AN EXPLORATORY STUDY OF THE VOCATIONAL DECISION-MAKING PROBLEMS OF REHABILITATION CLIENTS

By

Douglas Clark Strohmer

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Personnel Services
and Educational Psychology

1979

ABSTRACT

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The purpose of this study was to explore the nature and dimensions of the vocational decision-making problems of vocational rehabilitation clients.

Many rehabilitation clients have experienced difficulty in making the choice of a vocational goal. This choice is an intergal part of the rehabilitation process, and a client's inability to make such a choice is a major problem. A review of the literature revealed no direct research dealing with the decision-making problems of rehabilitation clients. In addition to this lack of direct research, it was also noted that no instrumentation had been developed or standardized specifically for the rehabilitation client.

This study was undertaken to develop a new instrument and to provide preliminary data on the decision-making of rehabilitation clients. This instrument, the Decision-Making Interview (DMI), was constructed based on relevant research literature and the experience of a number of rehabilitation professionals. Extensive content

validation and item analysis procedures were utilized in the development of the new instrument. The final form of the DMI was an interview format made up of three scales. These scales were the Employment Readiness Scale, the Self-Appraisal Scale, and the Decision-Making Readiness Scale. Reliability estimates indicated that the reliability of the three scales was not high enough to consider individual use, but group use was considered appropriate.

In addition to the Decision-Making Interview, two other instruments were utilized in the study. A demographic questionnaire was developed to gather information about the characteristics of the sample. One standardized instrument, the Career Maturity Inventory - Attitude Scale, was administered concurrently as an indicator of the concurrent validity of the DMI.

Three groups of subjects were used in the study. The first group was vocational rehabilitation clients in vocational evaluation. This group was chosen as representative of vocationally undecided rehabilitation clients. The second group was vocational rehabilitation clients in vocational training. This group was chosen as representative of vocationally decided rehabilitation clients. The third group was seniors in high school, who were selected as representative of a group having a mixture of vocationally decided and undecided individ-

uals. Only male subjects were utilized because of a low number of females in the training and evaluation groups.

Each subject was administered the DMI and demographic survey orally in an individual interview. The CMI was administered orally in a group at the end of the day. The results of these interviews were used to refine the DMI and to answer a number of research questions and hypotheses.

Of primary interest in the study were four research hypotheses regarding the DMI's ability to differentiate among the evaluation, training, and high school groups. A one-way analysis of variance procedure failed to indicate significant differences among the groups' means on the scales and the total DMI. All four research hypotheses were rejected based on these analyses. An additional analysis, Bartlett's Test of Homogeneity of Variance, was utilized to compare the groups. Differences among the groups were found on the variance dimension on the Employment Readiness Scale, the Decision-Making Readiness scale, and on the total DMI.

A second area of interest was the concurrent validity of the DMI. Correlational analyses were used to examine the degree of relationship among several theoretical indicators of decision-making and the DMI and its scales. A number of positive, significant correlations were found. These correlations indicated a reasonable degree of

validity for the DMI.

The final area of interest was a characterization of the undecided rehabilitation client. Although certain characteristics made up a large portion, the overall characterization of the group was that it was a very heterogeneous group.

A number of explanations and implications of the findings reported were discussed. Implications for further research use of the DMI were also presented.

DEDICATED

To Cindy

ACKNOWLEDGEMENTS

I would first like to extend my deepest appreciation to my wife, Cindy, for her love, patience, and understanding during the endless pre-occupations that make up a doctoral program.

Next, I want to recognize my children, Shaun, Jamie, Julie, and Amy who lost their dad to statistics, comprehensives, and my dissertation, and still thought it was great that dad was a student, too

For his encouragement to return to MSU, his support and friendship during the program, and his excellent guidance during the dissertation I thank my advisor and chairman, Jim Engelkes.

I also want to thank my guidance committee members, Herb Burks, Chuck Coker, Al Kirk, and Bob Winborn for their support and guidance.

A number of fellow students provided their friendship and their time to this project. I want to thank George Frassa, Pat Lustman, Claudia Sowa, and Terry Vander-Molen for their hard work and support.

I also want to thank Chuck Coker and Fred Menz for the excellent training and support they provided during my affiliation with the Research and Training Center at the University of Wisconsin-Stout.

The State Technical Institute and Rehabilitation Center, Peckham Rehabilitation Center, and Webberville High School were very cooperative in providing the subjects for this study. For this cooperation I thank the students and staff of each of these organizations.

Finally, I wish to gratefully acknowledge the partial support for this research provided by the Research and Training Center at the University of Wisconsin-Stout through Grant no. 16-P-56821/5, from the Rehabilitation Services Administration, Department of Health, Education, and Welfare, Washington, D.C.

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Chapter I

Introduction and Need

The mission of the state rehabilitation agency is to assist handicapped individuals to secure gainful employment. To reach this goal, assistance is provided in the form of a number of services. Services such as training, prosthetic aid, physical restoration, and psychiatric care are purchased by the agency for each individual. Other services like counseling, guidance, and placement are provided by agency personnel. Any one, a combination, of these services can be utilized to assist the individual. Each client of the state rehabilitation agency has a program of rehabilitation designed specifically to meet their needs. Although this process is individual in nature, there is an overall process, with distinct steps that is followed in every case.

Initially, the handicapped individual makes application for services to the state rehabilitation office. Medical, psychological, social, and vocational information is then gathered on each applicant. If they meet the eligibility criteria set by the agency, services beyond the diagnostic workup are offered to each individual. If they accept, they become clients of the agency. After eligibility is

determined, the client and counselor work through each of the succeeding steps in the rehabilitative process. Each of these steps is contingent on the successful completion of the previous step.

Next, the client and counselor begin work on a specific plan of rehabilitation. This plan is called the Individualized Written Rehabilitation Program (IWRP). This program requires the client to state a job goal which is realistic in light of their disability and of the current employment market. A commonly accepted counseling rule suggests that the more actively involved an individual is in making this decision, the more commitment he or she will have to it. Recently, the Rehabilitation Act of 1973 (P.L. 93-112) has taken this commonly accepted idea and mandated client participation as a part of the IWRP. Thus it becomes quite important that the rehabilitation client be able to make a decision regarding a job goal. Once this choice is made, the counselor and client can finish and implement the IWRP.

It is at the point of stating a job goal that many rehabilitation clients have difficulty. They are, in many cases, unable to state a job goal, while in other cases they cannot narrow their choice to one specific job. Whatever the case, this inability on the part of the client to make this crucial choice results in an interruption of the rehabilitation process. Until this decision point

can be managed by the client, no further services can be provided. If a client has trouble at this point, some direct action must be taken to resolve the difficulty. The Rehabilitation Research and Training Center (RTC) at the University of Wisconsin-Stout received federal funding to research this specific area. In the grant proposal submitted and approved for research in this area, the importance of this question for rehabilitation was highlighted (Research & Training Center, 1978 & 1979).

Faced with a client who cannot make the needed decision regarding a job goal, the counselor must take action to remediate the situation. A number of options are open to the counselor and the client at this point. Counseling and guidance services can be provided. Ability and interest testing can be utilized. Referral to vocational evaluation can also be considered. Whichever option the client and counselor select, there are a number of problems in justifying the use of any one of them. Chandler (1978) studied the effect of vocational evaluation on the client. One measure was decision-making ability as measured by the Career Maturity Inventory - Attitude Scale (Crites, 1973). In the Chandler Study there was no significant effect on the decision-making abilities of clients as measured pre- and post-evaluation. Others (Gelatt, 1962; Holland & Holland, 1977) have pointed out that in selecting any treatment, the counselor and

client may well be using untested assumptions and have no scientifically validated rationale for using them. They further suggested that utilizing any treatment for the undecided, without a description of the characteristics of this group and a knowledge of the origins of their problems, is questionable.

Turning to current research for answers to the problem of the undecided client provides little assistance. Most of the research dealing specifically with vocational decision-making has examined the problems of high school and college age populations. Only one study (Chandler, 1978) considered the vocational decision-making of the rehabilitation client, and then only as a secondary facet of the study. Thoresen and Ewart (1976) presented a review of current trends in career development research and pointed out that most research had focused on high school and college students. They suggested more research that would take into account a wider range of clients, including women, minorities, and adult career changers.

A review of the existing literature relevant to the problem of vocational indecision suggests a large number of causal factors relevant to the undecided high school and college student. Holland and Holland (1977) suggested that there are a large number of sub-groups within the overall undecided population. Each of these sub-groups is undecided for different reasons, or a combination of

reasons, each of which requires a different remedy. Holland and Holland further stated that the chief application of their research to the study of indecision was the recognition of "the need to see the undecided as multiple sub-types who need different personal-vocational treatments" (p. 404).

Given the lack of solid data concerning vocational indecision, and the absence of research on populations other than those in the mid-teens and early twenties, Jones and Jung (1976) called for descriptive research to investigate the characteristics and strategies of the vocational decision maker. It was the intent of this study to follow the suggestions of Holland and Holland, Thoresen and Ewart, and Jones and Jung and to examine the prevalence and dimensions of indecision within a non-traditional population-the rehabilitation client.

Purpose

The purpose of this study was to examine the vocational decision-making problems of vocational rehabilitation clients. These clients are a non-traditional group in terms of decision-making research, as they are a much more heterogeneous group than the him school and college population studied in most

previous research. They differ greatly from one another in terms of age, physical and mental abilities and disabilities, and responsibilities (e.g., head of household.). Many have worked previously, but because of a traumatic injury have become unemployed. For these individuals a mid-life career change is necessary. Others may never have worked because of a congential disability or a childhood injury. In each of these cases the individual may be viewing the choice of a job from a perspective significantly different from those in high school and college. Some of these differences may include a limited number of career choices, the need for more immediate employment, family responsibilities, and the fact that they do not have a peer group making the same significant decision with them. This study asked questions similar to those researched with the more traditional populations. It was expected that there would be significant differences among the rehabilitation client making a vocational decision and the individual between 17 and 22 making the same decision. It also seemed likely that differences would exist between the vocational rehabilitation clients studied. Holland and Holland's mutiple sub-types theory seemed likely to be consistent with the rehabilitation client, as well as with traditional vocational decision-makers.

Subjects from three different groups were interviewed. The first group was made up of vocational rehabilitation clients who were participating in vocational evaluation. This group was expected, for the most part, to consist of individuals who were vocationally undecided. The second group consisted of vocational rehabilitation clients who were completing their vocational training. This group was expected, in general, to have a stronger commitment to their vocational choice. The third group was a sample of high school seniors. It served as a comparison group for the rehabilitation groups.

The subjects were administered an interview designed for this study called the Decision-Making Interview (DMI). It is based on the research literature, and was designed to evaluate the strengths and weaknesses of an individual on the variables felt to be relevant to vocational decision-making. The validity and the reliability of this instrument also was checked as part of the study. It was anticipated that this instrument would be useful in research and to the counselor or evaluator dealing with a vocationally undecided individual.

In addition to the descriptive and instrument development functions of this study, it would also serve to stimulate further research. As the pilot project in a series of studies by the Research & Training Center at the University of Wisconsin-Stout into the vocational indecision of the rehabilitation client, this study provided the basic data on which to base further research into problem-specific treatments for indecision, as suggested by Holland and Holland (1977).

Definition of Terms

Client: a handicapped individual receiving rehabilitative services in a rehabilitation setting.

Decision: a deliberate mental act of selection, of an alternative from a set of competing alternatives in expectation, that carrying out the selected alternative will accomplish certain goals.

Decision-Making Process: a process in which the decision-maker follows a pattern of steps in an effort to generate the highest quality decision possible.

Rehabilitation Process: "A planned, orderly sequence of services related to the total needs of the handicapped

individual. It is a process built around the problems of a handicapped individual and attempts to resolve these problems and thus bring about vocational adjustment. The process begins with initial referral and ends with successful placement on a job" (Allison, 1970, p. 4).

Indecision: The inability of an individual to negotiate any one or all the steps in the decision-making process.

Vocational Evaluation: "A comprehensive process that systematically utilizes work, real or simulated, as the focal point for assessment and vocational development. Vocational evaluation incorporates medical, psychological, social, vocational, educational, cultural, and economic data in the attainment of the goals of the evaluation process" (Tenth Institute on Rehabilitation Services, 1972, p. 2).

Major Research Goals

1. To develop an instrument to describe and assess the decision-making skills of the rehabilitation client.
2. To refine the instrument utilizing various item analysis procedures.
3. To establish the reliability and validity of the instrument.
4. To describe the similarities and differences of the three groups studied on the decision-making and demographic variables assessed by the instrument.

5. To propose new areas of research based on this preliminary study.

General Limitations of the Study

One of the primary limitations of this study was the fact that it was done in a field setting. This type of setting introduced the possibility of a number of confounding variables. It was impossible to specify or control many of the factors which contributed to the results of the study. This limitation was balanced in part by the benefits of removing subjects from the restrictive conditions of a "laboratory" study. Although many formal control measures were not possible in such a study, it was possible to counterbalance some confounding by simply being aware of these limitations.

Since this study was the first in a series of studies into the topic of vocational indecision, it was exploratory in nature. The design and statistics used do not allow one to argue cause, but simply permit descriptive and correlational analysis. In order to conduct experimentally controlled, causal research, exploratory data on which to base hypotheses and treatments are needed. It was the intent of this study to provide such information.

One must be cautious about the generalizability of the findings of this study. In general they would be

limited to vocational evaluation clients, and students at the State Technical Institute and Rehabilitation Center and Webberville High School during the time period of the study. It is possible to extend the generalizability of these data to other clients and students who are similar to those utilized in this study by assuming the validity of the Cornfield-Tukey Bridge Argument (Cornfield & Tukey, 1956). Cornfield & Tukey argued that by defining the characteristics of the research population as clearly as possible it then becomes possible to generalize to other groups who are very similar in terms of these key characteristics. This argument was utilized in the present study.

Instrumentation presents a situation which could result in limited or imperfect findings. The instrument utilized to answer the research questions was developed as part of the study. No standardization will have been done. The reliability and validity of the instrument were determined as part of the study. It must be noted that few instruments are available that have been standardized for use with the rehabilitation population, and none that deal specifically with the research topic.

Overview

The remaining four chapters develop in greater detail the study outlined in this initial chapter. In Chapter II,

a review of the literature relevant to the field of investigation will be presented. Methodology will be discussed in Chapter III. Chapter III will include a discussion of instrumentation, sample selection, a statement of the research questions in testable form, and a discussion of the statistical models used for data analysis. Data analysis and interpretation of the results will make up Chapter IV. The significance of the results will also be discussed in Chapter IV. Chapter V will conclude with a discussion of the results, recommendations for future research, and conclusions.

Chapter II

Introductory Statement

The purpose of this study was to explore the literature relevant to decision-making in general, and to vocational decision-making specifically. Having done this, significant factors from this review were applied to the study of the vocational decision-making of the vocational rehabilitation client. In accord with the stated purpose, literature relevant to decision-making and job choice from a number of disciplines was reviewed. Beginning with a historical perspective and updating to the most recent studies, research from psychology, education, economics, and systems was reviewed.

Early Research

Although the main focus of this review was on psychological and vocational studies of decision-making, it is important to recognize and consider the contribution made by early studies in other disciplines. Edwards (1954, 1961) provided a comprehensive review of early literature dealing with decision theory from a number of disciplines. He described several main areas of focus in the early study of decision-making.

First he reported on the Theory of Riskless Choice.

> The method of those theorists who have been concerned with the theory of decision making is essentially an armchair method. They make assumptions, and from these assumptions they deduce theorems which presumably can be tested, though it sometimes seems unlikely that the testing will even occur. The most important set of assumptions made in the theory of riskless choices may be summarized by saying that it is assumed that the person who makes any decision to which the theory is applied is an economic man.
>
> What is an economic man like? He has three properties. (a) He is completely informed. (b) He is infinitely sensitive, (c) He is rational. (Edwards, 1954, p. 14).

Given these qualities, the economic man will look at the odds of any given alternative and will choose that which maximizes the outcomes he desires. As Edwards pointed out, these assumptions about an economic man are not true of any group of individuals, making this model suitable for research and speculation, but not for practical application.

Given the fallibility of man, another group of early theorists studied what Edwards described as the Theory of Risky Choice. A choice is risky because man is not assumed to know the actual probability of a given alternative meeting the desired ends, but rather can only make a choice based on his or her own subjective perspective of the utility of a given alternative. The more information individuals have and the degree of skill they can bring to bear on the utilization of that information, the greater the likelihood that the choice made will come close to the alternative objectively

having the most utility for the given situation. Although this theory recognized the fallibility of man, and the use of subjective rather than objective estimates of utility, it was still incomplete. It offered little in terms of prediction of decision, and offered no way of assessing skill in making subjective decisions, which likely varies from individual to individual.

The Theories of Riskless and Risky Choice made one critical assumption that other groups of decision theorists seriously questioned. Each theory assumed that an individual, when faced with a number of similar alternatives, was able to rank order the alternatives in terms of their actual desirability. While the earliest theorists assumed that an individual could do this, later theorists doubted this ability. These theorists speculated that such rankings were transitive, that is, they would vary from one ranking to the next, thus leading an individual to make different choices based on the same information. The early theorizing of both the Risky and Riskless Decision Theorists, although useful and a beginning, made assumptions about man that were unrealistic and did not consider individual differences.

Edwards touched on two other areas of decision theory in his 1954 review, the Theory of Games and Decision Theory Functions. These areas were not covered

in this review, as they are "mathematical subjects of a highly technical sort, with few statements which lend themselves to experimental test" (Edwards, 1954, p. 37).

In his second paper, Edwards (1961) discussed other models of decision-making research. First he discussed the static models of decision-making. These models were "concerned with the determiners of a single choice among courses of action, rather than with a sequence of choices" (Edwards, 1961, p. 66). Edwards critiqued these models as follows: "since any choice is imbedded in a sequence of other choices, any static model can be at best only a first approximation" (Edwards, 1961, p. 67). Static models do have the advantage of keeping the decision situation as simple as possible.

The opposite of the static model is the dynamic model of decision-making.

> In real life decisions occur in sequences, and information available for later decisions is likely to be contingent on the nature and consequences of earlier ones. The study of decision processes in such changing situations might be called the study of dynamic decision making. Two cases can be distinguished. In one, the most frequently studied, the environment is (stochastically) unchanging, but the decision maker's information changes as a result of successive decisions, other events, or both. In the other, little studied because it is so complex, the environment changes its characteristics while the decision maker is obtaining information about it. (Edwards, 1961, p. 84).

In studying vocational decision-making it was necessary to keep the model as simple as possible, as

with the static model, but to consider the individual's environment and past history as well, as with the dynamic model.

