</td>
<td>8.720</td>
<td>- - - - -</td>
</tr>
<tr>
<td>D - COMBINATION</td>
<td>9.130</td>
<td>S - - - -</td>
</tr>
<tr>
<td>E - UNCLASSIFIED</td>
<td>9.343</td>
<td>S S - - -</td>
</tr>
</tbody>
</table>
The other three PEPS elements (Auditory, Kinesthetic and Afternoon) identified by the one-way ANOVA were not significantly associated with the "Dependent" decision-making group. The PEPS elements of "Sound" (#1), "Auditory" (#12), "Kinesthetic" (#15), and "Afternoon" (#19) were significantly associated with the "Intuitive" decision-making group while the PEPS element of "Kinesthetic" (#15) was also significantly associated with the "Rational" decision-making group.

Data Analysis of LSI

Using the raw scores from the four learning modes (AC, CE, AE, and RO) of Kolb's LSI, a one-way analysis of variance (ANOVA) was carried out in analyzing the data for the five decision-making groups. A significance level of .05 was used with the ANOVA. Table 4.6 shows the results of the analysis of variance summary for the four LSI learning modes. Only the mean of "Concrete Experience" (CE) was found to be significantly different between groups.

Once again the Fisher's LSD was used to compare the means of the five different groups. The Fisher's LSD comparison results are shown in Table 4.7 which indicates that the "Intuitive" group had a significantly higher mean score for "Concrete Experience" (CE) than three of the other four groups. None of the means of the four LSI learning modes were shown to be significantly higher or lower for the "Dependent" group.

It does seem that the LSI learning modes of "Concrete Experience" (CE) and "Abstract Conceptualization" (AC) may have a relationship to
Table 4.6

ANALYSIS OF VARIANCE SUMMARIES FOR LSI MODES
AND FIVE DECISION-MAKING GROUPS:
Dependent, Intuitive, Rational, Combination & Unclassified

<table>
<thead>
<tr>
<th>LSI MODES</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE EXPERIENCE (CE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Ss</td>
<td>4</td>
<td>0615.468</td>
<td>153.867</td>
<td>2.85</td>
<td>0.0264 *</td>
</tr>
<tr>
<td>Within Ss</td>
<td>127</td>
<td>6846.531</td>
<td>053.909</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFLECTIVE OBSERVATION (RO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Ss</td>
<td>4</td>
<td>0254.605</td>
<td>063.651</td>
<td>1.34</td>
<td>0.2593</td>
</tr>
<tr>
<td>Within Ss</td>
<td>127</td>
<td>6040.455</td>
<td>047.562</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABSTRACT CONCEPTUALIZATION (AC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Ss</td>
<td>4</td>
<td>0333.508</td>
<td>083.377</td>
<td>1.57</td>
<td>0.1874</td>
</tr>
<tr>
<td>Within Ss</td>
<td>127</td>
<td>6762.212</td>
<td>053.245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIVE EXPERIMENTATION (AE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Ss</td>
<td>4</td>
<td>0321.153</td>
<td>080.288</td>
<td>1.74</td>
<td>0.1463</td>
</tr>
<tr>
<td>Within Ss</td>
<td>127</td>
<td>5876.756</td>
<td>046.273</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at the .05 level or lower
Table 4.7

FISHER'S LSD MULTIPLE COMPARISON TEST FOR KOLB'S CONCRETE EXPERIENCE FROM TABLE 4.6

**LSI CONCRETE EXPERIENCE (CE) - FEELING**

<table>
<thead>
<tr>
<th>DECISION-MAKING GROUPS</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - RATIONAL</td>
<td>24.792</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>27.357</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
</tr>
<tr>
<td>C - UNCLASSIFIED</td>
<td>27.656</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>S</td>
</tr>
<tr>
<td>D - COMBINATION</td>
<td>28.263</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>E - INTUITIVE</td>
<td>31.483</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>-</td>
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</tr>
</tbody>
</table>

**LSI ABSTRACT CONCEPTUALIZATION (AC) - THINKING**

<table>
<thead>
<tr>
<th>DECISION-MAKING GROUPS</th>
<th>MEAN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - INTUITIVE</td>
<td>28.172</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B - DEPENDENT</td>
<td>28.678</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ANOVA NOT</td>
</tr>
<tr>
<td>C - COMBINATION</td>
<td>29.105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SIGNIFICANT</td>
</tr>
<tr>
<td>D - UNCLASSIFIED</td>
<td>30.344</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AT .05 LEVEL</td>
</tr>
<tr>
<td>E - RATIONAL</td>
<td>32.708</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Harren's "Intuitive" and "Rational" decision-makers. Kolb's (1976) "Concrete Experience" (CE) (See Figure 2, page 35) was associated with the "feeling" domain of human behavior as was Harren's "Intuitive" decision-maker (See Table 2.3, page 27). Table 4.7 indicates that the "Intuitive" decision-makers had a significantly higher mean score (31.482) than the other groups. Table 4.7 also shows that the lowest mean score for Concrete Experience or feeling was for the "Rational" group which supports Kolb's model. Kolb's model was further supported by the mean scores for "Abstract Conceptualization" where the highest mean (32.71) was for the "Rational" group and the lowest mean (28.172) for the "Intuitive" group.

In summary, the analysis of Kolb's LSI modes indicate that only the "Concrete Experience" (CE) mode of feeling was significantly different and this mode was significantly higher for the "Intuitive" group. None of the four LSI learning modes were shown to be significantly higher or lower for the "Dependent" decision-making group.

**Research Question #2**

Research question #2 asks the researcher to identify instructional/learning strategies that are associated with any preferred learning style characteristics of "Dependent" decision-makers. The four learning style characteristics most associated with the "Dependent" decision-makers were (a) Sound, (b) Motivation, (c) Persistent, and (d) Responsible.
The following is information from the literature review concerning the four learning style characteristics most associated with the "Dependent" decision-making group. The following instructional/learning strategies associated with the four learning style characteristics may be used to maximize the learning potential of "Dependent" decision-makers.

Sound: The "Dependent" decision-makers as a group have a preference for a quiet environment so may want little or no background noise (Price, Dunn & Dunn, 1982). Learners and instructors should be aware of how distracting background noise can be to some learners (Ostwald & Williams, 1985).

Motivation: One of the key elements in the learning process is "Motivation." The fact that adults cannot be directly motivated (Wlodkowski, 1986) makes it much harder for instructors/teachers to have influence on students. But the fact that "Dependent" decision-makers are heavily influenced by others (Harren, 1979), may make this group more receptive to motivation by others.

Some specific instructional/learning strategies that may influence the motivation of this group are: (a) creating a learning climate of acceptance and support (Ostwald & Williams, 1985); (b) teaching with enthusiasm and concern for the learner (Knox, 1986); (c) creating a comfortable learning environment for adults by the use of humor and/or icebreakers (Brue, 1985; Whitman, Spendlove & Clark, 1986).
**Persistent:** For students with low "Persistence," Price, Dunn and Dunn (1982) suggested that these students be provided with short-range motivators and reinforcers. Have students "develop colleague relationships with able, persistent individuals; and praise during process of successful completion of tasks" (p. 8).

**Responsible:** For students with low scores on the PEP's "Responsible" element, Price, Dunn and Dunn (1982) suggest "short-term, limited assignments with only single or dual goals" (p. 8). Instructors should base assignments on the interests of the students and should "use interim praise or rewards during the successful completion of tasks and objectives" (p. 9).

**Summary**

This chapter has presented the results of this study. The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent" decision-makers. Then, to identify instructional/learning strategies which might influence the learning of "Dependent" decision-makers.

The sample of "Dependent" decision-makers was thirty-one adults from 144 students enrolled in a college career planning course. The "Dependent" decision-making group had a mean age of 33.42 years and predominantly white (87%). Even though this group had more females
(61.3%), the group was less dominated by females than was the total sample (74.3%).

The PEPS data analysis indicated that four of the PEPS elements (Sound, Motivation, Persistent, and Responsible) were significantly associated with the "Dependent" decision-making group. The other three PEPS elements (Auditory, Kinesthetic and Afternoon) identified by the one-way ANOVA were significantly associated with the "Intuitive" and/or the "Rational" decision-making groups.

The data analysis of Kolb's LSI modes indicated that none of the four LSI learning modes were shown to be significantly associated with the "Dependent" decision-making group. The "Concrete Experience" (CE) mode of feeling was shown to be significantly associated with "Intuitive" decision-makers.

The literature suggested several instructional/learning strategies that can be employed to influence the "Dependent" decision-maker's learning process. The "Dependent" decision-makers as a group may prefer a quiet environment with little or no background noise. Instructional/learning strategies used to assist "Dependent" decision-makers should stress motivational factors such as a supportive learning environment. Special emphasis should be placed on ways to help "Dependent" decision-makers to become more persistent and responsible about their learning.
CHAPTER V

CONCLUSIONS/RECOMMENDATIONS and DISCUSSION

In this chapter the three hypotheses made before the study began are reviewed and discussed in relation to the results of the study. Conclusions and recommendations are made based on results of this study as was outlined in Chapter IV. A discussion about the use of information about decision-making styles and learning style characteristics is presented plus summary remarks.

Review of Hypotheses

This study was a "descriptive" research and in order to strengthen this type of research, three hypotheses were made before the study began. These three hypotheses are now discussed in relation to the results of this research.

Hypothesis #1: This hypothesis predicted that, because of their denial of personal responsibilities, the "Dependent" decision-makers would have a preference for "Authority-Oriented" learning and would show a lack of "Responsibility" for one's learning. The results from this study did not support the hypothesis about Authority-Oriented learning but did support the hypothesis about "Responsible." This researcher now thinks that the three PEPS elements of (a) Motivation, (b) Persistent, and (c) Responsible have some relationship with each other. Price, Dunn and Dunn (1982) reported that "Motivation" was
positively related to both "Persistence" and "Responsible" (p. 22). They also reported most individuals reported that they were motivated, so a low score on "Motivation" might be extremely important as an indicator. Hindsight now makes this researcher think that PEPS elements "Motivation" and "Persistent" should have been identified along with the element of "Responsible" in Hypothesis #1.

**Hypothesis #2:** The resulting data from this study did not support the hypothesis that because of their high need for social approval, "Dependent" decision-makers would have a preference for "Peer Oriented" learning.

**Hypothesis #3:** The data from this study did not support the hypothesis that "Dependent" decision-makers as a group have Kolb's "Accommodator" learning style. The data did seem to support some elements of the Kolb model as reported in Chapter IV.

**Major Conclusions/Recommendations**

The conclusions drawn from this study need to be evaluated with the awareness of the limitations of descriptive research as described in Chapter III. The results of this study should only be generalized to populations with similar demographics. The results from this study does add to the research data concerning the concepts of decision-making styles and learning style characteristics.

The purpose of this study was to determine if there is a pattern of preferred learning style characteristics for adult "Dependent"
decision-makers. Based on the analysis of the data collected, the following major conclusions and recommendations are made:

1. **Conclusion:** Adult "Dependent" decision-makers as a group had four PEPS elements (Sound, Motivation, Persistent, and Responsible) that showed significantly lower means from the other decision-making groups. So it is concluded that the preferred pattern of learning style characteristics for "Dependent" decision-makers is made up of reduced motivation to learn, lack of persistence and not taking responsibility for one's learning. This group may also have a preference for a quiet learning environment.

**Recommendation:** Any model of instructional/learning strategies designed for "Dependent" decision-makers should take into account the PEPS elements of (a) Sound, (b) Motivation, (c) Persistence, and (d) Responsibility.

The "Dependent" decision-makers as a group have a preference for a quiet learning environment so may want, and need, little or no background noise. It is important for instructors and learners not to ignore the importance of "Sound" as part of the physical environment (Davies, 1981; Ostwald & Williams, 1985).

The "Dependent" decision-makers as a group generally have lower motivation for learning. The fact that adults cannot be directly
motivated (Wlodkowski, 1986) makes it much harder for instructors to influence their students. But because "Dependent" decision-makers are heavily influenced by others (Harren, 1979), this group may be more receptive to motivation by others.