In education, John Dewey prescribed a series of six steps needed in making good judgments, conclusions or decisions. In his book, How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process (Dewey, 1933), Dewey described judgment or authoritative decision making as following these steps:

1. The presence of a doubt or controversy is recognize.
2. The situation is redefined into understandable terms.
3. The appropriate facts are gathered:
   a. the determination of the data that are important in the given situation.
   b. elaborate the conceptions and meaning suggested by the crude data collected.
4. The method to be utilized to analyze the data is selected.
5. The data is synthesized.
6. The decision is made.

These papers are representative of early research and thought relevant to decision-making. Janis and Mann (1977) spoke directly to the complex models discussed by both Edwards and Dewey:

> We see man not as a cold fish but as a warm-blooded mammal, not as a rational calculator always ready to work out the best solution but as a reluctant decision-maker --- beset by conflict, doubts, and worry, struggling with incongruous longings, antipathies, and loyalties, and seeing relief by procrastinating, rationalizing or denying responsibility for his own choices. (p. 15).

One further study to be reviewed in this section is an often cited early vocational choice study. Trow (1941) explored the phantasies of high school students and the effect of these phantasies on career choice. Trow asked a group of Detroit high school students to respond to the following questions:

> Question 1, Probability: "What kind of job do you think you will probably be able to do when you are through school?
>
> Question 2, Possibility: "If you could be sure to get the education and training that you would need, what kind of job would you choose?"
>
> Question 3, Phantasy: "People sometimes think about what they would like to be although they don't really believe it could ever come true. If by some magic you could be anything you want, what would you like to be?"

He determined that although these students entertained phantasy job choices, when asked, they could distinguish between probability, possibility, and phantasy choices.

Research in Other Disciplines

In this section a number of studies from other research disciplines will be considered. The selection of studies was not intended to be all-inclusive, but is designed to illustrate certain areas relevant to

decision-making research.

In social psychology, Festinger's work with cognitive dissonance (Festinger, 1964) dealt directly with certain aspects of decision-making. Festinger did not attempt to describe job choice specifically, but described the decision-making process in general. According to Festinger's theory:

> The amount of dissonance that exists after a decision has been made is a direct function of the number of things the person knows that are inconsistent with that particular decision. It is clear from this, then, that the greater the conflict before the decision, the greater the dissonance afterward. Hence the more difficulty the person had in making the decision, the greater would be his tendency to justify that decision (reduce the dissonance) afterward. The decision can be justified by increasing the attractiveness of the chosen alternative and decreasing the attractiveness of the rejected alternative, and one would expect a post-decision cognitive process to occur that accomplishes this spreading apart of the attractiveness of the alternatives. (Festinger, 1964, p. 5-6)

In a series of research studies reported in Festinger (1964), a number of variables relevant to decision-making and cognitive dissonance were explored. Variables such as the amount of information available for the decision, attractiveness of the alternatives, and the amount of time available for the decision were manipulated. The following conclusions pertinent to decision making were drawn from this research:

When faced with a conflicting situation, that is, one in which the choice between alternatives must be made, several actions take place:

1. Initially the behavior is oriented toward gathering information on which to base the decision.
2. Once sufficient information is gathered to differentiate between the alternatives, a decision is made.
3. The confidence an individual will want in making a decision will be dependent on the importance of the decision, the variability of the information about the alternatives, and the similarity in attractiveness of the alternatives.
4. After the decision is made, in at least some conditions, there is a period of post-decision regret. During this period the chosen alternative seems less attractive and the rejected alternative more attractive than they were prior to the decision.
5. This regret period will be followed by a period of dissonance reduction in which the chosen alternative will be valued higher than the others. This process of dissonance reduction includes such activities as selective attention to detail, avoidance of materials contrary to the chosen alternative and favorable to the rejected one, and talking to others favorably about the chosen alternative.

Here, Festinger comments that although these conclusions describe the decision process in the experimental situation, there are other times that "decisions are made on a rather impulsive basis. There are times when a person makes a decision, even an important one, very quickly, without considering much information about the alternatives" (1964, p. 154).

Festinger's theory and research are important in that they explore an area of decision-making not covered by other researchers. It is, however, of limited usefulness in the construction of studies and instruments to measure pre-decision-making problems. Much of the research reported dealt with the aftermath of having made a decision, and the process a person follows to justify it. That which dealt with pre-decision variables was done in experimental situations and may not be representative of "real world" decision-making. It does, however, point out that decision-making is many times not done following a rigid process and is frequently intuitive and individual in nature.

In business administration, Holland (1968) dealt with the causes of errors in administrative decision-making. He highlighted several personality and interpersonal factors as major factors in poor decision-making. Factors such as rationalizing decisions (basing decisions on feelings, and then intellectualizing them to appear logical and reasonable), implusive decisions,

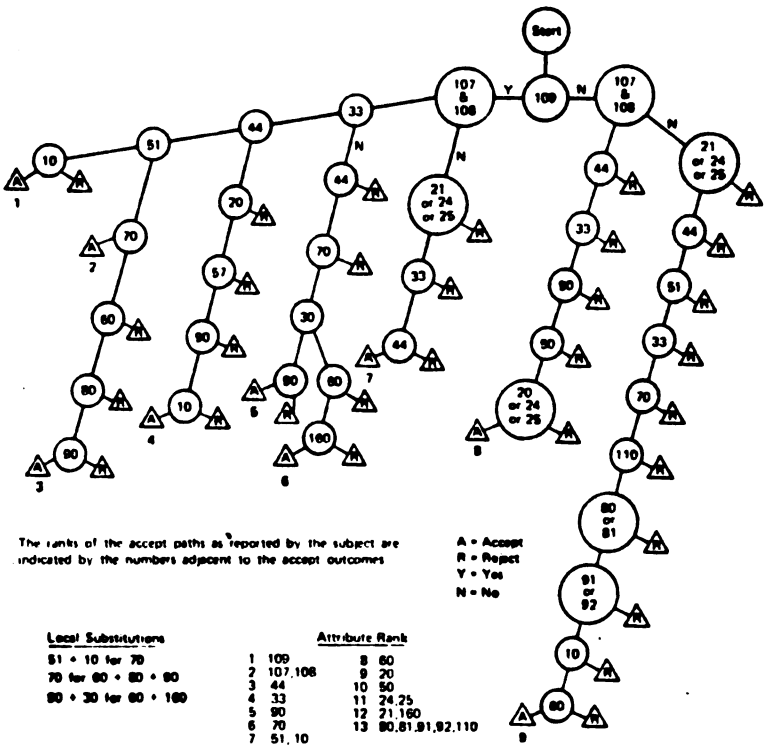
(made without considering the consequences), inflexibilty in decision principles (unable to look at new information and ideas) were discussed. Holland described these behaviors as causes of poor decision-making. He recommended the following steps to remedy these problems:

1. Know your own personality dynamics.
2. Set worthy goal-pictures of yourself.
3. Face reality objectively.
4. Use the rational self deliberately.

Holland's material was not research based, but was representative of the common wisdom approach many times used in describing and prescribing decision-making. Holland's advice may well be appropriate for the administrator, but is vague and general, making it virtually unresearchable.

In business and industrial psychology the decision tree or discrimination survey is utilized to predict job preferences. Swinth (1976) developed a discrimination net survey by asking subjects to describe their decision processes in the form of a decision tree. All subjects described their job choice by using the attributes they considered to be important to determine the branching. Figure 2.1 is an example of a discrimination net or decision tree. Each branch of the tree or net is constructed by combining several attributes necessary in a job for the individual to consider it acceptable.

Figure 2.1 Example of Discrimination Net Survey for Vocational Choice



• Representative job selection discrimination net. (Attributes: 109. Job is in management consulting. 107. Job is in operations research. 108. Job is in operations (systems) analysis. 44. Salary increases and bonuses contingent on performance, not seniority. 33. Good performance and initiative rewarded with advancement. 90. The nature of the work is interesting and satisfying. 70. The job involves travel. 51. The job is urban geographically. 10. There are good working relationships. 60. The fringe package is typical for this industry. 20. I will have decision-making responsibility. 50. Job location is San Francisco or Chicago or Kansas City. 24. I will make use of my skills. 25. I will have autonomy. 21. I will have responsibility on job acceptance. 160. The environment is open. 80. There is respect for the individual. 81. I will be treated as an individual, not one of aggregate. 91. The work is immediately interesting and satisfying. 92. The work in the future is interesting and satisfying. 110. The company has a sense of social values.)

NOTE: From "A decision process model for predicting job preferences" by R. Swinth, in the Journal of Applied Psychology, 1976, 61, 242-245. Reprinted by permission.

The individual for whom this net was constructed started with attribute 109 ("job is in management consulting"). A given job would be considered if it were such a job. The individual would then follow the "yes" (left) branch; if not, the "no" (right) branch. For example, if the job were not in management consulting the net or tree branches to 107 and 108. If the job did not meet the considerations in 107 and 108 it would be further branched to 21, 24,or 25. If none of the attributes called for in these levels exist, the job would be rejected. If they were present, the job would continue down the tree until it was rejected by some other attribute or was finally accepted at item 60. All potential jobs would be taken through the decision tree, until they were accepted or rejected. Those accepted at the end of any branch would then be assigned a rank based on the individual's priority place on that branch. That job found acceptable in the branch with the highest rank would be the first choice in jobs. Swinth had 28 graduate students in business construct a discrimination tree or net before accepting work. A comparison of acceptable category occupations with real job acceptances revealed 23 correct predictions. Swinth interpreted this result as lending strong support for the use of this procedure in predicting job preferences. This may be so for his sample, but the complexity of the procedure makes it questionable for use with other groups.

In educational psychology, Mehrens (1966) discussed the use of probability information in educator's decision-making. In a study utilizing one counselor and one teacher each from 20 schools, Mehrens examined the relationship between two independent and dependent variables. The independent variables were the objective probability for the situation (based on expectancy tables) and the student's expressed interest in attending college. The dependent variables were the subjective probability of success and the overall utility value of an individual attending college (degree of desirability). Using a statistical probability model developed by Edwards (1954), the SEU model, he obtained a rating of the desirability of a given student attending college. Mehrens described the model as follows:

$$U_{GO} = P_1U_p + P_2U_f$$

where

U_{GO} = the educator's rating regarding the desirability of a student attending college.

U_p = the educator's rating regarding the desirability of a student attending college if he is certain that the student would obtain a grade point average (GPA) less than or equal to C.

U_f = the educator's rating regarding the desirability of a student attending college if he is certain that the student would obtain a GPA greater than C.

P_1=SP = the educator's subjective probability of the prospect that, if the student attends college, he will achieve a GPA less than or equal to C.

$P_2=1-P$ = the educator's subjective probability of the prospect that, if the student attends college he will achieve a GPA greater than C.

The study attempted to determine what effect the expectancy tables and the student's interest in attending college had on educator's personal feeling of likelihood of success and the value of their attending college. Mehrens found that by adjusting the independent variables (objective probability and student interest), it was possible to effect change in the dependent variables (subjective probability and utility rating). Although this was so for both groups, counselors were affected more by students' expressed interests than were teachers. Certainly the use of objective information would affect the decision-making of the handicapped decision maker as well, but the use of a mathematical model to prescribe the process seems highly improbable. As Janis and Mann (1977) commented, researchers in this area tend to view the decision-maker more as a computer and less as an emotional being than is realistic.

Brinker (1972) edited a volume that reported on a number of complex approaches to aiding and researching decision-making. Decision-trees, information retrieval systems, and computer assisted decision-making are the subjects of Brinker's volume. Each of these is certainly an important area of decision research, as are the

approaches of Swinth (1976) and Mehrens (1966) discussed earlier. Smaby and Tamminen (1978) expressed what may be the most telling criticism of this area of research:

> There is a tendency to overemphasize logical-mathematical models involving probability, information input, and computer type strategies. In real life, a total person with feelings, desires, and hunches, as well as logic faces decisions that may seriously affect his or her life. (p. 106)

Janis and Mann (1977) presented a model of decision-making under stress. While most decision-making is stressful, some decisions, such as decision in an emergency situation, are more stressful than others. Janis and Mann termed the thinking that goes on during the decision-making "hot cognitive" processes and delineated five (5) stages:

Stage	Question
1. Appraising the Challenge	Are the risks serious if I don't change?
2. Surveying Alternatives	Is the (salient) alternative an acceptable means for dealing with the challenge? Have I sufficiently explored the available alternatives?
3. Weighing Alternatives	Which alternative is best? Could the best alternative meet the essential requirements?
4. Deliberating about Commitment	Shall I implement the best alternative and allow others to know?
5. Adhering despite negative feedback	Are the risks serious if I don't change? Are the risks serious if I do change?

This model is quite similar to that proposed by Dewey (1933). Janis and Mann dealt with the social aspects of a decision: "What will other think?" and "What will I do if they disapprove?" These are certainly aspects likely to be considered by a rehabilitation client making a tentative decision about a job.

Decision-Making Models

Models of vocational decision-making fall into two categories. There are those that attempt to describe the ways in which decision-making occurs in the real world. These models are called descriptive models of decision-making. The second category attempts to prescribe a particular vocational decision-making process. These models are generally called prescriptive decision-making models. In this section a number of models of both types will be discussed.

An early descriptive model was developed by Tiedeman (1961), based on Super's early writings on vocational development (Super, 1957).

> Super's writings about vocational development provide a clear outline of the process and its investigation. However, we still need an explicit statement of the process of decision-making in vocational development .... The analysis of vocational development

> is oriented by each of several decisions with regard to school, work, and life which a person makes as one matures. With regard to each decision, the problem of deciding may be profitably divided into two periods or aspects, a period of anticipation and a period of implementation or adjustment. (Tiedeman, 1961, p. 15).

The anticipation period is divided into four stages:

1. Exploration, In this stage a number of different alternatives are considered.
2. Crystallization, In this stage there is a tentative ordering of alternatives.
3. Choice, This stage represents a stabalization of the choices made in the crystallization stage.
4. Specification, As the name of this sub-stage suggests, a further specification takes place at this point. The individual decision-maker readies here for specific action.

The period of implementation and adjustment is in turn divided into sub-stages:

1. Induction, This stage represents the initial experience a person has with the job and with his superiors and coworkers. If the individual accepts the job, and is accepted into it, he or she arrives or is inducted.

2. Transition, In transition the individual begins to assert her/himself in the occupation or job chosen. This transition into a worker in the specific job category leads to stage three.
3. Maintenance stage, In this stage the individual maintains her/himself in the particular occupation.

Hilton (1962) constructed a descriptive model of decision-making based on Festinger's cognitive dissonance work (Festinger, 1957).

> The decision-making process is initiated by some input from the environment. This input could be, for example, an offer of a new position, a warning that the person should decide on a career, or information to the effect that one's income is not sufficient. If, when dissonance is tested, the input has raised dissonance above the tolerable level the person examines his premises, i.e. his beliefs and expectations about his environment and himself. If his premises can be changed to accommodate the input, he makes the change, and the revised set of premises are tested for dissonance.....If the dissonance is now below threshold, he makes a decision to accept the tentative plan and adjust his premises accordingly. (Hilton, 1962, p. 296).

So various input causes individuals to feel uncomfortable with their current situation and forces them to review alternatives which will reduce the dissonance they feel. There is, however, no way to be sure that the implementation of the particular alternative would realistically reduce dissonance.

Krumboltz, Mitchell, and Jones (1976) developed a model of career selection based on social learning theory. Although their model is more specifically addressed to career development, as are Super's and Holland's theories, it is descriptive of the decision act as well. Krumboltz, et al. identified genetic factors, environmental conditions, learning experiences, cognitive and emotional responses, and performance skills as part of the total decision process.

> At each decision point the decider has one or more responses or decision options. Internal (personal) and external (environmental) influencers (constraints or facilitators) shape the nature and number of those options and the way in which individuals respond to them. (Krumboltz, et al. 1976, p. 71).

Krumboltz et al. envisioned the decision process as greatly influenced by past learning experiences. That is, situations that were either reinforcing or punishing to the individual in the past will shape the kind of decision made in the present. This will not completely allow for the objective decision-making called for by certain theorists. Each individual will analyze a situation differently, despite the same input, and will subjectively rank and select alternatives. Since there is variance among individual histories, different alternatives may be selected in such a process, even though the same decision-making steps were followed by each individual.

Gelatt (1962) proposed a conceptual frame of reference prescriptive of decision-making in counseling. He suggested that the counselor work with the client to assure that he or she knows the alternatives and outcomes, applies a scale of personal values to each, and then evaluates the alternatives and their likelihood of success. Gelatt saw this process as cyclical, with the individual going through the process as many times as needed to generate an alternative that meets his or her needs in the job situation.

Another prescriptive model, proposed by Katz (1966), attempted to combine three systems of data: a value system, an information system, and a prediction system. In Katz's model the counselor works with the client in identifying important values, i.e., money-income, stability-security, adventure-excitement-change. After this list is developed the counselor assists the client in assigning intensities to each of these values. Katz suggested allowing the client 100 points to be distributed across each value. Once these values are obtained, the information system is the next to be considered. Information about the various alternatives is gathered and again ranked, e.g., percent of desired income: 65% -1, 75% -2, 85% -3, 95% -4, 100% -5, on the basis of the alternative's likelihood of meeting a specific value. Then on the basis of regression equations, or

expectancy tables, the counselor points out to the client the likelihood of success of any given alternative. All of this information is considered in an expected value equation which combines subjective probability (in the form of values and information ratings) and objective data (in the form of regression equations or expectancy tables). Thus the client's job in decision-making is simply to pick the alternative that has the highest expectancy value.

A final prescriptive model is that of Kaldor and Zytowski (1969). Their model was derived from the tenets of economic decision-theory. They felt that the determinants of occupational choice are: (1) the chooser's occupational utility functions (their preferences), (2) the resources or inputs at the disposal of the individual; and (3) the anticipated consequences of employing given resources in various occupations, each with a differing potential for meeting the individual's needs. This model, not unlike those mentioned earlier, requires the generation of alternatives, and the examination of personal preferences and values. It also requires the recognition of individual differences in terms of skills and aptitudes, as well as resources and opportunities. Once each of these factors is brought to bear, the next step is to predict the expected consequences or outcome for each alternative. Given preferences and values, resources and opportunities,

and skills and aptitudes, an individual then chooses the alternative that is congruent with these variables and offers the greatest likelihood of offering gratification.

Each of the models considered here has some common thread with the system of rational decision-making discussed by Dewey (1933). Although the terms are different, a sequence of steps is visualized by most authors. Gathering of information, weighting of alternatives, and predicting subjectively which alternative will be the most profitable are common to all. Jepsen and Dilley (1972) have characterized most of the models of decision-making as not comprehensive and as appropriate only for certain groups making certain kinds of decisions. Certainly the models discussed here can also be criticized from Janis and Mann's (1977) perspective, as making men rational computers and not recognizing the emotional, irrational aspects of any decision they might make.