Some specific instructional/learning strategies that may influence the motivation of "Dependent" decision-makers are: (a) creating a learning climate of acceptance and support (Ostwald & Williams, 1985); (b) teaching with enthusiasm and concern for the learner (Knox, 1986); (c) creating a comfortable learning environment for adults by the use of humor and/or icebreakers (Brue, 1985; Whitman, Spendlove & Clark, 1986).

The "Dependent" decision-makers as a group are not as "Persistent" as other decision-makers. Students with low persistence may be helped by providing them with short-range motivators and reinforcers (Price, Dunn & Dunn, 1982). Another strategy would be to provide the low "Persistent" learner with an opportunity to work and interact with more persistent learners while giving the low "Persistent" learner praise at the completion of assigned tasks (Price, Dunn & Dunn, 1982).

The "Dependent" decision-makers as a group are not as "Responsible" as other decision-makers. For students who take little responsibility for their own learning, Price, Dunn and Dunn
(1982) suggest "short term, limited assignments with only single or dual goals" (p. 8). Instructors should base their assignments on the interest of the students and should "use interim praise or rewards during the successful completion of tasks and objectives" (p. 9).

The "Motivation" element identified by the PEPS is an indication of a behavioral pattern and not a measure of underlying psychological factors (Price, Dunn & Dunn, 1982). Research should be conducted to identify some of the underlying psychological characteristics of "Dependent" decision-makers which produce this type of behavioral pattern. For example, one might use Rotter's (1966) Internal-External (I-E) locus of control scale designed to measure the psychological characteristic of locus of control.

2. **Conclusion:** Adult "Dependent" decision-makers as a group cannot be identified as belonging to any one of the four Kolb LSI cognitive learning styles.

**Recommendation:** This study should be replicated using a similar adult population. Since the Kolb model of "cognitive style" did not identify the "Dependent" decision-maker's learning style, other models of "cognitive style" should be used, such as Witkin's (Witkin & Goodenough, 1981) "field-dependent and field-independent" model or Hill's (1976) cognitive model.
Since the "Dependent" decision-making group was not identified as belonging to any one of the four Kolb cognitive learning styles, then maybe a diversity of instructional techniques and strategies should be used.

3. **Conclusion:** The literature on adult learning does identify instructional/learning strategies that are associated with the learning style characteristics defined in this study. Although the literature does not reflect any agreement on the definition of "learning style" (Bonham, 1988a), there does seem to be an agreement that the concept of "learning style" is important in understanding the learning process (Bonham, 1988a; Claxton & Murrell, 1987; Cole, 1982; Cornett, 1983; Dixon, 1982; Dunn & Debello, 1981; Guild & Garger, 1985; James & Galbraith, 1985; Keefe, 1982; McCarthy, 1980; Smith, 1983; and, Ulrich & Guild, 1986).

**Recommendation:** Research should be conducted to develop strategies to teach students techniques for adapting their learning style characteristics to different presentation modes and/or subjects.

Workshops and courses should be developed to assist students in the process of learning about their learning style
characteristics. Instructors should be trained in developing diversity in their instructional techniques and strategies.

4. **Conclusion:** The "Dependent" decision-making group had a higher percentage of males (38.7%) than any of the other groups and/or the total sample (25.7%).

**Recommendation:** This study should be replicated so that the pattern of males associated with the "Dependent" decision-making group might be investigated further.

**Supplementary Conclusions/Recommendations**

The focus of this study was on the preferred learning style characteristics of adult "Dependent" decision-makers. The previous conclusions and recommendations were for the "Dependent" decision-makers. The following supplementary conclusions and recommendations deal with the other decision-making groups.

1. **Conclusion:** Adult "Intuitive" decision-makers as a group had four PEPS elements (Sound, Auditory, Kinesthetic and Afternoon) whose means were significantly different from some or all of the other decision-making groups.

**Recommendations:** Any model of instructional strategies designed for "Intuitive" decision-makers should take into account the
elements of (a) Sound, (b) Auditory, (c) Kinesthetic, and (d) Afternoon.

The "Intuitive" decision-makers as a group have a preference for "Sound" and may study or learn better with soft background music. Students who need sound may turn on a radio, stereo, or TV when they study to screen out random background noise (Price, 1987).

The "Intuitive" decision-makers as a group have an "Auditory" perceptual preference. Lecture is an effective mode when presenting information to these students (James & Galbraith, 1985) but this group may effectively use audio tapes, records, radio, etc. (Price, Dunn & Dunn, 1982).

The "Intuitive" decision-makers as a group have a preference for the use of their whole body (Kinesthetic) in the learning experience. The "Kinesthetic" learner requires whole-body movement and/or real-life experiences. So effective learning techniques would be acting, visiting, interviewing, and role playing (Price, 1987).

The "Intuitive" decision-makers as a group show a weak preference for the "Afternoon" as a time of day for working or learning. The afternoon may not be a productive time of day for this group.
2. **Conclusion:** Adult "Rational" decision-makers as a group had the mean for the PEPS element of "Kinesthetic" that was significantly lower than two other decision-making groups (Unclassified and Intuitive).

**Recommendation:** The adult "Rational" decision-makers as a group do not prefer to use their whole body (Kinesthetic) in the learning experience. So, activities such as acting, visiting, interviewing, and role playing may not be effective for this group.

**Discussion**

The two constructs of decision-making styles and learning style characteristics were the focus of this study. The following discussion addresses the use of information about one's decision-making style and learning style characteristics.

**Decision-Making Style**

The development of career decision-making skills has been seen as an essential component of any effective career planning/development program (Baldwin, 1981; Hazler & Roberts, 1984). The work of Harren (1979, 1980) and others has played an important part in how career planning/development professionals now look at career decision-making. Harren's model looks at the characteristics of the decision-maker and promotes the concept that people have different decision-making styles.
Harren's (1980) research suggested that people who have a "Rational" decision-making style make more "effective" decisions than do either the "Intuitive" or "Dependent" decision-makers. So, one of the topics of discussion is whether one decision-making style is more effective than another and if so, should career counselors or others try to help people change their decision-making style?

Other questions arise from the above discussion, such as: If a person is not a "Rational" decision-maker, should they try to change?; and, What part should career counselors play in helping a person try to change his or her decision-making style?