Other Instruments

A number of instruments have been constructed to examine vocational decision-making and vocational indecision. Many of them have been constructed as ancillary parts of decision-making treatment programs. Others have sought to simply describe the characteristics of the decided and undecided. Still others have attempted to measure some specific precondition of being

vocationally decided or undecided. Studies from each of these groups will be discussed in this section.

Mendonca and Siess (1976) have developed a treatment for indecision that is, at least in part, caused by anxiety. In order to assess the degree of anxiety involved in an individual subject's indecision, they constructed an instrument called the Inventory of Anxiety in Decision-Making (IADM). This instrument was constructed to measure the state of anxiety surrounding a particular decision facing the subject. The IADM is administered both pre- and post- treatment to measure the amount of reduction in "state" anxiety felt by the subject.

> In the first part of the IADM, each subject is required to indicate as clearly as possible the career decisions that trouble him or her. In the second part, the subject rated the extent to which he or she might experience 16 overt or covert anxiety symptoms while in the process of wrestling with these decisions. (Mendoca & Siess, 1976, p. 341).

Subjects who participated in the anxiety management treatment groups showed a decrease in what Mendonca and Siess felt was decision-making anxiety. Although this variable is important in vocational decision-making, it remains only one variable of a potentially large number. The likely large amount of time needed to utilize

Mendonca and Siess's instrument, and the fact that it was designed to be administered to college level students, makes it inappropriate for exploratory research with a rehabilitation population.

In another study, Enger and Jackson (1978) described a program designed to improve students' career maturity and decision-making skills. They developed the Career Decision-Making Questionnaire (CDQ) to determine a students' career decision-making skills and career maturity prior to and after completion of their training program. "The instrument consisted of personal data (career maturity, career decision-making, and attitudinal items) and a self evaluation section" (Enger & Jackson, 1978, p. 47). This instrument was based in part on Crites' Career Maturity Inventory - Attitude Scale (Crites, 1973) and required a one hour and forty minute class period for completion. Again the length of the questionnaire and the population for which it was designed seemed inappropriate for the rehabilitation population. It should be noted, however, that the issues of career maturity and attitude need to be addressed with any decision-making population.

Holland and Nichols (1964) approached indecision from a different perspective. They empirically developed an instrument called The Indecision Scale. The scale was developed from an item analysis of 273 activities, hobbies, school subjects, and sports from

a large sample of high aptitude students (National Merit Finalists, a sample of 500 boys and 500 girls). All of the students who had decided on a vocation were compared with all the students who were undecided at the time they filled out the questionnaire. "The item analyses for each sex provided more than thirty items per sex with more than a 10 percent difference between 'undecided' and decided 'students'" (Holland & Nichols, 1964, p. 28). Of the more than 30 original items, 15 were finally utilized to construct the scale. These items were made up of hobbies and interests of decided and undecided boys and girls in the sample. Such items as roller skating and going to the movies characterized decided boys, whereas, collecting books and coining new words characterized undecided boys. A cross-validation study found that these results held true for a second group of subjects. This instrument looked for those students who were likely to be undecided, rather than attempting to diagnose why. It was developed with college students, and dealt with variables not as likely to be part of the world of a rehabilitation client. Baird (1968), who conducted other cross-validation studies with the Indecision Scale, concluded that the scale may be considered a rough predictor of "general effectiveness," rather than a predictor of vocational indecision.

Osipow, Carney, and Barak (1976) designed a scale to measure and identify the antecedents of educational-vocational indecision. It was designed for use with a variety of college student groups. Opipow, et al. identified 16 variables which they felt were likely to be antecedents of educational or vocational indecision. An instrument, A Scale of Vocational Indecision, was developed to probe the 16 possible antecedents. Statements were presented to the subjects with the instructions that they were to indicate the degree to which each of the statements corresponded to the sources of their indecision. Normative and test-retest data were collected from seven groups of Ohio State University students. Results of the study suggest the potential usefulness of this type of scale in understanding the antecedents of career indecision. This study is representative of the type called for by both Thoresen and Ewart (1976) and Jones and Jung (1976), although it does not deal with the non-traditional populations Jones and Jung felt were important. A review of the content of the instrument, and recognition of the group for which it was prepared, give indication of the high-level nature of the questions. The material appeared to be inappropriate for the group of interest in this study. However, the approach of separating the constructs of decision and indecision into components for closer study seemed well suited for this research study.

In an early study, Dilley (1965) developed an instrument to measure decision-making ability. Dilley's instrument was an untimed, self-administered questionnaire. Normal time for completion was 40 minutes. It contained three written problems, each of which dealt with an educational or vocational decision faced by high school students. An individual taking the instrument was presented with the particular problem, and six alternatives designed to solve it. For each of the alternatives the student wrote in two outcomes that he or she anticipated would result. Then the student ranked, on a five-point scale, the probability and the desirability of each outcome. After completion of the answer sheet the student rank ordered the alternatives he or she would choose. The first ranked alternative represented the student's decision for that problem. A student was considered to have made a good decision when his or her first choice had the highest utility value of the alternatives. This utility value was calculated by multiplying the checked probability value and desirability value for the two outcomes and then adding the products. High scores on these decision-making problems were found to be associated with high achievement, high intelligence, and high frequency of participation in extracurricular activities. This instrument possesses a performance portion not common to the instruments mentioned earlier, but presents two basic problems for

use with a very heterogeneous population like the rehabilitation client. First, it is fairly complex to administer, and requires probability judgment skills which the group of interest in this study may not possess. Second, any score here may indicate low decision-making ability, but does not point to the source of the problem or speak to its remediation.

A study by Jepsen (1974) focused on decision-making process rather than outcomes. In this study Jepsen measured the vocational decision-making behavior of non-college aspiring high school students. Based on decision-theory and earlier research, Jepsen determined 32 vocational decision-making (VDM) indices. Subjects were asked to provide responses related to vocational decision-making concepts over several vocational decision situations. Each of these responses was rated on a number of the VDM indices, e.g.:

SITUATION	VDM INDICES
1. selection of occupation	1. range of alternatives considered 2. consistency of range of alternatives 3. specificity of preferred alternatives 4. level of preferred alternatives 5. consistency of level of preferred alternatives 6. range of reasons for alternatives considered 7. heterogeneity of reasons for alternatives considered.

Each of seven vocational decision situations was presented to a research sample of high school juniors, who expressed preferences for a post-high school plan other than college enrollment. Each vocational situation was rated on a number of specific VDM indices, with a total number of indices of 32 for all seven situations. Each response was then rated on a number of variables: range, specificity and level, homogeneity, and consistency. The results of this exploratory study, for the most part, were inconclusive. One dimension of decision-making did stand out as significant, that of range of planning activity. This dimension is made up of several VDM indices, e.g., range of alternatives considered and range of current action or plans. Although the Career Decision Inventory was designed for a more specific group, non-college aspiring high school students, the problems of the handicapped were not specifically addressed by this instrument. Again it was developed for use with a fairly traditional population. This along with its complicated administration and scoring made it inappropriate for use with the groups considered for the problems addressed by this study.

Relevant Research

Research on the vocational indecision or vocational decision-making processes of handicapped individuals in the current literature was virtually non-existent. One

study by Chandler (1978) dealt indirectly with decision-making and the handicapped. The major focus of her study was the gain in self-knowledge of vocational evaluation clients as a result of their evaluation. One aspect of her study was gain in career maturity, as measured by the Career Maturity Inventory (CMI), (Crites, 1973). The score on the CMI has been associated with good decision-making, so an increase on the CMI would likely point to an increase in decision-making ability. Chandler's results showed no increase in these scores.

The remainder of the research reviewed regarding vocational decision-making dealt primarily with high school and college students. These studies identified a number of possible distinguishing characteristics of either the vocationally decided or undecided.

The decided student was described as being self-directing (Marr, 1965), as placing high value on work (Greenhaus & Simon, 1977) as vocationally mature (Dilley, 1965; Holland & Holland, 1977), as high in achievement (Dilley, 1965; Lunneborg, 1975), as high in intelligence (Dilley, 1965; Hollender 1971), as high in frequency of participation in extracurricular activities (Dilley, 1965; Holland & Nichols, 1964) and as having increasing ability in decision-making with age (Hollender, 1971).

The vocationally indecisive student has been described as less vocationally oriented (Baird, 1968), as having high needs for security and status (Miller, 1956),

as low in achievement (Lunneborg, 1975, 1976), and as socially alienated, with a lower G.P.A. and as more likely to be experiencing emotional disturbance (Walsh & Lewis, 1972).

The research which has examined the origins of vocational indecision has suggested a number of potential variables. The undecided individual may lack knowledge about occupations (Kukols & Banducci, 1973; Holland, 1968; Osipow, Carney & Barak, 1976), may not use an adequate number of sources of information (Biggers, 1971), may have inaccurate occupational information (Holland, 1968; Banducci, 1970), may have difficulty assigning probabilities to the likelihood of success of any given alternative (Gelatt & Clarke, 1967), and may have deficient decision-making skills (Osipow et al; 1976; Holland & Holland, 1977). Further, the undecided individual may have identity and self-concept problems (Marr, 1965; Korman, 1969, Rose & Elton, 1971; Holland & Holland, 1977). Ashby, Wall & Osipow (1966) saw the undecided student as dependent, while Ziller (1957) saw unwillingness to take risks as a variable. Anxiety about making a decision was also a problem for the undecided student (Walsh & Lewis, 1972; Kimes & Troth, 1974; Mendonca & Siess, 1976; Hawkins, Bradley & White, 1974).

The final category of research and theory dealt with treatment. Crites (1973), McGowan (1974), and

Mendonca and Siess (1976) each reported an approach to the treatment of indecision. These treatments were characterized by Holland and Holland (1977) as applied "without being clear about our characterizations of undecided people or the origins of their difficulties" (p. 404).

Implications of the Literature Review

The major contention set forth in Chapter One in support of the need for this study was that most previous vocational decision-making research had been very population specific. Jones and Jung (1976), and Thoresen and Ewart (1976) called specifically for research dealing with special populations groups, i.e., groups other than the high school and college populations normally studied. The review presented in this section supported this contention. It further supported the current author in calling for research with vocational rehabilitation clients. Only one study was found that even indirectly dealt with vocational decision-making and this group, Chandler (1978).

A closer look at the instrumentation utilized in earlier vocational decision-making research showed that it was also very population-specific. Another conclusion drawn from this review was that instrumentation developed for and standardized on the rehabilitation client was needed. This study attempted to begin to

fill this need.

In developing an instrument for use with rehabilitation clients, the variables discussed in the literature review as well as variables drawn from the experience of rehabilitation practitioners were taken into account. The format presented in Table 2.1 utilized these variables and was followed in constructing the new instrument. This format was described by Osipow, et.al. (1976), who saw decision-making problems in terms of categories. Any instrument using these categories is likely to yield a description of the undecided that assigns them to a number of sub-types of undecided individuals, as suggested by Holland and Holland (1977). The remainder of this study dealt with development and utilization of a new research instrument.

Summary

The vocational decision-making problems of the handicapped individual was a research area with no published research directly exploring it. A wide variety of research and speculation was pertinent to the question and population of interest, but none directly applicable. Only one study specifically discussed the vocational decision-making of the rehabilitation client, and then only indirectly.

Table 2.1

A Tentative Classification of Vocational Choice Problems

A. INFORMATIONAL PROBLEMS

1. Self-Knowledge
   a. needs
   b. interests
   c. abilities
   d. personality characteristics

2. Occupational Knowledge
   a. opportunities and requirements
   b. tasks and duties
   c. rewards and punishers
   d. immediate availability

B. DECISION-MAKING PROBLEMS

1. Acquisition of Information
2. Processing of Information
3. Skills in Choosing
4. Success in Previous Choices
5. Responsibility/Control
6. Anxiety/Fear of Decision-Making

C. ENVIRONMENTAL PROBLEMS

1. Family/Social
   a. coercion
   b. lack of reinforcement

2. Economic (e.g., disincentive)

The vocational decision-making of high school and college populations is an area which has been widely researched. None of the data collected or research instruments used were directly applicable to special populations. However, certain variables and concepts seemed appropriate as starting points for research with handicapped populations.

Jones and Jung (1976) and Thoresen and Ewart (1976) called for research with special populations that would be descriptive in nature. Holland and Holland (1977) suggested research which would seek to characterize the decided and undecided, as well as explore the origins of decision-making problems. In this study concepts from the research literature were used to develop an instrument descriptive and diagnostic of decision-making problems.

Chapter III

METHODOLOGY

Introductory Statement

In Chapter One of this study the need for more information and research on the vocational decision making problems of Bureau of Rehabilitation clients was highlighted. This issue was explored more fully in Chapter Two, where the need for direct research with rehabilitation clients and new instrumentation for this group became evident. Virtually none of the research reviewed had direct bearing on the problems of rehabilitation clients, although a number of variables were noted that would likely generalize to the study of this group. The focus of this chapter will be on three areas: first, a discussion of the selection of subjects for the initial administration of the new instrument; second, the procedures used in the development and refinement of the instrument; and third, the research questions to be answered by the analysis of the data generated by the instrument.

Selection of Research Participants

Theoretical Basis for Group Selection

In selecting groups of subjects for this study the primary consideration was that each group possess a different level of vocational decidedness. Any instrument developed for use with these groups should differentiate among them. Three groups were chosen that intuitively should be different on their levels of vocational decidedness. These groups were as follows:

Vocational Evaluation Clients This group was selected because clients sent to evaluation are generally expected to be vocationally undecided. The evaluation process is expected to provide information that would assist the client to make a vocational decision. It was anticipated that this group would be the most vocationally undecided of all the groups.

Vocational Training Clients Rehabilitation clients in vocational training who are at least half-way through their training program were selected as the most vocationally decided group. Since they had already come to a decision about a job goal and had spent some time in training, they would be expected to have the most commitment to a choice.

Senior High School Students This group was selected as a comparison group for the rehabilitation groups. It was anticipated that this group would be a mixture of decided and undecided and would, as a group, fall some-

where between the other two. Also, in an effort to maintain some continuity between this project and earlier decision-making research, this group was selected as representative of the traditional groups studied in vocational decision-making research.

In order to generate the subject pool, two separate selection procedures were utilized. First, research sites were selected. Then subjects for the three groups were chosen. The next section describes the criteria used to select sites.

Selection of Research Sites

It was necessary to select three different types of research sites to generate subjects for this study. Bureau of Rehabilitation clients were needed for the evaluation and training groups, while high school seniors were needed for the third group. The following criteria were utilized in selecting research sites.

Vocational Evaluation Center Two considerations were used in the selection of the evaluation site. The first criterion was that the site provide evaluation services to a large number of rehabilitation clients. In order to eliminate the potentially confounding effects of drawing clients from a large number of sites, it was the original intention of this researcher to select a site that could provide the total 30 subjects for this group. A second criterion was that the site not be one

of the large number of evaluation facilities used in a recent major study in the State of Michigan. It was felt to use facilities repeatedly would jeopardize the opportunity to use these sites in later research. Based on these criteria, the evaluation program at the State Technical Institute and Rehabilitation Center (STIRC) was selected to provide the subjects for the evaluation group.

The vocational evaluation program at STIRC is a two- to six-week program, with the length of stay dependent on how quickly the staff feels the client is progressing toward making a vocational choice. Most of the evaluation is done at work stations, where the client performs tasks typical of a particular type of job under the supervision of an evaluator. The average client load at STRIC is from 35 to 45 clients at the beginning of the evaluation period. Evaluations were begun every six weeks, with no new admissions after the initial week. At the time of the study there were four evaluators employed by the facility.

In the course of the study it was determined that STIRC would be unable to provide the total number of subjects needed for the evaluation group. During the evaluation period used for the selection of research subjects the number of clients entering evaluation was much lower than normal. It was possible to obtain only

20 of the 30 subjects needed from STIRC for this group. The study was conducted during the winter months and STIRC administrators felt that the reduced attendance may have been caused by the severity of weather. In order to obtain the additional 10 subjects another site was selected. In selecting a second site an effort was made to find a facility that served a similar population, and was in close proximity to STIRC. The Peckham Rehabilitation Center was chosen to provide the additional subjects needed for this group.

Peckham Rehabilitation Center is a privately run rehabilitation facility, specializing in vocational evaluation and work adjustment training. At the time of contact all of the clients were referred by area counselors. Evaluation at Peckham lasts two weeks, and is done by means of a number of commercial work samples. At any given time there are 10 to 15 clients in vocational evaluation, and an equal or larger number in work adjustment training. Clients are admitted for evaluation on Monday of every week. At the time of the study there were three evaluators employed by the facility.

Vocational Training Center The selection of a site from which to draw subjects for the vocational training group was based on criteria similar to those used for the vocational evaluation group. The first criterion for site selection was that the facility have a large enough population of rehabilitation clients in

training from which to draw the entire sample. Again, the elimination of the potentially confounding effect of using subjects from different facilities was the goal. A second consideration was that the training group should be large enough to allow some subject matching from the training group to the evaluation group. In seeking such a large number of potential subjects the State Technical Institute and Rehabilitation Center was chosen as the only site meeting the criteria.

At any given time there are up to 400 rehabilitation clients in training at STIRC. Each of these clients is referred to STIRC by a vocational rehabilitation counselor. Those who live a great distance from STIRC live in on-campus dormitories, while those who live in the area commute. STIRC has a large number of training areas including auto-mechanics, business education, custodial, drafting, electronics, floor covering, food services, machine shop, office machines, printing, upholstery, and watch and jewelry. The amount of time required for training varies from three months to two years.

High School Senior Group In selecting a high school to provide the subjects for this group, the primary consideration was to select a school that would provide a population of students that would match as closely as possible the urban and rural mixture of client backgrounds found at STIRC and Peckham. Although there

were major metropolitan areas represented in the evaluation and training samples it was noted that well over half of the students came from rural backgrounds. For this reason schools that had heavy inter-city or college-bound populations were eliminated from consideration. The senior high school in Webberville, Michigan was selected as having a mix of urban or rural students similar to that found within the other groups.

Webberville Senior High School is a small school of about 500 students. The student body is a mix between rural and urban populations. The majority of the community is made up of families in which the bread winner commutes to the major urban areas in close proximity for employment. There remain a small number of individuals who continue to make their living through farming.

Research Agreements After the selection of research sites was completed, facility directors and the school superintendent were contacted for personal interviews. At this time a thorough explanation of the project was provided. Appendix A is an example of the materials sent in advance of the meetings. After a verbal agreement was reached a formal research contract was signed (Appendix B).

Selection of Subjects

In selecting subjects for each of the groups it was noted that a very small percentage of the rehabilitation clients at STIRC were female. Female clients at STIRC made up under 10 percent of the total client population. In order to remove the potentially confounding affect of having a small percentage of females in each group, female clients and high school students were removed from the subject pool before sample selection.

Vocational Evaluation Subjects Subjects for this group were the total group of male rehabilitation clients in evaluation at the time of the interviewing process. Of the 22 males in evaluation at STIRC two were eliminated, as they were deaf and no adequate interpreter services were available. Of the 10 males at Peckham, all were accepted. The combined total made up the 30 subjects chosen as the N for this group.

Vocational Training Group Subjects for this group were selected from the total population of rehabilitation clients in vocational training at STIRC at the time of the study. They were selected using the following criteria:

1. They were at least half-way through their training programs.
2. They were male rehabilitation clients.

3. They matched a subject from the vocational evaluation sample on reported disability (as determined by the coded disability data on the Bureau of Rehabilitation form R 300), and as many of the following characteristics as possible:
   a. Clients from the training group were selected whose age fell within a five-year span either side of the evaluation subject's age.
   b. Clients from the training group were selected whose education fell within one year either side of the evaluation subject's total number of years of education.
   c. Where possible, clients were selected for the training group when their verbal I.Q. scores were similar to the evaluation subject score. This information was not available in many cases.

In selecting 30 subjects that matched the evaluation group on these criteria there were a number of cases where only one individual was found in the training group who met the matching criteria. In those cases where more than one individual from the training group was found using the criteria, that individual who most closely matched the client in the evaluation group was selected.

High School Group Subjects for this group were randomly selected from the total number of males in the senior class at Webberville High School. An alphabetical list of the males in the senior class was obtained from the school counselor. These names were numbered from 1 to 40. Then, using a table of random numbers a starting point was selected by chance. The table of random numbers was followed down each column until a list of numbers ranging from 1 to 40 was generated. The names associated with the first 30 numbers made up the experimental group and the remaining names were placed by the order of their selection into an alternates group.

Client Participation Each subject selected for participation in the study was advised that his participation was voluntary and in no way would influence his schooling positively or negatively. All of the subjects in the vocational evaluation group agreed to participate. All of the subjects contacted in the vocational training group agreed to participate, but two were completing their training away from the campus as a part of a co-op program. These two subjects were replaced by selecting two new subjects, using the criteria specified earlier. In the high school group there were two students who did not want to participate, and another student who was out sick for the duration of the interviews. Each of these individuals was re-

placed by a student from the top of the alternates list.

Each subject was administered the instrument developed for this study, The Decision Making-Interview, (DMI), on an individual basis. The subjects were also administered Crites' (1973) Career Maturity Inventory - Attitude Scale (CMI) on a group basis. There was some attrition between the individual interviews and the group administration of the CMI.

Table 3.1 summarizes data concerning the number of clients in each group and the attrition rate for each group. Table 3.2 compares the demographic data on subjects from the three groups who did and did not participate in the group testing.

Table 3.1

Comparison of Groups and Sites: Numbers Participating in Study and Attrition Rate

Sites	Instruments Utilized		Attrition Rate
	DMI	CMI	
Peckham Rehabiliation Center	10	8	20%
State Technical Institute and Rehabilitation Center - vocational evaluation.	20	17	15%
State Technical Institute and Rehabilitation Center - vocational training.	30	26	13%
Webberville High School	30	28	7%

Table 3.2

Comparison of demographic data on individuals who took the CMI and who did not.

Group	Age	Education
Vocational Evaluation		
- took CMI	26	11.6
- did not take CMI	28	10.6
Vocational Training		
- took CMI	25	10.6
- did not take CMI	24	11.3
High School Group		
- took CMI	17	11
- did not take CMI	17	11

Characteristics of the Sample

Vocational Evaluation Clients The 30 vocational rehabilitation clients in the evaluation group ranged in age from 18 to 44 years ($\bar{X}$ = 26.3). The average educational level was 11th grade, with a range from seven years of education to 14 years of education. Within this group there were 12 orthopedically handicapped, eight emotionally handicapped, five mentally retarded, two visually disabled and one individual with each of the following conditions: hearing disability, epilepsy, and brain damage. Seventeen of these individuals were considered severely disabled, and 13 were not severely disabled. Twenty of the subjects were drawn from the

evaluation program at STIRC, and the remaining 10 were drawn from the Peckham evaluation program. At STIRC the average age was 26 years, while at Peckham the average age was 27 years. Both groups had an average educational level of 11th grade.

Vocational Training Clients The 30 vocational rehabilitation clients in the training group ranged in age from 19 to 39 years ($\bar{X}$ = 25.4). The average educational level was 11th grade, with a range from eight years of education to 12 years of education. Within this group there were 12 orthopedically handicapped, eight emotionally handicapped, five mentally retarded, two visually disabled and one individual each with the following disabling conditions: hearing disability, epilepsy, and brain damage. Twelve of the individuals were considered severely disabled, while 18 were not.

High School Students The 30 high school students ranged in age from 17 years to 19 years ($\bar{X}$ = 17.4). They were all attending the 12th grade. None of the students interviewed had a verifiable disability.

Procedure

Five students enrolled in the doctoral program in counseling at Michigan State University were recruited to collect data for this study. Each student participated in an individual training session in which the general

purpose of the study was explained and specific data collection instructions were given. In addition each interviewer was given a set of written instructions to be followed in the interview situation (Appendix C). One final briefing was given to each interviewer just prior to the actual interview period.

Each site was prepared for the data collection procedure with a personal visit to the facility by the researcher. The purpose of the visit was to discuss the intent of the study and to review the demands of the data collection procedures on the site. At this time the materials to be utilized were reviewed with the counselors and evaluators, and an effort was made to answer any procedural questions.

The interviewers were assigned to a particular site and day based on their schedules. Each site informed the researcher of the times that were the most advantageous for data collection. These times were those that would least disrupt the evaluation and training activities. The final interview arrangements were based on the schedules of both interviewers and research sites.

Data Collection Procedures

Each of the interviewers and the researcher followed a prescribed set of data collection procedures. These

procedures were as follows:

1. Each interviewer met with the contact person at the site. The interviewer checked on the suitability of the interview room and arranged the most convenient method of contacting each student or client for an interview.

2. Each interviewer met individually with each subject, (a) a vocational rehabilitation client participating in vocational evaluation, (b) a vocational rehabilitation client attending vocational training, or (c) a 12th grade high school student. During this meeting a statement was read to each client regarding the nature and purpose of the study (Appendix D). If the client or student agreed to participate, an informed consent agreement (Appendix E) was read to him and his signature was obtained

3. Each interviewer then administered the Decision-Making Interview (DMI). This interview was designed to be presented orally with the interviewer recording the subject's responses. (The DMI will be discussed at length later in Chapter Three.) Appendix F contains a copy of the DMI. Also at this time the DMI-Demographic Survey was completed (Appendix G).

4. At the end of the individual interview arrangements were made for the subject to return to a specified room for the group administration of the Career Maturity Inventory - Attitude Scale (CMI). All subjects interviewed on a given day were administered the CMI at the end of that day. The CMI was administered orally, with the subjects recording their responses on an IBM answer sheet. The administration of the CMI was done following written instruction provided to the interviewer. A copy of these instructions can be found in Appendix H.

5. Each interviewer at the end of the interview day gave the Decision-Making Interview - Counselor/Evaluator form (Appendix I) for each subject interviewed that day to the counselor or evaluator having the most direct contact with the particular subject. Arrangements were made to pick up these forms after several days, allowing the counselor/evaluator time to complete the form.

Time Frame for Data Collection

The procedures outlined in the preceding section resulted in the interviewers being at the sites for the following periods of time:

a. At Peckham Rehabilitation Center the interviewers spent approximately four hours for three days.

b. At STIRC the interviewers spent approximately seven hours for four days.

c. At Webberville High School the interviewers spent approximately seven hours for four days.

The interviews lasted from a minimum of 45 minutes to a maximum of two hours, with an average time spent of one hour and 15 minutes per interview. The group procedure lasted approximately one-half hour. An effort was made to work around coffee breaks and lunch hours, which resulted in considerable delay in the interviewer schedules.

Instrumentation

Introductory Statement

An extensive review of the literature pertinent to vocational decision-making revealed no instrumentation specifically designed for use with the rehabilitation client. Further, instruments reviewed that had been designed for use with other groups appeared inappropriate for use with a rehabilitation population. Given this lack of instrumentation, work was begun on the development of an instrument to fill this gap. A number of variables were determined to be likely factors in an

individual's level of vocational decidedness. These factors or variables as presented in Table 2.1 were utilized to develop a number of categories of decision-making problems to be explored in this study. In the following sections the procedures used in the development and revision of the instrument to the final form used for data analysis will be discussed.

Instrument Development

In Chapter Two a list of potential decision-making problems was generated. In this section will be described the steps taken to develop an instrument based on these variables. This new instrument covered the following categories of decision-making problem:

1. Information Problems Problems falling into this category stem from a lack of the information needed to make a job choice. This category is made up of two additional categories:
    a. self-knowledge This is the information the individual possesses about himself or herself.
    b. occupational knowledge This is information the individual possesses about the world of work.
2. Decision-Making Problems These are problems that stem from lack of ability or knowledge in the decision-making process.

3. Environmental Problems These are problems that have as their basis, interference from sources external to the individual, i.e. economics and coercion.

In each of these categories a number of questions were generated to deal with each of the factors making up that category. A total of 68 items was developed for the original pool of items.

Content Validation In order to establish the content validity (Anastasi, 1976) of the original pool of items, a content validity study was undertaken. The 68 items were typed onto index cards and given to 10 "expert" raters with instructions for their review (Appendix J). These instructions called for two Q-sorts which ranked each item in terms of the categorical assignment, and how well it examined that category. The 10 raters for the content validity study were drawn from several areas of expertise. These raters were:

1. Two rehabilitation counselor educators.
2. Two vocational rehabilitation counselors with over four years experience.
3. Two vocational evaluators with over two years experience.
4. Two counselor educators.
5. One psychologist dealing with 15 to 20 year olds in counseling practice.
6. One social worker dealing with young adults.

Based on the ratings and suggestions of these individuals, the original group of items was revised. One item was dropped as not modifiable. Seven items were modified to address their decision-making category more directly. Four items had prompting questions attached to them. Three of the items were divided into two items each. The result of the content validity study was to modify the original pool of items from 68 to 70 items.

Pre-Testing The revised 70 items that resulted from the content validity study were assembled into an interview format for pretesting. This pretesting was done to determine the ease of administration of the interview, the clarity of the instructions utilized in the interview, and the usability of the data. Clients from Peckham Rehabilitation Center and The State Technical Institute and Rehabilitation Center were contacted to serve as subjects for this pretesting. If they agreed to participate, an informed consent agreement was signed. Subjects were then interviewed, using the initial 70-item pool.

Based on the pretesting, a few small grammatical corrections were made to clarify certain questions. The data generated by this pretesting were also analyzed to determine the usefulness of such data gathered on a large scale. After this pretesting was completed and

the resulting modifications made, the instrument was written in the final form utilized in the study (Appendix F).

The Decision-Making Interview (DMI) The final form of the DMI utilized for the interviews conducted in this study was made up of three sections. The first section consisted of seven preliminary questions which addressed issues felt to be important in making vocational decisions. The second section was made up of the 70 items developed for the study. The final section of the DMI was made up of three open-ended questions designed to elicit additional information about the subject's decision-making needs and problems.

Response Categories Three response categories were utilized for all of the items in the first two sections of the DMI. They were as follows:

True: The individual judged the statement true of himself.

False: The individual judged the statement not true of himself.

Not Sure: The individual was not sure if the statement was true or false of himself.

In addition, 36 of the items in section two were followed by a prompting question which asked the subject to demonstrate his knowledge of the material covered in that particular question. Table 3.3 shows two examples of questions with a prompting question added.

Table 3.3

Examples of DMI Questions with Prompts

I know how much money I need to earn from a job.
How much money? _____

I know enough about my needs to decide about jobs.
List three of your needs:

1._____

2._____

3._____

In section three of the DMI the questions were open-ended. The subjects' answers were recorded verbatim by the interviewers in this section.

Scoring The scoring procedures for the DMI were developed by this researcher with the assistance of Drs. Coker, Ellis, and Menz of the University of Wisconsin-Stout. In the first two sections of the DMI, all questions that had no prompting question were scored in the following way. A scoring format was developed (Appendix K) by the individuals cited above. This scoring format was developed by reviewing each question and determining the response considered to be a positive response for the question. This decision was made on a logical and theoretical basis by the panel of researchers mentioned earlier in this section. In some cases the positive answer was based on previous

decision-making research, while in others it was based on a logical determination of the correct or positive answer to a particular question.

In general a true response was considered the positive response and assigned a value of three points. A false response in such a case would be considered a negative response and was assigned a value of one. It was felt that a "not sure" answer would fall somewhere between a positive and negative answer and was assigned a value of two. Table 3.4 presents an example of a question scored in this way.

Table 3.4

Example of Unprompted Question

with True Answer Scored Three

T	NS*	F	I have had good luck deciding about jobs.
			True responses on this question are scored three.
			False responses on this question are scored one.

*"not sure" responses are scored two in every case.

In other cases a false response was considered, by the researchers cited earlier, to be the positive

response to the question. This determination was made by the researchers independently. The consensus was then used to assign values to the responses. In such a case a false response received the three value and a true response received a value of one. Table 3.5 presents an example of an unprompted question with a false answer scored three.

Table 3.5

Example of Unprompted Questions with False Answer Scored Three

T	NS*	F	Others often disagree with my decisions about jobs. True responses on this question are scored one. False responses on this question are scored three.

*"not sure" responses are scored two in every case.

The scoring of all non-prompted questions was done utilizing the scoring format. Appendix K contains a copy of the format used.

The scoring of the prompted questions was done utilizing a separate scoring format (Appendix L). This scoring format was developed by this researcher in

cooperation with Drs. Coker and Menz of the University of Wisconsin-Stout. The responses of the 90 subjects to each of the 36 prompted questions were individually recorded on index cards. The cards for each question were then separated into as many distinct categories of responses as possible. These categories were then reviewed by the researchers mentioned above. Based on frequency, and appropriateness of the category to the question asked, a list of correct responses was developed. Using this list a scoring format was developed to be followed in scoring the prompted questions. Appendix L presents the scoring format developed.

Inter-Rater Reliability In order to establish the reliability of the scoring procedure used for the prompted questions in section two and the open-ended questions in section three, an inter-rater reliability study was undertaken. A second scorer was selected (this researcher did the initial scoring) to rate the prompted questions. This rater was selected because of an extensive background in rehabilitation work. Ten interviews were selected randomly from each group, for a total of 30 interviews. The second rater was given the scoring schedule and asked to rate each of the interviews. A Pearson Product Moment Correlation Coefficient was computed for the comparison between the original ratings of this author and those of the second rater.

A correlation coefficient of .8035 was obtained.

Recoding of Scores For Data Analysis

Since this instrument and the scoring procedures developed for this study are in the early stages of development, a recoding of scores was done before the various item analysis and data analysis procedures were undertaken. The primary intent of the study was to discriminate between those who have decision-making problems and those who do not. It became unclear how the middle ground reflected by a "not sure" response fit into this dichotomy. For this reason and to maximize the distinction between a positive answer to a question and a less than positive answer to a question, a recoding of responses was done. Simply, all positive answers were coded 1 and all "not sure" or negative answers were coded 0. This left a dichotomy of either a positive answer to a question or a less than positive answer to a question.

Given this recoding, total scores could range from a minimum value of zero to a maximum value of 80. The lower the score on the DMI the greater the individual's level of decision-making problem would be expected to be. The range and frequency of scores obtained from the initial administration of the DMI will be reported in Chapter Four.

Reliability Study and Item Analysis Procedures with the Initial Version of the Decision-Making Interview

Introductory Statement

The results of the item analysis procedures and reliability study utilized to refine the initial version of the DMI to the final form used for the data analysis are reported in this section.

Reliability Study

In order to establish the reliability of the initial version of the DMI, Hoyt's Analysis of Variance Procedure (Hoyt, 1941) was used to compute an estimate of the internal consistency of each of the scales and of the total test. Table 3.6 reports the reliability estimates obtained.

Item Analysis Procedures

In addition to the reliability estimates obtained, item analysis procedures were utilized in an effort to eliminate those items which did not contribute significantly to the ability of the instrument to discriminate between high scorers and low scorers on the instrument.

Table 3.6

Internal Consistency Estimates for the Original Version of the Decision-Making Interview

(N = 90)	
Scale	Reliability Coefficient
DMI (All Scales)	.8363
Self-Information Problems	.4721
Occupational Information Problems	.7311
Decision-Making Problems	
a. acquisition of information, & processing of information, & skills in choosing.	.5894
b. success in previous choices, & responsibility/control, & anxiety/fear of decision making.	.6527
Environmental Problems	.4308
Section One and General Questions	.5819

Index of Discrimination The index of discrimination (Gronlund, 1965) provided a rating of an individual item's ability to discriminate between high and low scorers on the total test. It was then possible to remove those items that discriminated poorly or not at all between high and low scorers on the test. The higher the rating on the index, the better an item discriminated. A score of 1.00 would indicate perfect discrimination.

Index of Item Difficulty The index of item difficulty (Mehrens & Lehmann, 1973) is simply a percentage of subjects who get a particular item correct. Using this index it was possible to determine and eliminate those items which were passed by a very large portion of the subjects.

Utilizing these two item analysis procedures it was possible to eliminate seven items that were both very easy and discriminated poorly between high and low scorers. These seven items were selected on the basis that they had an index of discrimination of below .10, and an index of difficulty above 80 percent. Table 3.7 shows the items removed and their scores on both indexes.

Inter-Item Correlation Analysis The original scales used in the development of the DMI were developed on a theoretical basis using past research and the experience of a number of rehabilitation professionals. In order to determine those items that not only fit together theoretically, but also correlated closely enough to be considered part of a scale, a Pearson Product Moment Correlation Coefficient was determined for each possible pair of items in the DMI. Using the scales originally developed as a theoretical basis, and noting those items that had a positive correlation significant at the .05 level or lower, new scales were developed. Items placed into these scales had

Table 3.7

Items Removed from the Decision-Making Interview (DMI) after Index of Discrimination and Index of Difficulty Procedures

Scale	Item number	Item	Index of Discrimination	Index of Difficulty (%)
Section One	1	I want to get a job soon.	.095	81
	2	I should get a job soon.	-.095	83
Anxiety/Fear of Decision-Making	61	I would like to avoid making a decision about a job.	.000	81
Lack of reinforcement	66	My friends (family, spouse) want me to get a job.	.095	94
Economics	70	I would be better off financially from various types of aid and social services than if I got a job.	.048	83
	71	I can't buy the things I want without getting a job.	.048	92
	73	Money is one of the reasons to look for a job.	.048	96

significant correlations and were theoretically related as well. Table 3.8 shows the new scales and the old scales from which they were drawn.