This study did not focus on the effectiveness of different decision-making styles but on how one might help "Dependent" decision-makers. The results of this study suggest that such factors as "Sound," "Motivation," "Persistence," and "Responsibility" may be the keys to assist "Dependent" decision-makers. But, one might ask if instructional strategies were designed to increase the motivation, persistence and responsibility of "Dependent" decision-makers, then what effect might that have on the learner's decision-making style?

This author has taken the position that it is better to let people learn about their decision-making style and then let them decide on whether to change or not. If a person is comfortable with his or her decision-making style, then career counseling may be used to assist a person in using his/her style effectively.
Learning Style Characteristics

The information about learning style characteristics can be used in different ways either by the learner or persons who may be assisting learners. Some writers suggest that when students are aware of their own learning style characteristics, they can make useful decisions about how they approach the task of learning (Dixon, 1982, 1985; Gorham, 1986). Smith (1983) wrote that "knowledge of one's preferences and tendencies in learning and information processing can be helpful in making choices about what, when, where, and how to learn" (p. 98).

Dixon (1985) suggested that learning style information can and should be used by both learner and instructor. The learner can be empowered by knowing more about his or her learning style characteristics. Instructors can assist learners by giving student workshops and/or learning style instruments that would activate the student's own investigation of his or her learning style characteristics. Several useful books/booklets have been published to assist students in the process of learning about learning style characteristics (Claxton & Murrell, 1987; Guild & Garger, 1985; Kolb & Baker, 1986; Ulrich & Guild, 1986). Other authors have tried to assist the instructors in developing diversity in their instructional techniques and strategies (Cole, 1982; Fuhrmann & Grasha, 1983; McCarthy, 1980, 1984; Spaid, 1986; Whitman, Spendlove & Clark, 1986).

Another topic of discussion in the literature on learning styles is the question of matching and mismatching learning styles to
instructional strategies. Messick (1978) suggested that mismatching is needed to promote flexible and creative thinking but also supported matching which allows students to use their preferred modes of functioning when learning new material. Mismatching instructional procedures to the learning styles of students would allow the student to develop new ways of learning (Fuhrmann & Grasha, 1983).

Summary

This study of the pattern of learning style characteristics for adult "Dependent" decision-makers has provided useful information for both learners and teachers. The "Dependent" decision-makers as a group had the four PEPS elements of (a) Sound, (b) Motivation, (c) Persistent, and (d) Responsible identified as important learning style characteristics. Any instructional/learning strategies designed for "Dependent" decision-makers should take into account those four elements.

The literature suggests several instructional/learning strategies that may be employed to influence the "Dependent" decision-makers. Instructional/learning strategies used to assist "Dependent" decision-makers should stress motivational factors such as a supportive learning environment. Special emphasis should be placed on ways to help "Dependent" decision-makers become more persistent and to take more responsibility for their learning.
REFERENCES


APPENDIX A

Permission Form
PERMISSION FORM

I give Jim Reynolds permission to use my scores on selected "learning style" and "decision-making style" surveys as data in a study on the relationship between decision-making style and learning style characteristics. I also give Mr. Reynolds permission to use data from my NVCC student file, such as age, ethnic group, gender, etc..

I understand that all scores and data reported in the study will be confidential. No identifying characteristics of individuals will be disclosed (i.e., name, SS#, gender, etc.). All data will be reported in statistical terms, such as mean, percentage, etc..

Signature

Date

Social Security No.

If under 18, Parent or Guardian

Signature
APPENDIX B

Learning Style Instruments
<table>
<thead>
<tr>
<th>DEVELOPERS</th>
<th>NAME</th>
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<th>REFERENCES</th>
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<tr>
<td>Canfield &amp;</td>
<td>Learning Style Inventory (LSI)</td>
<td>Self-report: Rank ordering of choices for each of 30 questions</td>
<td>Relations with instruction peers; Structural conditions; content (#s, words, etc); Learning mode (listening, reading, iconic &amp; direct experience); Achievement conditions.</td>
<td>JR H.S. to Adults</td>
<td>Price (1983)</td>
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<td>Lafferty</td>
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<tr>
<td>Dunn, Dunn, &amp;</td>
<td>Learning Style Inventory (LSI)</td>
<td>Self-report: Rank ordering of choices for each of 104 items.</td>
<td>Tendencies and preferences Environment; Emotional; Need for structure; Sociological.</td>
<td>Grades 3-12</td>
<td>Dunn &amp; Dunn (1978)</td>
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<td>Price</td>
<td>Productivity Environmental Preference Survey (PEPS)</td>
<td>Self-report: Rank ordering of choices for each of 100 items.</td>
<td>Vizualization; Written Environment; Emotional; Need for structure; Sociological</td>
<td>Adults</td>
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<td>Gregorc,</td>
<td>Transaction Ability Inventory</td>
<td>Self-report: Rank ordering of four words to each of ten sets.</td>
<td>Concrete-Sequential; Concrete-Random; Abstract-Sequential; Abstract-Sequential.</td>
<td>JR H.S. to Adults</td>
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<td>Hill, Joseph</td>
<td>Cognitive Style Interest Inventory (East Lansing High School)</td>
<td>Self-report: Rank ordering items.</td>
<td>Measures abstractions; Visual, tactile, and auditory perceptions; Motor coordination; Social inter-action &amp; modalities of inference.</td>
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### LEARNING STYLE INSTRUMENTS (Continued)

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<td>Hunt, David</td>
<td>Teacher Assessment of Student's Learning Style</td>
<td>Student reaction to teacher-introduced changes in structure.</td>
<td>Focus is on the amount of structure individual students require.</td>
<td>Grade 6 to Adults</td>
<td>Hunt(1982) Price(1983)</td>
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<td>Kolb, David</td>
<td>Learning Style Inventory (LSI)</td>
<td>Self-report: Rank ordering of endings to 12 sentences.</td>
<td>Four learning modes: Concrete experience (CE); Reflective observation (RO); Abstract conceptualization (AC); Active experimentation (AE).</td>
<td>Adults</td>
<td>Kolb(1985) Kolb(1986) Price(1983)</td>
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<td>DEVELOPERS</td>
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<td>Witkin, Herman A.</td>
<td>Embedded Figures Test</td>
<td>Locate simple figures in designs.</td>
<td>Field independent - field dependent aspect of cognitive style.</td>
<td>Children to Adults</td>
<td>Witkin &amp; Goodenough (1981)</td>
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Table design adapted from Freeley (1983)
APPENDIX C

ACDM Answer Sheet
and ACDM Report

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Services, 12031 Wilshire Boulevard,
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PART A: DECISION MAKING

1. I am very systematic when I go about making an important decision.

2. I like to have someone to steer me in the right direction when I am faced with an important decision.

3. I make decisions pretty creatively, following my own inner instincts.

4. I usually make my decisions based on how things are for me right now rather than how they'll be in the future.

5. I rarely make an important decision without gathering all the information I can find.

6. I often make a decision which is right for me without knowing why I made the decision.

7. When I make a decision I consider its consequences in relation to decisions I will have to make later on.

8. When I make a decision it is important to me what my friends think about it.

9. I really have a hard time making important decisions without help.

10. Even on important decisions I make up my mind pretty quickly.

11. When I make a decision I usually don't consider the feelings and reaction of others.

12. I often make decisions that, rather than doing the right thing, are selfish.

13. When I need to make a decision I think it through carefully.

14. I often decide on something and then get the facts to back it up.

15. I rarely make a decision of the first thing that came to my mind.

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ability to make the right decisions

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**PART B: FEELINGS ABOUT SCHOOL**

1. I don't know what the instructors in my courses expect.  
2. People are starting to listen to some of my ideas around here.  
3. I believe I've been pretty successful in adjusting to school.  
4. I'm trying to find out what the people I live with want of me.  
5. I've been talking to some of my friends about how much I like this school.  
6. People here seem to respect me and value my ideas.  
7. Some of my instructors seem open to suggestions for improving their course.  
8. I've been asking other students how they like it here.  
9. It's hard to know how to act at this school.  
10. I'm trying to get other students involved in things, instead of just sitting around.  
11. This school seems to be meeting my expectations and needs pretty well.  
12. I don't feel that I really belong here.  
13. I often talk to my instructors outside of class.  
14. I'm not afraid to speak up in class when I don't agree with the instructor.  
15. The encouragement and support I've gotten have helped me to try hard to do well.  
16. I've been getting along with instructors.  
17. Some of my instructors are more objective people.  
18. I wonder if further.  
19. I'm pretty satisfied with my school.  
20. I really enjoy getting to know other students.  
21. I feel I've gotten a sense of belonging here.  
22. I've been telling my friends at other schools what a great place this is.  
23. I feel like we are all helping each other to accomplish our goals.  
24. Some of the advanced students have helped me to become more realistic.  

**PART C: OCCUPATIONAL PLANS**

1. I'm interested in too many fields.  
2. I've changed my mind about what I wanted to become, but I've learned more about some of them.  
3. I want to know what field of work I am best suited for.  
4. I need to decide on an occupation.  
5. I know what's important to me, but I don't know what kind of career would meet most of my needs.  
6. I can't decide on a career because my interests keep changing.  
7. I need to know more about the training required for some of the occupations I am considering.  
8. I don't know how to go about deciding on a career.  
9. I don't know if I have the right kind of personality for the work I'm considering.  
10. It is unlikely that I will change my mind about my career plans.  
11. It's hard to know what to look for in a career.  
12. I wonder what kind of job I'll be able to get in my field.  
13. My plans for the future are too indefinite.  
14. I'm trying to decide between two or three possible careers.  
15. I'm pretty certain about the occupation I will enter.  
16. I don't know what I really want out of life.  
17. I'm more certain of the fields I don't want than what I do want.  
18. I need information about occupations.  
19. I need to find out what jobs are available in my field.  
20. I'm a little happier now that my future career is clearer.

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ASSESSMENT OF CAREER DECISION MAKING (ACDM)

A WPS TEST REPORT by Western Psychological Services
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Los Angeles, California 90025
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Version 2 Production 2

NUMBER OF STUDENTS: 6  MALES: 6  FEMALES: 0
DATE OF REPORT: June 3, 1985  CLASS(ES): Freshman-Freshman

CONTENTS OF THIS REPORT: 1 Group Summary
6 Counselor's Reports
6 Student's Reports

***** ACDM GROUP SUMMARY *****

This group report provides summary scores for each individual whose responses to the Assessment of Career Decision Making (ACDM) were submitted to WPS TEST REPORT for processing. The ACDM is a 94-item questionnaire designed to assess a student's career decision-making style, satisfaction and adjustment to school, and progress in the process of making career decisions regarding a field of study and occupation.

Based on the Harren Model of Career Decision Making (Harren, 1979), the instrument is composed of declarative statements to which students respond either "True" or "False". Scores are reported for the three Decision-Making Styles scales (Rational, Intuitive, Dependent), the three subscales of the School Adjustment scale (Satisfaction with School, Involvement with Peers, Interaction with Instructors), the Occupation scale, and the Major scale.

The Decision-Making Styles scales indicate the strategies an individual uses to approach and resolve career decisions. Most people use a combination of the three styles. A significantly higher score on a single scale indicates a dominant strategy. On the School Adjustment scale, high scores indicate that a student feels accepted and satisfied with school. The Occupation and Major scales assess the progress a student has made toward selecting an occupation and major, respectively. High scores indicate a sense of direction, certainty, and a commitment to action. Low scores suggest that the student may need help to address unresolved questions concerning educational or vocational goals. The user should consult the ACDM Manual (WPS Catalog Number W-195B) for more details concerning the content, reliability, validity, and interpretation of these scale scores before interpreting the attached reports.

The group summary on the following page is used to identify students who have the highest or lowest scores on each of the scales, and may be used to develop local norms and facilitate research or evaluation with this instrument. However, in reviewing these scores it is important not to interpret them out of context. For more detailed interpretation of each student's responses, including any special validity considerations, refer to the Counselor's Reports.
ID NUMBER  AGE  SEX  VALIDITY INDICATOR*  RAW SCORES  MEANS  STANDARD DEVIATIONS
000000135  17  M  NO  10  2  2  12  0  2
000000138  17  M  YES  7  6  9  12  3  3
000000140  17  M  NO  4  7  3  17  12  13
000000145  17  M  YES  4  7  0  11  8  4
000000169  17  M  YES  10  2  2  15  7  3
000000178  19  M  NO  9  5  1  8  5  2

MEANS:  7.3  4.8  2.8  12.5  5.8  4.5
STANDARD DEVIATIONS:  2.8  2.3  3.2  3.1  4.2  4.2

*As noted in the Counselor's Reports, there are a number of special circumstances or "validity considerations" which should be taken into account in interpreting the scores for an individual. A "Yes" in the Validity Indicator column above indicates that at least one special validity consideration was identified for a particular student. Thus, these scores should be interpreted with particular caution. Detailed information about the nature of these validity considerations is contained in the Counselor's Reports.