Table 3.8

Revised Decision-Making Interview Scales - By Old Scale

Scale	Original Scale
Employment Readiness Scale	Section One Coercion Lack of Reinforcement Economics Mobility
Self-Appraisal Scale	Needs Beliefs and Interests Abilities Personality Success in Previous Choices Responsibility/Control Anxiety/Fear of Decision-Making
Decision-Making Readiness Scale	Opportunities and Requirements Tasks and Duties Rewards and Punishers Acquisition of Information Skills in Choosing

Table 3.9 presents the new DMI scales and the items that made up each of the scales.

Table 3.9

Revised Decision-Making Interview Scales

By Item Number

Scale	Item Numbers
Employment Readiness Scale	3, 4, 5, 6, 7, 62, 63, 64, 65, 67, 68, 69, 72, 74, 75, 76, 77, 78, 79, 80
Self-Appraisal Scale	8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61
Decision-Making Readiness Scale	24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50.

Each of the new scales measured an aspect of decision-making. These scales were defined as follows:

A. The Employment Readiness Scale - The questions in this scale were designed to examine the individual's desire to obtain work, and the external pressures that may help or hinder the individual's motivation and ability to make a decision.

B. The Self-Appraisal Scale - This scale is focused upon individuals' knowledge and perception of themselves, i.e. their abilities, needs, etc., and their decision-making history.

C. The Decision-Making Readiness Scale - This scale deals with the individual's readiness to make a vocational decision based on the occupational knowledge they possessed and their decision-making skills.

Reliability Study and Item Analysis Procedures with the Revised Version of the Decision-Making Interview

Introductory Statement

With the revision of the original scales and the deletion of several items, it was necessary to do additional item analysis procedures and to do a new reliability study. The results of these procedures will be presented in this section.

Item Analysis and Reliability Study Results

An internal consistency estimate (Hoyt's Analysis of Variance Procedure), mean score, mean difficulty, and standard error of measurement were computed for the new scales and the total instrument. Table 3.10 reports these estimates.

Table 3.10

Item Analysis and Reliability Estimates for Revised DMI and New Scales

(N = 90)

Scale	Number Of Items	Mean Score	Mean Difficulty	Standard Error Of Measurement	Reliability Coefficient
Employment Readiness Scale	20	12.7444	.6372	1.7730	.6167
Self-Appraisal Scale	26	12.0111	.4620	2.1482	.6295
Decision-Making Readiness Scale	27	9.5556	.3539	2.1182	.7939
DMI (All Scales)	73	34.3111	.4700	3.5776	.8431

It should be noted here that the reliability estimates reported here are all below the .85 level listed by Mehrens and Lehmann (1973) as necessary for the use of a test for decision-making with individuals. For this reason the remainder of this study will consider the group application of the DMI. For group use Mehrens and Lehmann call for a reliability level of about .65. The revised scales of the DMI approach or exceed this level in every case.

Revised Scale Correlations Another consideration in test construction is the correlation between the scales themselves and their correlation with the total instrument. In general a moderately low level of inter-scale correlation is desirable, while a higher level of scale to total test correlation would be looked for. Table 3.11 reports the inter-scale and scale with total test correlations for the revised version of the DMI. These inter-correlations were in the direction expected.

Table 3.11

Inter-Scale and Scale with Total Test Correlations for the Decision-Making Interview

(N = 90)

Scale	Employment Readiness Scale	Self-Appraisal Scale	Decision-Making Readiness Scale	DMI* (Total)
Employment Readiness Scale	1.000			
Self-Appraisal Scale	.375	1.000		
Decision-Making Readiness Scale	.436	.550	1.000	
Total DMI	.696	.803	.880	1.000

*All correlations significant at the .001 alpha level.

Additional Instruments

DMI - Demographic Questionnaire

The literature reviewed in vocational decision-making has in general been supportive of the idea that there are certain types of individuals who are better decision-makers than others. The literature has also supported the notion that certain characteristics are likely to be correlated with successful decision-making. Holland and Holland (1977) specifically called for research that would be descriptive of the undecided individual. With this purpose in mind a demographic questionnaire was constructed. It was completed before the DMI was administered.

Counselor/Evaluator Form

This form was developed to assess the realism of the subject's choice of jobs. It also asked for the counselor's or evaluator's judgment of the subject's independence in decision-making.

Career Maturity Inventory-Attitude Scale

One standardized instrument was utilized in this study. The Career Maturity Inventory - Attitude Scale - CMI (Crites, 1973). The Attitude Scale has been used on several occasions as a measure of decision-making ability. Chandler (1978) used it as a measure of pre-

test to post-test change in decision-making ability with a population similar to that sampled in this study.

The CMI - Attitude Scale is designed to measure "the feelings, the subjective reactions, the dispositions that the individual has toward making a career choice and entering the world of work (Crites, 1973, p. 3)." Five clusters of attitudes are represented: "involvement in the career choice process; orientation toward work; independence in decision-making; preference for career choice factors; conceptions of the career choice process (Crites, 1973, p. 3)."

Standardization The CMI-Attitude Scale was standardized utilizing a "normal" school-age population. Chandler (1978) provided standardization utilizing a vocational rehabilitation population. Table 3.12 reports the reliability estimates for this group.

Table 3.12
Reliability Estimates - Career Maturity Inventory - Attitude Scale

Reliability	N=	Reliability Coefficient	Significance
Internal Consistency	69	ALPHA = .81288	.0001
Test-Retest*	12	r_{xx} = .7902	.001

*Over a two to four week time period

Note: From "Client change in self-concept, vocational maturity, and decision-making skills following vocational evaluation" by A. L. Chandler, Unpublished doctoral dissertation, Michigan State University, 1977, p. 50. Copyright by A. L. Chandler. Reprinted by permission.

These reliability estimates supported the use of the instrument with the population of interest in this study.

Rationale for Inclusion Although standardization presents a problem with the use of the CMI, it was determined that it would provide a useful comparison for the instrumentation developed in this study. Specifically, the content areas covered by the Attitude Scale appeared, at least intuitively, to be related to decision-making. The CMI served as an initial instrument for establishing the concurrent validity of the DMI. If both instruments tapped a similar aspect of decision-making ability, individuals scoring high on one would be expected to score high on the other.

Research Questions and Hypotheses

Introductory Statement

Consistent with the stated goals of this project, the data gathered through the administration of the

Decision-Making Interview (DMI) was utilized to address three major topics of interest. The remainder of this section will consist of a presentation of research questions and hypotheses designed to provide information about the undecided rehabilitation client, to establish the concurrent validity of the DMI, and to examine differences among the clients in vocational evaluation, the clients in vocational training, and the students in their senior year of high school on the DMI scales.

Research Question One

Q - What are the characteristics of the undecided vocational rehabilitiation client?

For this question a tabulation of the demographic data will be provided, with appropriate Chi Square analysis results.

Research Question Two

Q - Does the DMI have concurrent validity?

In order to begin to establish the concurrent validity of the DMI it was necessary to compare its scores with other indicators of decision-making ability. Three indicators were chosen theoretically as partial indicators of decision-making ability. The three indicators were as follows:

1. The Career Maturity Inventory - Attitude Scale: If both the CMI and the DMI measured some related dimension of decision-making ability or problem, individuals who scored high on one should score high on the other.
2. Question Three of the DMI: This question asked the subject to state three job goals. Intuitively, the subject's ability to state three job goals seemed likely to be correlated with decision-making ability.
3. Question Five of the DMI: This question asked the subject to state three career goals and again, intuitively appeared likely to be correlated with decision-making ability.

Hypothesis One - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Employment Readiness Scale.

Hypothesis Two - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Self-Appraisal Scale.

Hypothesis Three - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Decision-Making Readiness Scale.

Hypothesis Four - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the total score on the Decision-Making Interview.

Analysis of Data

For question one, which called for a description of three groups, a simple tabular presentation was utilized. Chi-Square analyses were used to compare the demographic data of the three groups.

For question two, Pearson Correlation Coefficients were generated between the theoretical decision-making indicators and the DMI and its scales. Correlations were considered significant if they attained a .05 level of significance.

Two analysis procedures were utilized for the four research hypothesis. One way analysis of variance procedures were used for each question. In addition,

Bartlett's Test for Homogeneity of Variance was computed for these questions. In both analyses a significance level of .05 was utilized.

Summary

Bureau of Rehabilitation clients in vocational evaluation and training, and seniors in high school made up the three groups utilized in this study. All subjects were male and were volunteers. Each group was administered an instrument developed for this study.

The instrument, The Decision-Making Interview (DMI), was designed to measure the degree of decision-making difficulty an individual experienced in making a vocational decision. Extensive content validation and item analysis procedures were conducted to determine the final form of the instrument.

The data obtained from the initial administration of the DMI was used to answer two research questions and to test four research hypotheses. These questions and hypotheses were designed to provide information regarding the characteristics of the undecided rehabilitation client, the concurrent validity of the DMI, and the DMI's ability to differentiate among three groups of decision makers.

Chapter IV

Analysis of Results

Introductory Statement

An analysis of the data generated by this study will be presented in this chapter. Consistent with the purpose of the study, three major areas of interest will be addressed. The first area will include a description of the vocational evaluation, vocational training, and high school groups, with an emphasis on the clients in evaluation. The second area will address the concurrent validity of the Decision-Making Interview (DMI) and its three scales. The final section will present the formal testing of the research hypotheses which were explored in this study.

Research Question One

What are the characteristics of the undecided rehabilitation client?

Table 4.1 presents the demographic characteristics of the sample used in this study. The characteristics of the vocational evaluation group were considered important, as this group was selected as the most representative of the undecided rehabilitation client.

Table 4.1

Demographic Characteristics of the Sample: Age, Sex and Education

Variable	All Subjects %	(N)	Evaluation Clients %	(N)	Training Clients %	(N)	High School Students %	(N)	Test of Significance X^2	p
Age										
17 to 25 years	75.6	(68)	60.0	(18)	66.7	(20)	100	(30)	15.76	.0034
26 to 35 years	16.7	(15)	30.0	(9)	20.0	(6)	---	(0)	(3.01)	(.250)*
36 to 44 years	7.8	(7)	10.0	(3)	13.3	(4)	---	(0)		
Sex										
Male	100	(90)	100	(30)	100	(30)	100	(30)		
Education										
0 to 8 years	4.4	(4)	3.3	(1)	10.0	(3)	---	(0)	46.17	.01
9 to 11 years	45.6	(41)	16.7	(5)	20.0	(6)	100	(30)	(1.29)	(.5000)*
12 or more years	50.0	(45)	80.0	(24)	70.0	(21)	---	(0)		

*These figures represent a second Chi Square analysis that was computed between the evaluation and training clients.

Table 4.1

Continued: Race, Source of Income and Bureau of Rehabilitation Status

Variable	All Subjects %	All Subjects (N)	Evaluation Clients %	Evaluation Clients (N)	Training Clients %	Training Clients (N)	High School Students %	High School Students (N)	Test of Significance X^2	Test of Significance p
Race										
White	95.6	(86)	93.3	(28)	93.3	(28)	100	(30)	5.09	.53
Black	2.2	(2)	3.3	(1)	3.3	(1)	---	(0)	(2.00)	(.750)*
American Indian	1.1	(1)	---	(0)	3.3	(1)	---	(0)		
Spanish Surname	1.1	(1)	3.3	(1)	---	(0)	---	(0)		
Source of Income										
Self	8.9	(8)	10.0	(3)	3.3	(1)	13.3	(4)	46.23	.0000
Family	35.6	(32)	13.3	(4)	13.3	(4)	80.0	(24)	(1.08)	(.750)*
Public Assistance	55.6	(50)	76.7	(23)	83.3	(25)	6.7	(2)		
Bureau of Rehabiltation Status										
Client	66.7	(60)	100	(30)	100	(30)	---	(0)	85.57	.0000
Non-Client	33.3	(30)	---	(0)	---	(0)	---	(30)	(.00)	(----)*

*These figures represent a second Chi Square analysis that was computed between the evaluation and training clients.

Table 4.1

Continued: Primary Disability and Severity of Disability

Variable	All Subjects %	All Subjects (N)	Evaluation Clients %	Evaluation Clients (N)	Training Clients %	Training Clients (N)	High School Students %	High School Students (N)	Test of Significance X^2	Test of Significance p
Primary Disability										
Visual Impairment	4.4	(4)	6.7	(2)	6.7	(2)	---	(0)	96.12	.0000
Hearing Impairment	2.2	(2)	3.3	(1)	3.3	(1)	---	(0)	(00.00)	(-----)*
Orthopedic Impairment	26.7	(24)	40.0	(12)	40.0	(12)	---	(0)		
Mental Illness	17.8	(16)	26.7	(8)	26.7	(8)	---	(0)		
Mental Retardation	11.1	(10)	16.7	(5)	16.7	(5)	---	(0)		
Other Physical or Mental	4.4	(4)	6.7	(2)	6.7	(2)	---	(0)		
None	33.3	(30)	---	(0)	---	(0)	100	(30)		
Severity of Disability										
Severely Disabled	46.7	(28)	53.3	(16)	40.0	(12)	Not Applicable			
Not Severely Disabled	53.3	(32)	46.7	(14)	60.0	(18)			(2.38)	(.3045)*

*These figures represent a second Chi Square analysis computed between the evaluation and training groups.

Table 4.1

Continued: Time Since Last Job

Variable	All Subjects %	All Subjects (N)	Evaluation Clients %	Evaluation Clients (N)	Training Clients %	Training Clients (N)	High School Students %	High School Students (N)	Test of Significance X^2	Test of Significance p
Time Since Last Job										
never employed	8.9	(8)	6.7	(2)	16.7	(5)	3.3	(1)	32.08	.0004
1 to 6 months	45.6	(41)	26.7	(8)	20.0	(6)	90.0	(27)		
7 to 12 months	17.8	(16)	23.3	(7)	26.7	(8)	3.3	(1)	(4.64)	(.500)*
13 months to 2 years (24 months)	18.9	(17)	33.3	(10)	20.0	(6)	3.3	(1)		
25 months to 5 years (60 months)	6.7	(6)	10.0	(3)	10.0	(3)	---	(0)		
61 months to 10 years (120 months)	1.1	(1)	---	(0)	3.3	(1)	---	(0)		
over 10 years (121 + months)	1.1	(1)	---	(0)	3.3	(1)	---	(0)		

*These figures represent a second Chi Square analysis that was computed between the evaluation and training groups.

Table 4.1

Continued: Time in Most Recent Job

Variable	All Subjects %	All Subjects (N)	Evaluation Clients %	Evaluation Clients (N)	Training Clients %	Training Clients (N)	High School Students %	High School Students (N)	Test of Significance X^2	Test of Significance p
Time in Most Recent Job										
never employed	8.9	(8)	6.7	(2)	16.7	(5)	3.3	(1)	14.70	.1434
1 to 6 months	57.8	(52)	50.0	(15)	60.0	(18)	63.3	(19)	(5.56)	(.500)*
7 to 12 months	8.9	(8)	6.7	(2)	6.7	(2)	13.3	(4)		
13 months to 2 years (24 months)	10.0	(9)	13.3	(4)	3.3	(1)	13.3	(4)		
25 months to 5 years (60 months)	6.7	(6)	13.3	(4)	---	(0)	6.7	(2)		
61 months to 10 years (120 months)	5.6	(5)	10.0	(3)	6.7	(2)	---	(0)		
over 10 years (121 + months)	2.2	(2)	---	(0)	6.7	(2)	---	(0)		

*These figures represent a second Chi Square analysis that was computed between the evaluation and training groups.

Table 4.1

Continued: Combined Time in Last Three Jobs

Variable	All Subjects %	(N)	Evaluation Clients %	(N)	Training Clients %	(N)	High School Students %	(N)	Test of Significance X^2	p
Combined Time in Last Three Jobs										
never employed	8.9	(8)	6.7	(2)	16.7	(5)	3.3	(1)	20.10	.07
1 to 6 months	24.4	(22)	16.7	(5)	16.7	(5)	40.0	(12)	(4.37)	(.500)*
7 to 12 months	12.2	(19)	6.7	(2)	13.0	(4)	16.7	(5)		
13 months to 2 years (24 months)	21.1	(19)	23.2	(7)	16.7	(5)	23.3	(7)		
25 months to 5 years (60 months)	21.1	(19)	26.7	(8)	20.0	(6)	16.7	(5)		
61 months to 10 years (120 months)	5.6	(5)	13.3	(4)	3.3	(1)	---	(0)		
over 10 years (121 + months)	6.7	(6)	6.7	(2)	13.3	(4)	---	(0)		

*These figures represent a second Chi Square analysis that was computed between the evaluation and training groups.

Sixty percent of the evaluation clients were between the ages of 17 and 25, 80% had at least a high school education, and 76.7% received their primary source of support from public assistance. The primary disability group was the orthopedically handicapped (40%), although it should be noted that the proportion of disability groups represented in the evaluation sample was quite similar to that of the total rehabilitation population at the State Technical Institute and Rehabilitation Center. Fifty percent of the evaluation group spent from one to six months in their last job. The information on time since last job and total time in last three jobs was quite scattered, with no one category making up a majority of the sample.

These figures were assumed to be representative of the undecided rehabilitation client, at least for purposes of this study. Perhaps the most valid observation that can be made from the demographic data about this group is that, although it was possible to point to a certain age group or educational level as making up the largest percentage of the group, the group was actually made up of a widely divergent mixture of individuals.

Chi Square analyses were used to test for differences between the clients in evaluation and the clients in training. These two groups were made up of the rehabilitation clients utilized in this study. No significant differences were found on any of the

demographic variables. It should be noted that the training group was selected, in part, by matching with the evaluation group on age, education, and disability. Given this matching procedure, no significant differences would be expected on at least these variables.

Additional Chi Square analyses were used to test for differences between the evaluation, training, and high school groups on the demographic variables. Significant differences were noted in age, education, source of income, Bureau of Rehabilitation status, and time since last job. These differences were expected because of the nature of the high school group. They were much more homogeneous than the training or evaluation groups in terms of demographic characteristics.