STUDENTS WITH SUSPECTED PROBLEMS IN CAREER DECISION MAKING

The students listed below scored one standard deviation or more below the mean compared to a normative sample of high school and college students.

Decision-Making Styles and School Adjustment

Students who use the dependent decision-making style tend to be less satisfied with their career decisions. Individuals scoring high on this scale may need individual counseling in career decision making and need assistance in other areas of personal development. Likewise, a low score on the School Adjustment scale is related to dissatisfaction with school, and students with a low score may be in need of individual counseling.

Students who may be in need of individual career or personal counseling are:
000000135, 000000138, 000000145, 000000169, 000000178

Occupations and Majors

Low scores on the Occupation and Major scales indicate a need to investigate career options and decide on a course of action. These students may benefit from individual or group exploration of careers and the career decision-making process.

Students who may be in need of individual or group counseling or instruction to explore careers are:
000000135, 000000138, 000000145, 000000169, 000000178

Figure 5 - WPS Test Report  Page 2 of 12

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Los Angeles, CA 90025
ASSESSMENT OF CAREER DECISION MAKING (ACDM)

This summary is based on a systematic analysis of this student's responses to the ACDM in conjunction with the currently available research on this instrument. These results may be useful in assessing the predominant career decision-making style, school adjustment, and progress in an occupation and major as an aid to individual assessment or research in career development. The ACDM may also be used to identify individuals who may benefit from career counseling or instruction. In assessing individuals, the user should keep in mind that the ACDM is intended as a screening instrument regarding the career decision-making process. Patterns of responses to the Decision-Making Styles scales or the School Adjustment scale may provide clues about the nature of problems in other areas. Thus, this report should be viewed as a series of hypotheses requiring further verification from personal interviews and other information obtained from the student.

This report is organized into seven parts:
1. An assessment of validity considerations.
2. A profile of percentile scores summarizing empirical test results.
3. A narrative description of the student's decision-making style and progress on the career decision-making tasks.
4. Tables analyzing the variability in this student's responses on the different scales.
5. Analysis of this student's predominant decision-making style.
6. Individual item responses.
7. A brief student report which can be detached and given to the student for use in counseling or instruction.

Studies underlying this WPS TEST REPORT are discussed in the Manual for the ACDM (WPS Catalog Number W-195B). Appropriate use of the ACDM assumes familiarity with the Manual and relevant research literature. In addition, potential users should become familiar with and conform to the ethical and professional standards for the use of tests, as prescribed by the American Psychological Association.
***** VALIDITY CONSIDERATIONS *****

The pattern of responses and background information provided by this individual do not suggest any special circumstances which might adversely affect the validity of the scales.

***** SUMMARY OF TEST RESULTS *****

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<td>DMT-M (2)</td>
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Decision-Making Styles
DMS-R = Rational
DMS-I = Intuitive
DMS-D = Dependent

Decision-Making Tasks
DMS-SA = School Adjustment
SWS = Satisfaction with School
IWP = Involvement with Peers
IWI = Interaction with Instructors
DMS-O = Occupation
DMS-M = Major

Figure 5 - WPS Test Report Page 4 of 12

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DECISION-MAKING STYLES SCALES

Rational (DMS-R)

This student indicates that in making decisions he is very realistic in his appraisal of the situation. His use of this decision style is much above average when compared to the normative sample. This student is systematic in assessing the situation and makes logical decisions based on the information available. He considers the consequences of his decisions and therefore is likely to accept responsibility for a decision.

Intuitive (DMS-I)

The responses selected by this student indicate that he uses the intuitive decision-making style much less frequently than his normative group. His decision style may involve little consideration of feelings and concern for self-satisfaction.

Dependent (DMS-D)

This student indicates an average degree of dependency in his career decision making.

SCHOOL ADJUSTMENT SCALE

Overall Adjustment to School (DMT-SA)

This student reports an average degree of adjustment to school. He is not satisfied with his school experiences. Interactions with instructors are about as frequent as is typical based on the normative group. Also, he is moderately involved with his peers.

Satisfaction with School (SWS)

This student’s responses suggest that he is generally not satisfied with school. He feels that he has been unsuccessful in adjusting to school.

Involvement with Peers (IWP)

This student reports an average involvement with peers. His responses indicate an interest in working with other students.

Interaction with Instructors (IWI)

This student interacts with instructors to an average extent. He is confident about course requirements and speaking up in class. He feels that his teachers are generally supportive and encouraging. He willingly expresses his opinions in class and interacts with instructors outside of class.

OCCUPATION SCALE (DMT-O)

This student reports uncertainty regarding his occupational selection. This student is unsure about his personality style and personal
preferences. He lacks knowledge and information-seeking skills to gather information about self and the work world.

MAJOR SCALE (DMT-M)

The responses given by this student suggest that he has not decided on a major. This student may be experiencing anxiety regarding the lack of a choice of a major. This student is aware of the need to decide on a major and to take exploratory courses in school. His responses indicate concern about a lack of ability. He is aware of changing and undifferentiated interests. This student does not have a systematic strategy for choosing a major.
This section presents pairs of scales which differ significantly from one another based on a statistical criterion. While statistical significance does not guarantee clinical significance, the user should consider the relevance of any observed difference for test interpretation.

The difference between two scales is presented only if the probability of the observed difference occurring by chance is less than 5%, correcting for the number of tests made.

Tests of the difference between pairs of scales are conducted between each of the Decision-Making Styles scales, between each of the School Adjustment subscales, and between the Occupation and Major scales. This information may be useful in determining the relative strength of a decision-making style, the influence of the School Adjustment subscales to overall adjustment, and relative progress in the tasks of selecting an occupation and a major.

Decision-Making Styles Scales

No significant differences were found on the Decision-Making Styles scales.

School Adjustment Subscales

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<tr>
<th>Scale</th>
<th>Very Low</th>
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<tr>
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<td>xxxxxx</td>
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<tr>
<td>Interaction with Instructors</td>
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<td>xxxxx</td>
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<td>x</td>
<td>+</td>
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<tr>
<td>Interaction with Instructors</td>
<td>++</td>
<td>xxxxx</td>
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</table>

The Satisfaction with School score is very much lower than the Interaction with Instructors score. Furthermore, the combination of much below-average Satisfaction with School and slightly above-average Interaction with Instructors scores is very unusual.

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<th>Scale</th>
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<td>Involvement with Peers</td>
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<td>+</td>
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<tr>
<td>Interaction with Instructors</td>
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<td>xxxxx</td>
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The Involvement with Peers score is very much lower than the Interaction with Instructors score. Also, the combination of average Involvement with Peers and slightly above-average Interaction with Instructors scores is very unusual.
Occupation and Major Scales

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The Occupation score is very much lower than the Major score. Also, the combination of very much below-average Occupation and much below-average Major scores is very unusual.
ANALYSIS OF PREDOMINANT DECISION-STYLE PATTERN

This section presents four common theoretical patterns of decision-making style. Each pattern is defined in terms of ranges of possible scores on each of the Decision-Making Styles scales. On each profile, the left bracket ([]) denotes the group lower bound while the right bracket (]) denotes the upper bound. The student's observed scores, indicated by X's, are compared to each pattern to determine the likelihood that the student is a member of that group.

Pattern 1: High Rational

The predominantly rational decision maker actively seeks relevant career information and makes decisions deliberately and logically. This individual accepts responsibility for decision making. The rational decision maker usually has a long-term perspective on decision making and is most likely to express certainty and satisfaction with career decisions.

The probability that this person is representative of the group is 99%

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Pattern 2: High Intuitive

The predominantly intuitive decision maker is concerned with present feelings and emotional satisfaction. This individual often makes decisions quickly with little regard for the future. Although the intuitive decision maker accepts responsibility for decisions, those decisions may lack stability and long-term satisfaction as the individual's internal state fluctuates over time.

The probability that this person is representative of the group is 21%

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Figure 5 - WPS Test Report  Page 9 of 12

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Los Angeles, CA 90025
Pattern 3: High Dependent

The predominantly dependent decision maker bases career decisions on the expectations and opinions of others. This individual may not take responsibility for career choices, depending on others to make these decisions.

The probability that this person is representative of the group is 53%.

Pattern 4: Combination

The individual with this pattern uses a combination of intuitive and dependent decision-making styles. This individual is concerned with the present, basing decisions on immediate feelings or the expectations and opinions of others. This pattern is indicative of a generally immature decision-making style. This individual may not take responsibility for career choices.

The probability that this person is representative of the group is 4%.
***** CRITICAL ITEM RESPONSES *****

Items selected by this student which may prove useful in gaining an understanding of the empirical pattern of scores and in suggesting areas for further inquiry are listed below. These items were answered by the student in the direction shown. For each item, the percentage of the standardization sample responding in this direction is also indicated.

IMPORTANT
* In interpreting the results, the user should be careful not to place too much interpretive value on any individual response.
* The results should never be interpreted out of context. For this reason, individual item responses should not be given to parents or other individuals who may not have sufficient background to interpret them appropriately.

DECISION-MAKING STYLES SCALE

2. I like to have someone steer me in the right direction when I am faced with an important decision. (True 61%)

SCHOOL ADJUSTMENT SCALE

18. I wonder if further education is worthwhile for me. (True 44%)

OCCUPATION SCALE

3. I want to know what field of work I am best suited for. (True 78%)
4. I need to decide on an occupation. (True 51%)
7. I need to know more about the training required for some of the occupations I am considering. (True 66%)
8. I don't know how to go about deciding on a career. (True 37%)
12. I wonder what kind of job I'll be able to get in my field. (True 66%)
18. I need information about occupations. (True 60%)

MAJOR SCALE

1. I need to decide on a major. (True 45%)
8. I don't know how to go about choosing a major. (True 41%)

Figure 5 - WPS Test Report  Page 11 of 12

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APPENDIX D

PEPS Answer Sheet
& Profile Report

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When your name, sex, and marital status are recorded in this survey, you will not be identified as an individual. Responses are confidential and cannot be traced back to any individual. Your answers will be used to improve the survey and to provide information on the characteristics of the population.
45. The one job I like doing best: I do with a group of people.
46. I am uncomfortable when I work or try to study in a warm room.
47. I prefer to have teachers or supervisors set deadlines for my work.
48. I like to eat while I'm concentrating.
49. I prefer completing one thing before I start something else.
50. It is difficult for me to start a new task before I finish the task I am doing.
51. I really enjoy movies.
52. I have to be reminded to do things I've said I would do.
53. I work best when the lights are low.
54. I prefer that persons in authority stay away until I have completed my work.
55. I keep trying to accomplish a task even if it appears that I may not succeed.
56. I like to learn about something new by hearing a tape or a lecture.
57. I feel I am self-motivated.
58. The one job I like doing best: I prefer doing alone.
59. Eating something would distract me when I'm working.
60. My performance improves if I know my work will be checked.
61. I prefer to work with music playing.
62. I stay at a task until it is finished, even if I don't like what has to be done.
63. I learn best by being directly involved in what I am doing.
64. I always do the best I can.
65. I remember how to do a new task when I learn how by actually doing it.
66. I often read in dim light.
67. If I have to learn something new, I like to learn about it by reading.
68. I prefer someone else carefully outlining how a task should be done.
69. I would rather start work in the morning than in the evening.
70. I constantly change positions in my chair.
71. Things I remember best are the things that I hear.
72. I like my instructor(s) or supervisor(s) to recognize my efforts.
73. I learn better by reading than by listening to someone.
74. I get more done in the afternoon than in the morning.
75. I can block out most sound when I work.
76. I really like to build things.
77. I prefer to work under a shaded lamp with the rest of the room dim.
78. I choose to eat, drink, smoke or chew only after I finish working.
79. I remember things better when I study in the evening.
80. If I have to learn something new, I like to learn about it by seeing a movie.
81. I feel good when my spouse, colleague, or supervisor praises me for doing well at my job.
82. I prefer a cool environment when I try to study.
83. It's difficult for me to block out sound (music, TV, talking) when I work.
84. I would rather learn by experience than by reading.
85. I like being praised for a "job well done."
86. It's difficult for me to sit in one place for a long time.
87. I work best if coffee is available.
88. I enjoy doing experiments.
89. If a task becomes very difficult, I tend to lose interest in it.
90. I like to learn new things.
91. I can sit in one place for a long time.
92. I can concentrate best in the evening.
93. I prefer to study with someone who really knows the material.
94. I often change my position when I work.
95. I would work more effectively if I could eat while I'm working.
96. If I can go through each step of a task, I always remember what I learn.
97. I learn better when I read the instructions than when someone tells me what to do.
98. I only begin to feel wide awake after 10:00 A.M.
99. I often complete unfinished work on a bed or couch.
100. I often wear a sweater or jacket indoors.