The total sample, as the initial group of subjects used for the standardization of the DMI, was described in Table 4.1. It was noted that the sample consisted of a very small number of minority subjects. Only four subjects in the total sample came from racial groups other than white. Age varied widely within the evaluation and training groups, with little variance in the high school group. The most typical age of the total sample ranged from 17 to 25 years. Educational level across the sample was, for the largest percentage of subjects, at least at the high school level. A majority of the rehabilitation clients had 12 or more

years of education. There were no disabled individuals in the high school group, while the other groups were, by the nature of the criteria used to select them, all disabled. Of the disabled population, 53% were severely disabled and 47% were not.

Few subjects in the study were self-supporting financially. Only 8.9% of the total sample considered themselves to be self-supporting. Eighty percent of the high school sample received their support from their family, while 80% of the rehabilitation clients received some form of public assistance. It was noted that the sample was not unfamiliar with the world of work. Most of the subject population had worked some time in the last year, with only eight subjects having been unemployed for over two years. Of the total sample, two-thirds had spent at least one year in their most recent job.

This sample was considered representative of the populations sampled to a limited degree. The small sample size was a major factor in the caution used in generalizing from these demographic data. The data were felt to be an initial indicator of the characteristics of the populations. The heterogeneity within the evaluation and training groups was felt to warrant this expanded discussion.

An additional source of demographic information was the Decision-Making Interview - Counselor/Evaluator rating form. This form was designed to elicit counselor/evaluator ratings of the job or career choices of a subject, and a judgment of the independence of the decision-making used in making these choices. It should be noted that if the subject failed to list a choice in either the job or career choice area, this information was reported to the counselor/evaluator as well. Counselor/evaluators were asked to rate the appropriateness of the individual's not having made a choice at that point in time. This was considered a choice, in the sense that the client decided not to name a goal at the time of the interview. Such a choice may have been quite realistic given the individual's situation.

Table 4.2 presents a description of the data generated by this rating form. Chi Square analyses found no significant differences among the vocational training, vocational evaluation, and high school groups on the counselor/evaluator ratings for any of the questions asked. It was noted, however, that individuals in the training group did receive a larger percentage of positive ratings on their choice of job (Question Three) and career (Question Five). This was in the direction expected, as this group was in training (at least in most cases) for the choice reported. The high school

Table 4.2

Counselor/Evaluator Ratings for the Evaluation, Training, and High School Groups

Question	Vocational Evaluation yes %	Vocational Evaluation yes N	Vocational Evaluation don't know %	Vocational Evaluation don't know N	Vocational Evaluation no %	Vocational Evaluation no N	Vocational Training yes %	Vocational Training yes N	Vocational Training don't know %	Vocational Training don't know N	Vocational Training no %	Vocational Training no N	High School yes %	High School yes N	High School don't know %	High School don't know N	High School no %	High School no N*
Is the occupational choice made by the client in Question #3 realistic (given what you know about the client)?**	53.6	(15)	25.0	(7)	21.4	(6)	70.0	(21)	20.0	(6)	10.0	(3)	51.9	(14)	22.2	(6)	25.9	(7)
Is the career/training choice made by the client in Question #5 realistic (given what you know about the client)?**	53.6	(15)	21.4	(6)	25.0	(7)	62.1	(18)	24.1	(7)	13.8	(4)	51.9	(14)	18.5	(5)	29.6	(8)
Did the client independently make a decision about a job/career choice?	44.4	(12)	33.3	(9)	22.2	(6)	50.0	(15)	40.0	(12)	10.0	(3)	66.7	(18)	29.6	(8)	3.7	(1)

*Chi Square analyses were not significant to the .05 level for the comparison of the three groups on the counselor/evaluator ratings.

**If the subject listed no choice this information was reported to the counselor/evaluator who was asked to rate the realism of a "no choice" response for the client in the same way he or she would have rated a job choice.

group received the highest rating on the independence in decision-making question. This finding may have been due to the lack of vocational services provided to the high school population in general. Any choice they may have made would likely have been on their own, or at least without the assistance of the counselor. Despite the trends noted here, the result of this analysis was that no significant differences were found among the groups on these ratings.

Having completed a description of the sample utilized, and having characterized the undecided as coming from a heterogeneous group, the next goal of the research was to examine the concurrent validity of the DMI. The next section deals with the analysis of results relevant to the issue.

Research Question Two

Does the DMI have concurrent validity?

In order to establish the concurrent validity of the DMI and its scales, datawere collected on variables that were felt to be indicators of decision-making ability. This datawere collected concurrent with the DMI administration. Any correlation between these indicators and the DMI would be an indication of the validity of the DMI. Table 4.3 reports the Pearson Product Moment Correlations between the DMI (and its

scales) and the Career Maturity Inventory - Attitude Scale, a subject's ability to state three job goals (Question Three), and a subject's ability to state three career goals (Question Five). The Employment Readiness Scale, the Self-Appraisal Scale, and the total DMI correlated significantly and positively with the CMI, Question Three, and Question Five. The Decision-Making Readiness Scale correlated significantly with only Question Three.

Table 4.3

Correlation Matrix for DMI and the Concurrent Validity Variables

Scale	CMI	Question #3	Question #5
Employment Readiness Scale	.227*	.445***	.425***
Self-Appraisal Scale	.249*	.249*	.223*
Decision-Making Readiness Scale	.193	.254*	.178
Total DMI	.272*	.374***	.317**

* significant at the .05 alpha level
** significant at the .01 alpha level
*** signigicant at the .001 alpha level

These significant correlations with theoretical indicators of decision-making collected concurrently with the DMI were interpreted to be demonstrations of

the concurrent validity of the DMI. This concurrent validity lends support to the arguement that the DMI does in fact measure some facet of decision-making ability. Limitations on this findings were noted, and are discussed in Chapter Five.

The third area of interest examined in this study was the analysis of research hypotheses generated to test the new instrument and its scales. With the validity of the DMI supported to a degree, the next concern was its ability to distinguish among groups of individuals. The results of the analyses of the hypotheses generated for this purpose are reported in the next section.

Test of Hypotheses

Hypothesis One - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Employment Readiness Scale.

Table 4.4 presents descriptive statistics for the evaluation, training, and high school groups' scores on the Employment Readiness Scale.

Table 4.4

Descriptive Statistics for the Evaluation, Training, and High School Groups on the Employment Readiness Scale

Group	Minimum Score	Maximum Score	Group Mean	Group Variance	Standard Deviation
Evaluation	4	18	12.23	11.564	3.401
Training	8	17	13.60	4.041	2.010
High School	6	19	12.40	9.448	3.074
Total	4	19	12.74	9.145	3.024

One way analysis of variance was utilized to test Hypothesis One. No significant difference was found among the three groups on the Employment Readiness scale. Table 4.5 presents the analysis of variance data for hypothesis one. Based on this analysis, hypothesis one was rejected.

Table 4.5

Analysis of Variance for the Evaluation, Training, and High School Groups' Scores on the Employment Readiness Scale

Source	Sum of Squares	Degrees of Freedom	Mean Square	F - Ratio	Significance Probability
Mean	14617.878	1	14617.8777	1771.28	
Groups	33.356	2	16.6778	2.02	.1386
Within Groups	717.767	87	8.2502		
Total	15369.000	90			

Given the newness of the Employment Readiness Scale and the lack of previous research on the indecision of the rehabilitation population, further analysis was considered appropriate. A second dimension of the distribution of scores of the evaluation, training, and high school groups was examined. ANOVA had been used to compare the group means; in addition, it was considered appropriate to compare the within-group variances of the distributions of scores as well. Bartlett's Test for Homogeneity of Variance (1937) was computed for the scores of three groups on the Employment Readiness Scale. The results of this analysis are presented in Table 4.6

Table 4.6

Bartlett's Test of Homogeneity of Variance - Employment Readiness Scale

Group	Variance	Chi Square	Degrees of Freedom	Significance Probability
Evaluation	11.564	7.80	2	.0203
Training	4.041			
High School	9.448			

The within group-variances were found to be significantly different on the Employment Readiness Scale. Thus, the distributions of the evaluation, training, and high school groups were significantly different on this dimension.

This finding had two implications for the analysis of the results. Bartlett's test was an additional method of comparing the evaluation, training, and high school groups on the Employment Readiness Scale. Differences on Bartlett's test were not felt to affect the rejection of Hypothesis One, as ANOVA is a more powerful test of significance. However, the differences were felt to make the discussion of these findings quite important and the usefulness of the Employment Readiness Scale a potential topic for further research.

A second implication of the significant differences in within-group variances was in the degree of confidence

that could be placed on the rejection of Hypothesis One. In using an ANOVA to test for group differences, an assumption was made that there was equality of within-group differences across all groups. The assumption was not met in this case. However, the use of ANOVA was considered appropriate, as it was robust to the violation of this assumption, given the equality of sample sizes. Thus, ANOVA was the test of choice in this case, but the significance of the Bartlett's Test was felt to indicate a need for further research. The implications of these findings are discussed in Chapter Five.

The result of these findings was to reject Hypothesis One, with recognition of the need to examine the implications of the significant differences in group variances.

Hypothesis Two - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Self-Appraisal Scale.

Table 4.7 presents descriptive statistics for the evaluation, training, and high school groups' scores on the Self-Appraisal Scale.

Table 4.7

Descriptive Statistics for the Evaluation, Training, and High School Groups on the Self-Appraisal Scale.

Group	Minimum Score	Maximum Score	Group Mean	Group Variance	Standard Deviation
Evaluation	0	17	11.53	17.292	4.158
Training	5	20	12.87	11.499	3.391
High School	5	19	11.63	9.826	3.135
Total	0	20	12.01	12.955	3.599

A one-way analysis of variance was used to test Hypothesis Two. No significant difference was found among the three groups on the Self-Appraisal Scale. Table 4.8 presents the analysis of variance data for Hypothesis Two. Based on this information , Hypothesis Two was rejected.

Table 4.8

Analysis of Variance for the Evaluation, Training, and High School Groups' Scores on the Self-Appraisal Scale

Source	Chi Square	Degrees of Freedom	Mean Square	F - Ratio	Significance Probability
Mean	12984.011	1	12984.811	1008.67	
Groups	33.089	2	16.544	1.29	.2818
Within Groups	1119.900	87	12.872		
Total	14137.000	90			

Given the newness of the Self-Appraisal Scale and the lack of previous research on the indecision of rehabilitation clients, a second analysis of the scores on the scale was computed. As with the Employment Readiness Scale, Bartlett's Test of Homogeneity of Variance was used to compare the within-group variances for the evaluation, training, and high school groups. The results of this analysis are presented in Table 4.9. The within-group variances were not found to be significantly different on the Self-Appraisal Scale. The assumption of homogeneity of variance was met in this case, and no implications can be drawn from the results of Bartlett's Test. Hypothesis Two was rejected based on the results reported.

Table 4.9

Bartlett's Test of Homogeneity of Variance - Self-Appraisal Scale

Group	Variance	Chi Square	Degrees of Freedom	Significance Probability
Evaluation	17.292	2.50	2	.2858
Training	11.499			
High School	9.826			

Hypothesis Three - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on the Decision-Making Readiness Sacle.

Table 4.10 presents the descriptive statistics for the evaluation, training, and high school groups' scores on the Decision-Making Readiness Scale.

Table 4.10

Descriptive Statistics for the Evaluation, Training and High School Groups on the Decision-Making Readiness Scale

Group	Minimum Score	Maximum Score	Group Mean	Group Variance	Standard Deviation
Evaluation	0	19	8.167	23.454	4.843
Training	5	17	10.867	9.913	3.148
High School	1	22	9.633	32.240	5.678
Total	0	22	9.556	22.609	4.755

A one way analysis of variance was utilized to test Hypothese Three. No significant difference was found among the three groups on the Employment Readiness Scale. Table 4.11 presents the analysis of variance data for Hypothesis Three. Based on this analysis, Hypothesis Three was rejected.

Table 4.11

Analysis of Variance for the Evaluation, Training, and High School Groups on the Decision-Making Readiness Scale

Source	Chi Square	Degrees of Freedom	Mean Square	F - Ratio	Significance Probability
Mean	8217.78	1	8217.778	375.77	
Groups	109.62	2	54.811	2.51	.0874
Within Groups	1902.60	87	21.869		
Total	10230.00	90			

The newness of the scale and the fact that little was known about the indecision of rehabilitation clients were the reasons used to justify further analysis. Bartlett's Test of Homogeneity of Variance was used to compare the within-group variances for the evaluation, training, and high school groups on the Decision-Making Readiness Scale. The results of this analysis are presented in Table 4.12. The within-group variances were found to be significantly different on the Decision-Making Readiness Scale. Thus, the distributions of the evaluation, training, and high school groups were significantly different on this dimension. Again, this significance was not used to alter the rejection of Hypothesis Three, but indicated the need for cautious

Table 4.12

Bartlett's Test of Homogeneity of Variance - Decision-Making Readiness Scale

Group	Variance	Chi Square	Degrees of Freedom	Significance Probability
Evaluation	23.454	9.52	2	.0086
Training	9.913			
High School	32.240			

interpretation of the results, and further study of the scale.

The result of the findings reported was to reject Hypothesis Three, with the recognition of the need to examine the implications of the significant differences in group variances.

Hypothesis Four - The distribution of scores will be significantly different among the vocational evaluation group, the vocational training group, and the high school group on total score on the Decision-Making Interview.

Table 4.13 presents the descriptive statistics for the evaluation, training, and high school groups' scores on the total Decision-Making Interview.

Table 4.13

Descriptive Statistics for the Evaluation, Training, and High School Groups on the Decision-Making Interview (All Scales)

Group	Minimum Score	Maximum Score	Group Mean	Group Variance	Standard Deviation
Evaluation	7	48	31.93	105.24	10.258
Training	26	50	37.33	40.85	6.391
High School	16	53	33.67	92.02	9.593
Total	7	53	34.31	82.71	9.095

A one-way analysis of variance was utilized to test hypothesis four. Although the results approached significance at the .05 alpha level, no significant differences were found among the groups on total score on the DMI. Table 4.14 presents the analysis of variance data for Hypothesis Four. Based on this analysis, Hypothesis Four was rejected.

Table 4.14

Analysis of Variance for the Evaluation, Training, and High School Groups on the Decision-Making Interview

Source	Sum of Squares	Degrees of Freedom	Mean Square	F - Ratio	Significance Probability
Mean	10592.71	1	105952.711	1334.92	
Groups	456.09	2	228.044	2.87	.0619
Within Groups	6905.20	87	79.370		
Total	113314.00	90			

As with the first three hypotheses it was felt that additional analysis was appropriate for the distribution of scores on the total Decision-Making Interview. The interview was new, and little was known about the indecision of the populations sampled. Bartlett's Test of Homogeneity of Variance was computed to compare the within-group variances of the evaluation, training, and high school groups on the total DMI. The results of this analysis are presented in Table 4.15. The within-group variances were found to be significantly different on the Decision-Making Interview. Thus, the distributions of the evaluation, training, and high school groups were significantly different on this

Table 4.15

Bartlett's Test of Homogeneity of Variance - Decision-Making Interview (All Scales)

Group	Variance	Chi Square	Degrees of Freedom	Significance Probability
Evaluation	105.24	6.7916	2	.0353
Training	40.85			
High School	92.02			

dimension. The results of this finding were two-fold. First, there does appear to be some difference in the distribution of scores. However, since ANOVA provided the strongest test of the hypothesis it was not appropriate to accept Hypothesis Four. Second, although the hypothesis was rejected, as with Hypotheses One and Three, caution was needed in the interpretation of the results, and further study with the DMI seemed warranted.

Summary of Results

The results of the analysis of the data generated by this study were summarized into five major points:

1. No significant differences were found between the two rehabilitation groups on demographic characteristics. Significant differences were

noted among the training, evaluation, and high school groups in age, education, sources of income, Bureau of Rehabilitation status, and time since last job.

2. Descriptive statistics were presented for the vocational evaluation client group, as it was seen as most representative of the undecided rehabilitation client. This group was determined to be largely a heterogeneous group.
3. The DMI was determined to have significant, positive correlations with other theoretical indicators of decision-making ability.
4. No significant differences were found among the evaluation, training, and high school groups' distribution of scores on the total DMI or its scales, using an analysis of variance procedure. This resulted in the rejection of the research hypotheses.
5. Significant differences were found among the variances of the groups using Bartlett's Test of Homogeneity of Variance on the Employment Readiness Scale, the Decision-Making Readiness Scale, and the total score on the DMI. These signifcant differences were seen as indicating areas for discussion and further research of the DMI.

Chapter V

Discussion

Introductory Statement

The purpose of this study was to explore the nature and dimensions of the vocational decision-making problems of vocational rehabilitation clients. In reviewing the literature it was determined that little research had been focused on this group and no instrumentation had been designed and standardized specifically for use with the undecided rehabilitation client. In order to begin studying rehabilitation clients and the indecision they experience, a new instrument was developed. The focus of this project then became the development and trial use of the instrument.

In addition to the development and use of the instrument, demographic data on the subjects participating in the study were collected, and the concurrent validity of the instrument was explored. The following sections explore each of these concerns and discuss a number of implications and explanations for each of the findings reported in Chapter Four.

Characterization of the Undecided Client

The first issue addressed in the analysis of the results of this study was the characterization of the undecided rehabilitation client. To produce this characterization a group of rehabilitation clients who were theoretically assumed to be vocationally undecided was selected. For this purpose a group of vocational evaluation clients was selected as representative of the undecided rehabilitation client population. Demographic and employment history data were collected, and a characterization of the group was generated. Although certain characteristics represented a larger percentage of the group in some cases, it was noted that the group was quite heterogeneous across the demographic and employment history variables. The heterogeneous nature of this group was not unlike the heterogeneity of the total rehabilitation client population.

The heterogeneous nature of the evaluation group indicated that the undecided rehabilitation client group is a heterogeneous group as well. This would imply that the problem of indecision in the rehabilitation client population was not typical of just one group or type of client, but was a problem that existed among all rehabilitation sub-groups.

Several limitations should be placed on the conclusion that the undecided rehabilitation group is a heterogeneous group. First, the small sample size must be considered a major limitation. Viewing the results of this study from a conservative perspective, it should be kept in mind that this was a small sample of rehabilitation clients in evaluation in the state of Michigan. However, the results may have generalizability to other groups and should be considered in constructing further research in this area. One of the aims of an exploratory study is to generate hypotheses to be tested in later research. This finding is one that can be tested further.

An additional limitation that must be considered was the limited number of demographic variables utilized. For example, verbal I.Q. may have been a significant consideration. However, this data was not obtainable on many clients, and in those cases where it was, the number of instruments used to obtain the scores made comparison impossible. An expansion of the number of variables utilized and an increase in the sample size may be considered in future research.

Keeping in mind the limitations mentioned above, what implications could be drawn from this characterization of the undecided rehabilitation client? As noted in Chapter Two, Holland and Holland (1977) felt that

the undecided fall into multiple sub-types. That is, within the undecided population there are sub-groups of individuals rather than one homogeneous group. It may be that the results reported in this study were a reflection of the presence of such sub-types within the rehabilitation group as well.

Extending the implications of the multiple sub-group hypothesis, it may be that research and speculation on the characteristics of the undecided are unwarranted. The number of individual differences may be so large within the group of undecided rehabilitation clients that attempt to delineate a characterization of this group would be impossible.

The lack of significance found between the evaluation group and the training group was another demographic variable needing comment. Had the training group been selected randomly, rather than by matching with the evaluation group, this lack of significance may have been a noteworthy finding. However, since the goal of this study was to eliminate these variables from consideration in the results of the study, a lack of significance was considered to be an indicator of the success of the matching procedure.

This matching procedure made it impossible to consider a comparison of the undecided and decided rehabilitation client, as represented by the evaluation

and training groups. Further, since the clients in training may in fact have been through a similar evaluation process, or have had other help in making their choice, they may have been part of the rehabilitation population that required special help in making their vocational choice. The only conclusion that could be drawn was that the two groups were not significantly different demographically, and that any difference noted between the groups could not be attributed to these variables. The net result of these conclusions was to focus more attention on the types and origins of vocational decision-making problems, and less on the demographic characteristics of the undecided group.

One final aspect of the demographic portion of the study needs consideration. Significant differences among the three groups on the demographic variables were found when the evaluation and training group were compared with the addition of the high school group data. Since no significance was found between the two rehabilitation groups, the source of the differences appeared to be the high school group. Differences between the rehabilitation clients and the high school subjects were expected simply because of the nature of the high school group. The average age of the high school seniors was 17, with a very small range from 17

to 19 years of age. While within the rehabilitation population the average age was much higher, 26 for the evaluation group, with a range from 17 to 44 years of age. The high school group was quite homogeneous in terms of age, education, and their limited amount of past work experience. This homogeneity, combined with the heterogeneity of the rehabilitation groups, was determined to be a strong explanation for the significant differences noted between groups.

Concurrent Validity of the DMI

The validity of the Decision-Making Interview and its scales was another concern of this study. The positive correlations of the Decision-Making Interview and its scales, the Employment Readiness Scale, the Self-Appraisal Scale, and the Decision-Making Readiness Scale with the theoretical indicators of decision-making ability, allow one to argue that the Decision-Making Interview does in fact measure some dimension of decision-making. This indication of the validity of the DMI was only a first step in what would have to be an extensive validation process. Despite the implication that the Decision-Making Interview had validity as a measure of some aspect of decision-making, a number of limitations of this portion of the study were considered.

Perhaps the primary concern in interpreting the results of the correlational statistics was the theoretical nature of the decision-making indicators used. Each was chosen on a theoretical basis, with a rationale developed to justify its use in the study. Since these indicators were theoretical, a concern for their validity must be noted as well. Even with the recognition of this concern, the results of the validation study were felt to be important. There was some concurrence between the theoretical indicators and the Decision-Making Interview, and this should be considered a positive first step. Longitudinal, predictive validity studies may be the next step in exploring the validity of the DMI.

An additional concern related to the validity issue resulted from the level of correlation found between the DMI and the decision-making indicators. The correlations were positive and significant. Concern may be expressed because of the low level of correlation found between variables. The level was not as high as might have been desired, and potential reasons for not achieving higher correlational levels need further clarification. Methodologically, the presentation of the Career Maturity Inventory - Attitude Scale at the end of the day to the total group interview for that day would be a consideration. Some of the subjects

were interviewed using the DMI at 8 A.M. and were given the Career Maturity Inventory - Attitude Scale at the end of the day (3 P.M.). However, other subjects were interviewed at approximately 2 P.M. and went straight to the group administration of the Attitude Scale. It was speculated that this variability in time span between the administrations of the DMI and the CMI may have had an affect on the level of correlation found between the two instruments. Since both instruments dealt with similar materials, the shorter time span between their presentations may have produced a higher correlation than was found when the time span between presentations was greater. Having a subject respond to vocationally related material on the DMI may have produced a "practice effect" having an impact on the subject's performance on the CMI. This impact seemed likely to be strongest when the time span between presentations of the instruments was smallest. Presentation of the CMI - Attitude Scale immediately following the presentation of the DMI for all subjects may have eliminated the possible affect of time span on level of correlation between the two instruments. However, it should be pointed out, that the largest delay experienced was six hours, and one could argue that this small span of time should not have differentially affected performance on the CMI - Attitude Scale.

A second consideration regarding the low correlations was that the Decision-Making Interview is in its early stages of development. In the "Implications for Future Research" section presented later in this chapter, a number of possible modifications for method and the instrument are suggested. Given such changes it may be reasonable to expect a higher correlation. At this point low correlations were considered a noteworthy finding because of the newness of the DMI and the lack of a solid theoretical foundation on which to base vocational decision-making research.

Comparison of Groups on the DMI

The final area of interest in this study was the analysis of the research hypotheses. None of these hypotheses were supported. This meant that a comparison of the means of the evaluation, training, and high school groups on the Decision-Making Interview and its three scales failed to show any significant differences among the groups. It was noted, however, that the variances of the groups were significantly different on the Employment Readiness Scale, the Decision-Making Readiness Scale, and the total Decision-Making Interview. Although the hypotheses were already rejected using ANOVA, the differences in within-group variances did demonstrate the ability of the DMI to discriminate

among the groups on this dimension. The implications and possible explanations of both of these findings were considered next.

What are the implications of the failure to find significant differences among the means of the three groups? This lack of significance can be attributed to at least two causes. First, the selection procedures, and criteria used to develop the groups, should be considered. A second consideration may be the insensitivity of the instrument developed for this study. Each of these considerations, along with the difference in variance among the groups, requires discussion.

Subject Selection

Accepting the results of the study at face value and disregarding any limiting factors, one may consider the possibility that the groups selected were not significantly different on the variables measured by the Decision-Making Interview. Although the groups were selected from populations that logically would appear to be different in terms of their decision-making ability, a comparison of group means supported the contention that they were in fact quite similar. The analysis of the homogeneity of groups variances, however, indicated that the groups were significantly

different. Different variances within groups could cause their means to be quite similar, even though the groups were quite different in other ways. For example, the differences between groups where the range of scores was quite narrow and one where the range of scores was quite large would not have been reflected in a report of group means. It appeared that this may have been the case with three of the four hypotheses tested in this study. The group means on all of the sub-scales and on the total DMI were not significantly different; however, all but one of the comparisons of group variances were significant. These differences in group variances caused two concerns in the interpretation of the results. First, as mentioned earlier, any analysis of variance procedure utilized to compare groups has a basic assumption regarding the homogeneity of variance of the groups being compared. Failure to meet this assumption is cause for cautious interpretation of the conclusions drawn from the analysis. A second and related concern must be that the selection criteria used did not truly generate groups representative of the characteristics sought in that group.

In selecting groups that would be different in their level of decision-making ability, it was necessary to utilize theory and logic to choose subjects. If the theoretical bases used to select these groups were in

error, it may be that the groups did not represent homogeneous mixtures of decided and undecided individuals. Examination of group variances for the three groups on the sub-scales pointed to the high school group, and in particular, the evaluation group as not homogeneous on the decision-making variables measured by the sub-scales of the DMI. As noted in Chapter Three, the high school group was selected as a group that would likely vary in decision-making ability and in the number of decision-making problems they had, and so such variance may have been expected. However, the vocational evaluation group was expected to be a homogeneous group of undecided individuals, and therefore such large within-group variance was an unexpected finding.

The variance within the evaluation group may have been the result of two factors. First, the assumption that the evaluation group was an undecided group may have been faulty. Perhaps there were individuals who were really quite vocationally decided in this group. These individuals may have been in evaluation simply to verify their choice. There may have been others who had made a choice, but were in evaluation to prove to their counselor or evaluator that their choice was a realistic one. Finally, there may have been still others who were truly undecided. If, in fact, the evaluation group was not homogeneous with

respect to vocational indecision, then the comparisons to other groups would not have been valid. If some of the individuals in evaluation were decided at the time of their interview, this may have accounted for the wide variance noted in the evaluation group. In fact, some evaluation subjects scored quite high on the DMI, while others scored at the bottom of the distribution. This finding could have been explained by the presence of decided and undecided individuals in the evaluation group. If this were the case, a careful screening procedure may have eliminated this decided subgroup and thereby have removed their scores from the evaluation group's distribution of scores. Although this reasoning may prove to be a possible explanation for the variance problem, one additional consideration in this area must be mentioned. In selecting the evaluation group as representative of the undecided rehabilitation client, it was noted there may be individuals who in their own minds were decided, but who in the judgment of others had made an incorrect choice. Thus, even though these clients were decided in one respect, they may still have demonstrated some degree of decision-making difficulty as reflected in their inappropriate vocational choice. Despite this limitation, the possibility that the evaluation group was only a partially undecided group warrants careful consideration, and must be taken into account in any replication of this study.

A second, and more complicated, explanation of the large within-group variance found in the evaluation group is that the individuals in the sample may have been weak only on certain scales and strong on the others. If there were such a mixture of individuals, some of whom were strong on the Decision-Making Readiness Scale, for example, and others who were weak on this scale, the net effect would have been to bring the total mean for the group on this scale to a mid-point between the scores of those who had problems in this areas and those who did not. Such a combination would obscure any discriminating ability the scale may have had. Holland and Holland (1977) reasoned that the undecided fall into multiple sub-groups, and were supported by the findings in this study. It may have been that there were a number of sub-groups present in the evaluation group. For example, there may have been seven sub-groups in the over-all undecided group. There may have been individuals who were weak on only one of the scales, others who were weak on the three possible combinations of two scales, and still others who were weak on all three scales. Thus, the variance found in the evaluation group might have been due in part to the presence a number of sub-groups. Combining the scores of the sub-groups would have produced an average score for the scale not reflective of the individuals scoring low on the scale.

The multiple sub-group consideration presented a problem for the use of any statistic that averages the scores of individuals and makes group comparisons. It is always possible that the average is deceptive of the true effect of a treatment, or as in this case, of a scale's ability to distinguish among individuals. Predictive rather than discriminative research may be a solution to this problem. Establishing a scale's abiltity to select those individuals who have decision-making problems may be a substitute procedure which could eliminate the problems discussed above.

In addition to the selection concerns, a methodological concern may also have contributed to the large group variance in the evaluation sample. Although clients were interviewed at the beginning of evaluation, it was impossible to interview them all on the first day. Some clients were interviewed on their first day of evaluation, while others were not interviewed until they had been in evaluation for several days. Perhaps even this limited evaluation experience provided the clients interviewed after a few days of evaluation, with information they did not have before they began. This information is not likely to have been extensive, as the first few days of evaluation are generally an orientation and adjustment period for the client. Any new information gathered during the first few days is

likely to be an impression or new idea developed as the result of an experience the client may have had. Thus a new client assigned to a carpentry work sample may initially feel an attraction to this sample, but may lose interest after a few days. If this client were interviewed during the period of time that he was experiencing a temporary interest in the work sample, this interest may influence his score on the DMI. To extend this line of reasoning further would simply be building on conjecture. However, it may be important to note this factor in later research. Insuring that each client was interviewed before his evaluation began might have eliminated concern in this area.

This initial administration of the DMI was considered a partial success, in spite of the failure to accept the research hypotheses. If the group differences discussed in this section were in fact present, the DMI may have been quite sensitive in noting them. The variances of the groups on the DMI ranged from a relatively homogeneous variance in the training group to the more heterogeneous variances of the other two. An additional perspective may be that the training group was a highly decided group, which was reflected in their narrow range of scores. On the other hand, the evaluation group and the high school group may have been

mixtures of decided and undecided individuals, with the DMI successfully reflecting that fact as well. Given the newness of this area of research and the fact that the DMI is in its initial stages of development, this type of discrimination among groups was considered a positive finding, with implications for further research. These implications are discussed in a later section.

Sources of Error in the Decision-Making Interview

The failure to find significant differences among the training, evaluation, and high school groups' means had implications for the instrument developed as well. At worst, the instrument may have been of poor design, based on faulty theory and thereby not able to discriminate among groups. On the other hand it has already been speculated that the instrument may have been adequate, with the groups selected not as different as originally anticipated. Each of these extremes should be considered. The possibility that the groups were not as homogeneous as may have been expected has already been discussed. The following discussion will focus on potential sources of error within the Decision-Making Interview.

The first consideration would focus on the scales developed. These scales were based on theory and experience, with no solid previous research to support their validity. In developing the scales it may have

been more desirable to utilize a factor analysis procedure with the item pool, rather than the correlational approach used in this study. It was impossible to factor-analyze the data generated here, as this type of analysis requires either a much larger sample size or a significantly larger number of test items. Thus, an additional source of the failure to find significant differences among the groups may have been an incorrect assignment of items to scales. In defense of the current scales, it should be noted that their intracorrelations were reasonably high and that they did appear to fit together theoretically and statistically.

Two other characteristics of the DMI should be considered in a discussion of the results. First, the DMI was developed using two types of questions. The first type of question simply required a true, false, or "not sure" response. In addition, a group of prompted questions required additional information from the subject. These prompted questions were developed to check the accuracy of a subject's response. It was speculated that the non-prompted questions may have been subject to response set biasing. That is, certain subjects may have attempted to answer questions in a certain way, not necessarily reflective of the "true" response to the question. If, for example, a subject

felt a need to do "well" on the interview because he felt it would help his evaluation, he might respond in a favorable way to a question, even though in reality his response should have been the opposite. This may have inflated the scores of individuals responding in this way, thus creating an inflated mean score of the total group of subjects.

An additional concern with the DMI was the scoring format developed to score the prompted questions. It seemed likely that the format developed for scoring was a simplistic tool, requiring further refinement to make it truly workable. The format may have contributed to some error in the scoring of the interviews. If the format did not clearly discriminate between positive and negative answers for certain questions, these questions would detract from the discriminating ability of their scale and of the total DMI. Refining the scoring procedure through further use and critical analysis may improve the scoring of such questions and remove this source of error in any further utilization of the instrument.

In summary, the most that can be concluded from the results and forgoing discussion is that although no significant differences were found among the group means, a number of other factors were noted. These made this initial study a source for generating new research hypotheses and methodologies for studing vocational

indecision. The fact that the DMI did differentiate among the groups on the variance dimension, and that support for its concurrent validity was found, provides direction for the further research use of the DMI. A discussion of these directions is found in the next section.

Implications for Future Research

In terms of replication and extension of this study, a number of problems were mentioned in the discussion section which should be addressed. First, the characteristics of the undecided group must be more carefully examined. If in fact the results of this study were influenced by inadequate selection criteria, a first implication may be that very careful screening procedures should be utilized in any further research. Perhaps a screening interview before participation in the study, or contact with the referring counselor, may allow more careful selection of a group of truly undecided individuals. Questions concerning the degree of undecidedness experienced by the clients, and their reasons for coming to evaluation may provide some basis for group or sub-group assignment.

In order to eliminate the possible effect of a variable number of days in evaluation on the results, a second change in methodology should be considered.

The current procedure should be modified to insure that each of the evaluation clients is interviewed on or before the first day of evaluation. This interviewing might be done by the home counselor before the client comes to evaluation, or by a group of interviewers on the first day of evaluation. In either case such a change may reduce concern in this area.

Extension of the sample to include females and a larger number of minority clients would be a priority in any continuation of this line of research. Female clients and minority group clients make up a large portion of the case load of any rehabilitation counselor, and any instrument designed for use only with white males would be of limited applicability. Another dimension of the sample requiring modification would be its size. The number of clients interviewed should be increased to allow for more confidence in the generalizability of the findings, and of the representativeness of the groups.

Changes in the structure of the instrument may also be considered a direction for continued research. A factor analysis of the item pool would be useful to insure the accuracy of the placement of items in subscales. The increase in sample size mentioned above and the use of the DMI in a number of research studies would provide the number of clients needed to utilize factor

analysis with the item pool. In addition it may be useful to utilize only prompted questions in the interview. The deletion or modification of those questions that did not have a prompt to make the DMI homogeneous in terms of type of question, may eliminate the problem of response set bias mentioned in the discussion section. The questions answered without a verification of the accuracy of the response may have been subject to such bias. A concern related to the response set bias issue was the accuracy of the self-report data obtained by the DMI. Non-prompted questions did not permit verification of the subject's responses, whereas those with prompts permitted examination of the accuracy of a response. The modification of the DMI to an all-promted question format may provide a solution to both concerns.

Continued use of item analysis to remove items that are ineffective in discriminating between high and low scorers may also help to refine the DMI. The refinement and improvement of the DMI would hopefully lead to an increased reliability for the instrument to the point that it could be considered for individual diagnostic use.

A change in the research design that may be important for research on this problem would be to change the focus from attempting to detect differences among groups

to predicting those clients who will have decision-making difficulty. It may be possible to interview clients at the beginning of the rehabilitation process and to predict from their score on the DMI the type and degree of difficulty they would have in making a vocational choice. This would be the ideal use of the DMI and is unrealistic at this time. However, it may be possible to correlate DMI scores with indicators of decision-making on the part of a client going through the rehabilitation process. Such indicators may be referral to vocational evaluation, counselor reports, length of time in status 10 (the planning stage in the rehabilitation process) and the number of career goals selected by a client before obtaining employment. This type of longitudinal study may be the most appropriate methodology, considering the complications of the multiple sub-groups reasoning discussed earlier, regarding the vocationally undecided.

Conclusions

All conclusions based on this study must be drawn keeping in mind the limitations discussed in the preceding sections. Factors other than those built into the study may have accounted for some of the findings reported.

It seems likely that a characterization of the undecided rehabilitation client is not a realistic goal for research. The client group is likely to be made

up of a divergent mixture of individual characteristics and may have in common only the fact that each person is disabled and vocationally undecided. The sources of their indecision may be as divergent as is the character of the population from which they come. Perhaps the most reasonable focus for research in this area is to isolate the sources of indecision and to develop treatments for them.

The instrument developed in this study, the Decision-Making Interview (DMI), is a first attempt to assess the problems of vocational indecision in rehabilitation clients. The form of the DMI may require modification, and scoring procedures need careful examination. Given these potential changes the DMI may be a promising instrument which considers a little-researched, but very important problem for the rehabilitation client.

Vocational decision-making is a concern for populations other than the rehabilitation client. The approach used in the Decision-Making Interview is new for both the undecided rehabilitation client and the populations traditionally studied in vocational decision-making research. The DMI appears to provide a new approach to the study of indecision for a wide range of groups.

Certain implications of the research reported here warrant further study. The results reported can be used

as a foundation on which to base additional research. The notion of multiple sub-types within the total undecided group, and the use of predictive rather than discriminative research to study this problem appear to be significant new directions.