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STOP
INDIVIDUAL PROFILE
PRODUCTIVITY ENVIRONMENTAL PREFERENCE SURVEY

Name: DOE JOHN  Sex: M  Year in School: 16  Date of Birth: 58/01  I.D. No.: 999887777

Group Identification: A  Special Code:  Date: 12-03-1987  Group No.: 999

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<td>19</td>
<td>57</td>
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<table>
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<td>Light- -</td>
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</tr>
<tr>
<td>Temperature</td>
<td>Warm</td>
</tr>
<tr>
<td>Design- -</td>
<td>Formal</td>
</tr>
<tr>
<td>Motivation</td>
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<tr>
<td>Persistent</td>
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<tr>
<td>Responsible</td>
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<tr>
<td>Structure</td>
<td></td>
</tr>
<tr>
<td>Learning Alone-Peer Oriented</td>
<td></td>
</tr>
<tr>
<td>Authority Figures-Present</td>
<td></td>
</tr>
<tr>
<td>Learn in Several Ways</td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td></td>
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<tr>
<td>Visual</td>
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<td>Tactile</td>
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<td>Kinesthetic</td>
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<td>Requires Intake</td>
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</tr>
<tr>
<td>Evening - Morning</td>
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<td>Late Morning</td>
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<tr>
<td>Afternoon</td>
<td></td>
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<td>Needs Mobility</td>
<td></td>
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<tr>
<td>Parent Figure Motivated</td>
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<tr>
<td>Teacher Motivated</td>
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</table>

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APPENDIX E

Ethnic Group Frequency Distribution Tables
FREQUENCY DISTRIBUTION OF FEMALES BY ETHNIC GROUPS AND DECISION-MAKING STYLES

<table>
<thead>
<tr>
<th>FEMALE DECISION-MAKING STYLES</th>
<th>FEMALES</th>
<th>PERCENT OF TOTAL FEMALE &quot;n&quot; n = 107</th>
<th>PERCENT FEMALE &amp; MALE SAMPLE n = 144</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASIAN</td>
<td>BLACK</td>
<td>HISP.</td>
</tr>
<tr>
<td></td>
<td>n/%fdm</td>
<td>n/%fdm</td>
<td>n/%fdm</td>
</tr>
<tr>
<td>DEPENDENT N=19</td>
<td>00/00.0</td>
<td>01/05.3</td>
<td>01/05.3</td>
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<tr>
<td>INTUITIVE N=25</td>
<td>01/04.0</td>
<td>04/24.0</td>
<td>02/08.0</td>
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<tr>
<td>RATIONAL N=17</td>
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<td>01/05.9</td>
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<td>01/03.6</td>
<td>01/03.6</td>
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<tr>
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<td>07/06.5</td>
<td>08/07.5</td>
<td>06/05.6</td>
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</table>

DATA IN TABLE = n/%fdm where "n" = SAMPLE SIZE & %fdm = PERCENT OF FEMALE DECISION-MAKERS
FREQUENCY DISTRIBUTION OF MALES BY ETHNIC GROUPS AND DECISION-MAKING STYLES

| MALE DECISION-MAKING STYLES | MALES | PERCENT OF TOTAL MALE "n"  
<table>
<thead>
<tr>
<th></th>
<th>ASIAN n/%mdm</th>
<th>BLACK n/%mdm</th>
<th>HISP. n/%mdm</th>
<th>OTHER n/%mdm</th>
<th>WHITE n/%mdm</th>
<th>n = 037</th>
<th>PERCENT OF TOTAL SAMPLE n = 144</th>
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</thead>
<tbody>
<tr>
<td>DEPENDENT N=12</td>
<td>00/00.0</td>
<td>01/08.3</td>
<td>01/08.3</td>
<td>00/00.0</td>
<td>10/83.4</td>
<td>12/32.4</td>
<td>12/08.3</td>
</tr>
<tr>
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<td>00/00.0</td>
<td>00/00.0</td>
<td>00/00.0</td>
<td>00/00.0</td>
<td>05/100</td>
<td>05/13.5</td>
<td>05/03.5</td>
</tr>
<tr>
<td>RATIONAL N=08</td>
<td>00/00.0</td>
<td>04/50.0</td>
<td>00/00.0</td>
<td>01/12.5</td>
<td>03/37.5</td>
<td>08/21.6</td>
<td>08/05.6</td>
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<tr>
<td>COMBINATION N=05</td>
<td>00/00.0</td>
<td>02/40.0</td>
<td>00/00.0</td>
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<td>03/60.0</td>
<td>05/13.5</td>
<td>05/03.4</td>
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<td>01/14.3</td>
<td>00/00.0</td>
<td>00/00.0</td>
<td>05/71.4</td>
<td>07/19.0</td>
<td>07/04.9</td>
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<tr>
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<td>01/02.7</td>
<td>08/21.6</td>
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<td>37/100</td>
<td>37/25.7</td>
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DATA IN TABLE = n/%mdm where "n" = SAMPLE SIZE & %mdm = PERCENT OF MALE DECISION-MAKERS
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