The phenomenon of vocational indecision remains elusive, despite its direct examination in this study. Issues of degree of indecision, realism of the decision made, and selection of truly undecided clients leave this area of research open to several directions of inquiry. The planning of treatments for indecision remains an issue that requires additional prelimenary research.

APPENDICES

APPENDIX A

Project Description Materials

Date: November 14, 1978 Project Director: Douglas C. Strohme

Title of Project: An Exploratory Study of the Vocational Decision-Making Skills of Clients

1. Project Description: The purpose of this research project is to (1) determine the extent to which vocational decision-making problems are encountered by vocational evaluation clients, (2) develop an assessment tool to measure the types of problems which these clients have, and (3) to compare the decision-making of vocational evaluation clients with other rehabilitation clients. Present work on the project has involved a tentative classification of problems which might exist as a client attempts to make a vocational decision. The Decision-Making Interview (DMI) has been developed to correspond to these problems. It includes several questions which attempt to assess the presence of each of the problems in clients. Minor revisions may be made following pilot testing of the instruments.

2. Selection of Subjects: Three separate groups of thirty subjects each will be considered:

    1. Clients in vocational evaluation - within the first two to three weeks.

    2. Clients early in their training - within the first two to three weeks of training.

    3. Clients late in their training - near completion; the last several weeks.

    Clients will be selected for each group in the following way:

    1. Clients in the vocational evaluation group will be utilized as an intact population, due to the low number of clients in this group.

    2. Clients in the other two groups will either be matched to the evaluation group on the basis of certain key variables, e.g., (a) age, (b) I.Q., (c) sex, (d) disability, or if this information is not available a priori, clients will be drawn at random from the larger population of each group.

3. Procedures: The following procedure will be followed with each client:

    1. The researcher will state a brief purpose for the interview and will discuss confidentiality and the voluntary nature of participation. An agreement form will be signed at this time.

    2. The researcher will then give two sample questions of the type utilized within the interview.

    3. The researcher will answer any questions.

    4. The researcher will then conduct the interview, reading

word for word from the script in the DMI.

5. The Career Maturity Inventory (CMI), (Crites, 1973), will be administered to the subjects, either individually or in a group.

4. Consent Procedures: Each subject will be required to read and sign an informed consent form before participating in this project. The form will be read to those clients who express a difficulty in reading the form. Consent will be obtained from each participant by the interviewer immediately prior to administration of the DMI. This interviewer will be either one of the research staff involved in this project, or a staff member from the participating facility.

5. Procedures for Guarding Confidentiality and Minimizing Risk: Information which identifies specific subjects involved in this project will be kept solely by the project or participating facility's staff. This information will include name of the subject, and answers to the questions on the DMI. Names of subjects will not be released or included in future project reports or other dissemination efforts. Additionally, subjects may withdraw from participation without prejudice at any time before or during the interview.

6. Potential Benefits: Although the individual client in this study will not be directly given assistance by the investigator(s) for vocational decision-making problems, information regarding client difficulties will be provided upon request to the participating facility. This would assist the facility in providing services to their clients in the area of vocational decision-making.

   The real benefits of this project will result from the knowledge of the extent to which clients experience certain problems. If these problems can be accurately assessed, it will be possible to develop treatment procedures for each of several problems. This type of individualized treatment could then be administered to clients who have problems in deciding which vocational goals to pursue. Additionally, it is hoped that as a result of this project, an instrument will emerge which can assist client service providers, such as the vocational evaluator, in measuring the existence of decision-making problems. This tool would be disseminated by training and research reports to various rehabilitation facilities.

7. Risk-Benefit Ratio: This project is viewed as a low-risk/high-benefit study of value to rehabilitation facilities and in turn to individual clients. Short-term benefits will include an understanding of the extent to which vocational decision-making problems exist and the development of an instrument to measure these problems. Long-term benefits will be realized through improvement of services to clients, in terms of assistance, in dealing with choosing a vocation.

APPENDIX B

Administrative Agreement

ADMINISTRATIVE AGREEMENT

This document indicates the agreement of the Michigan Bureau of Rehabilitation (BR) and the Director of the State Technical Institute and Rehabilitation Center (STIRC) to allow research (to be conducted by Douglas Strohmer, researcher, Michigan State University) in the aforementioned facility.

The following list of responsibilities constitutes an agreement between the above facility and a researcher from Michigan State University to insure the continuity of this study and the protection and confidentiality of subjects of the study on client vocational decision-making.

The Bureau of Rehabilitation (BR) and the Director of the State Technical Institute and Rehabilitation Center (STIRC) agree to:

1. Provide access to the files of clients attending the facility who have been selected for the study providing that a signed release from the client whose file is to be accessed is obtained.

2. Allow the use of said files for the purpose of performing quantitative analyses of the data therein.

3. Allow a researcher from Michigan State University to meet with selected clients attending the facility.

4. Provide other additional information pertinent to the research study as requested.

The Researcher from Michigan State University agrees to:

1. Take full responsibility for protecting the confidentiality of the individuals whose files are to be accessed.

2. Maintain the physical integrity and security of the files and their content when working with them.

3. Secure from each client a consent form for participation in the study.

4. Take full responsibility for protecting the confidentiality of the test and survey results obtained on each individual participating in the study.

5. Prepare a final report of the results of the study for the Michigan Bureau of Rehabilitation and the State Technical Institute and Rehabilitation Center.

These agreements shall be in force until the final report is written.

SIGNED:

_____ _____

Basil Antenucci, Central Staff Services Supervisor, Michigan Bureau of Rehabilitation — Date

_____ _____

Leonard Lee, Director, State Technical Institute and Rehabilitation Center — Date

_____ _____

Douglas Strohmer, Michigan State University Researcher — Date

APPENDIX C

Interviewer Instructions

GENERAL INSTRUCTIONS FOR ADMINISTERING THE SURVEY INSTRUMENTS

The following directions describe the steps you will take in interviewing research subjects:

1. All materials utilized will be administered orally to each subject. The interviewer should read at a comfortable pace, being careful to assure that the subject is following along.

2. All responces will be recorded verbatim by the interviewer.

3. Each subject is interviewed individually.

4. The following steps should be taken with each subject.

   a. Greet the subject and introduce yourself, then accompany the subject to the interviewing room.

   b. Read the statement of purpose to the subject. Ask if there are any questions. If there are, try to answer them as fully as possible. Care should be taken to not say anything that would bias the subject's response.

   c. Read the informed consent agreement to the subject and obtain the necessary signatures. Do not interview or test any subject who has not signed the informed consent agreement.

   d. Administer the Demographic Survey to the subject.

   e. Administer the Decision-Making Interview (DMI) to the subject:

      1. Review the format of the questions with the subject before administering.

      2. On those questions requiring a follow-up response after the true, not sure, or false responses the interviewer should proceed as follows:

         a. if the subject responds true read the prompt question as it is written.
         (eg. I know how much money I would need to earn from a job. How much money? _____)

         b. if the subject responds not sure, or false each prompt should be prefixed with - " try to tell me " or " try to " as appropriate.
         (eg. I know how much money I would need to earn from a job. " Try to tell me " How much money? _____)

   f. Give the counselor/evaluator survey form to the appropriate individual.

5. The Career Maturity Inventory-Attitude Scale will be administered to the entire group interviewed on a given day at the end of that day. Follow the directions on the attached page for administration.

APPENDIX D

Statement of Purpose of Study

DECISION-MAKING INTERVIEW (DMI)

READ TO SUBJECT:

My name is _____, I am a researcher from Michigan State University. At Michigan State University we are trying to find out more about the ways people decide which job or jobs they want. We have an idea that people go about deciding in different ways, and sometimes have problems in making a decision. I am going to ask you a number of questions we feel may be related to the ways some people choose a job. Some of these may apply to you and others may not. What you tell me will remain confidential. No one but the M.S.U. researchers will know what answers you give.

Most of the questions will ask you to respond true, false, or not sure. If you are unclear about what a question is asking, please do not respond not sure, but rather ask me to read the question again. Answering not sure to a question means that you cannot decide if you should answer true or false, not that you do not understand the question.

APPENDIX E

Informed Consent Agreement

INFORMED CONSENT AGREEMENT

VOCATIONAL DECISION-MAKING

I,_____, have had the purposes of this project explained to me. I understand that the general purpose of this project is to better understand the ways people make vocational decisions and the problems they face in making them.

I understand that the personal information to be collected during the course of this project is essential to the project and this information is confidential and will not be released to anyone without my expressed written consent. I give the State Technical Institute and Rehabilitation Center and/or the Bureau of Rehabilitation, permission to allow the Michigan State University researchers to obtain any information from my personal file and records at the Institute or the Bureau of Rehabilitation offices. In any research report prepared subsequent to this project, I will not be identified by name, and other identifying information will be changed so as to protect my identity.

I understand that I can stop participating in the study at any time during the study. This consent agreement will terminate July 1, 1979.

Signed_____

Date _____

Witness_____

I certify that I have read this document, or had it read to me, prior to my signing it.

Signed_____

APPENDIX F

Decision-Making Interview (DMI)

Experimental Version - Not authorized for use without the permission of Douglas C. Strohmer or the Research and Training Center, University of Wisconsin-Stout, Menomonie, Wisconsin.

Circle one answer for each question, also fill in the blanks is necessary.

T = True NS = Not Sure F = False

	True	Not Sure	False		(SECTION ONE)
(1)	T	NS	F	1.	I want to get a job soon.
(2)	T	NS	F	2.	I should decide on a job soon.
(3)	T	NS	F	3.	I have decided what kind of job I would like to have.

1st Choice:_____

2nd Choice:_____

3rd Choice:_____

(If "false" or "not sure", go to #5)

(4)	T	NS	F	4.	I am sure about this choice.
(5)	T	NS	F	5.	I know what kind of career I would like to have, that is what type of work I would like to do for the rest of my life.

1st Choice:_____

2nd Choice:_____

3rd Choice:_____

(If "false" or "not sure", got to #7.)

(6)	T	NS	F	6.	I am sure about this choice.
(7)	T	NS	F	7.	I would take any job.

A. INFORMATION PROBLEMS (SECTION TWO)

Self Knowledge

Needs

	True	Not Sure	False		
(8)	T	NS	F	1.	I know how much money I would need to earn from a job.

How much money? _____

(9)	T	NS	F	2.	I have a preference for the part, of town, state, or country that I take a job in.

Where would you prefer?_____

(10)	T	NS	F	3.	I know what types of work I would not do, even if I made a lot of money.

What types of work?_____

(11)	T	NS	F	4.	I know enough about my needs to decide about jobs.

List three of your needs:

1._____

2._____

3._____

Beliefs and Interests

	True	Not Sure	False	
(12)	T	NS	F	1. There are certain types of jobs I wouldn't take because of my beliefs - that is the things I believe in.
(13)	T	NS	F	2. I know enough about my beliefs to decide about jobs. List three of your beliefs that would help you decide to take or not take a job.

1._____

2._____

3._____

(14)	T	NS	F	3. I know what types of work would be interesting to me. What types of work?_____
(15)	T	NS	F	4. I know enough about my interests to decide about jobs. List three of your interests:

1._____

2._____

3._____

Abilities

(16)	T	NS	F	1. I know what kinds of work I am good at doing. What kinds of work?_____
(17)	T	NS	F	2. If I had more training I know what kinds of work I could do. What kinds of work?_____
(18)	T	NS	F	3. I know how my disability limits the kinds of work I could do. How does it limit the kinds of work you can do?_____
(19)	T	NS	F	4. I know enough about my abilities to decide about jobs. List three of your abilities:

1._____

2._____

3._____

Personality

(20)	T	NS	F	1. I change my opinion of myself a lot.
(21)	T	NS	F	2. If someone asked me, I could describe myself, my personality, accurately.
(22)	T	NS	F	3. I know what kind of life I want for myself.
(23)	T	NS	F	4. I know enough about myself to decide about jobs. List three things about yourself:

(continue on next page)

1._____

2._____

3._____

Occupational Knowledge

Opportunities and Requirements

(24) T NS F 1. There are some jobs that I have been thinking about. Name three jobs that you have been thinking about.

1._____

2._____

3._____

(25) T NS F 2. I know how much education or training I need for jobs that I would like to have.
How much education or training?_____

(26) T NS F 3. I know how much experience I need for the jobs I would like to have. How much experience?_____

T NS F 4. I have enough information on opportunities and requirements to decide about jobs.

(27) A. Name three job opportunities:

1._____

2._____

3._____

(28) B. Name three requirements:

1._____

2._____

3._____

Tasks and Duties

(29) T NS F 1. I understand the responsibilities that are common to all jobs. Name three responsibilities that are common to all jobs:

1._____

2._____

3._____

(30) T NS F 2. I know what kinds of tasks I would be doing on the jobs I have thought about. Name three tasks:

1._____

2._____

3._____

(31) T NS F 3. I know what responsibilities I would have on the jobs I have been thinking about. Name three responsibilities you would have on these jobs:

1._____

2._____

3._____

True Not Sure False

(32) T NS F 4. I know enough about what various jobs would be like to decide about jobs. Name three important things about jobs you are thinking about.

1. _____

2. _____

3. _____

Rewards and Punishers

(33) T NS F 1. I could name some rewards or good things about some jobs. Name three rewards or good things:

1. _____

2. _____

3. _____

(34) T NS F 2. I could name some things that I would not like about some job. Name three things you wouldn't like:

1. _____

2. _____

3. _____

(35) T NS F 3. I could name some of the benefits that I should consider to decide on a job. Name three benefits:

1. _____

2. _____

3. _____

T NS F 4. I know enough about the advantages and disadvantages of different jobs to decide about jobs.

(36) A. Name three advantages:

1. _____

2. _____

3. _____

(37) B. Name three disadvantages:

1. _____

2. _____

3. _____

B. DECISION-MAKING PROBLEMS

Acquisition of Information

(38) T NS F 1. I know where to get information on different jobs. Where would you get it? _____

(39) T NS F 2. I know whom to ask to get information on different jobs. Whom would you ask? _____

(40) T NS F 3. I know how to find out which jobs I could do. How would you find out? _____

(41) T NS F 4. I know how to find out which jobs I would be interested in. How would you find out? _____

	True	Not Sure	False	
(42)	T	NS	F	5. I know how to get enough information on jobs to make a job choice.

Processing of Information

(43)	T	NS	F	1. If I know what a job is like, I can decide if I could do the work. How would you decide?_____
(44)	T	NS	F	2. If I know what a job is like, I can decide if I would be interested in doing the work. How would you decide?_____
(45)	T	NS	F	3. There are some jobs I could be good at doing. Name three jobs: 1._____ 2._____ 3._____
(46)	T	NS	F	4. There are some jobs that are interesting to me. Name three jobs: 1._____ 2._____ 3._____

Skills in Choosing

(47)	T	NS	F	1. I can describe the steps I would take to decide about a job. Describe the steps: _____
(48)	T	NS	F	2. If there were several jobs that I was interested in, I would know how to choose among them. How would you choose?_____
(49)	T	NS	F	3. I would be good at choosing a job on my own.
(50)	T	NS	F	4. I know enough about how to make decisions to make a job choice.

Success in Previous Choices

Yes No (Circle one) Have you had to make decisions about jobs before?
(If not, go to Responsibility/Control)

(51)	T	NS	F	1. The decisions I have made about jobs have worked out O.K.
(52)	T	NS	F	2. Having to make decisions about jobs is an unpleasant task.

(53) T NS F 3. Others often disagree with my decisions about jobs.

(54) T NS F 4. I have had good luck making decisions about jobs.

Responsibility/Control

(55) T NS F 1. I have made decisions about whether to take a job or not

(56) T NS F 2. A job will come along no matter what I do.

(57) T NS F 3. I have let others decide which job was best for me.

Anxiety/ Fear of Decision-Making

(58) T NS F 1. I get upset when I have to make a decision about a job.

(59) T NS F 2. I would rather let fate take its course than make a choice about a job.

(60) T NS F 3. I feel sure of myself when I have to make a decision about a job.

(61) T NS F 4. I would like to avoid making a decision about a job.

C. ENVIRONMENTAL PROBLEMS

Family/Social

Coersion

True Not Sure False

(62) T NS F 1. I would take a job that my family and/or friends didn't approve of.

(63) T NS F 2. I let others decide which jobs I should take so they don't criticizeme.

(64) T NS F 3. I don't worry about letting others down by taking a job they wouldn't approve of.

(65) T NS F 4. Others expect me to take a certain type of job; so I will, even though I'm not sure it will be right for me.

Lack of Reinforcement

Yes No (Circle one) Do you have some friends?

Yes No (Circle one) Do you have a family?

Yes No (Circle one) Are you married?

(66) T NS F 1. My friends (family, spouse) want me to get a job.

(67) T NS F 2. I would feel good if I could tell my friends (family, spouse) that I got a job.

(68) T NS F 3. My friends (family, spouse) do not encourage me much to look for a job.

(69) T NS F 4. My friends (family, spouse) would be proud of me if I got a job.

Economics

(70) T NS F 1. I would be better off financially from various types of aid and social services than if I got a job.

(71) T NS F 2. I can't buy the things I want without getting a job.

(72) T NS F 3. The type of job I will get will not pay enough to make it worth my while.

(73) T NS F 4. Money is one of the reasons to look for a job.

Mobility

(74) T NS F 1. If I had to I could move to a different location in or out of town to get a job.

(75) T NS F 2. If I had to I would move to a different location in or out of town to get a job.

(76) T NS F 3. I could find a way to get to work and back home again no matter where I lived.

(77) T NS F 4. I have few job choices, because it is hard for me to get around.

(SECTION THREE)

General

(78) 1. Of all the things you have been asked about, what are the most important to make a good job or career decision?

(79) 2. Of all the things you have been asked about, what things would you like help on to make a job choice?

(80) 3. In general what are your reasons for wanting a job?

APPENDIX G

Demographic Survey

DECISION-MAKING INTERVIEW (DMI)

NAME: _____

AGE: ____ Years

SEX: ____ Male
____ Female

RACE: ____ White
____ Black
____ American Indian
____ Spanish Surname
____ Asian-American
____ Other

Income ____ Self
____ Family
____ Public Assistance

BVR
STATUS ____ Client
____ Non-Client

DISABILITY CHARACTERISTICS

Major Disability

___ Visual Impairment
___ Hearing Impairment
___ Orthopedic Impairment
___ Mental Illness
___ Mental Retardation
___ Alcoholism
___ Drug Abuse
___ Other Physical or Menta
___ Public Offender
___ Sociocultural Disadvantagement
___ None

Severity of Disability

___ Severely Disabled
___ Not Severely Disabled

IQ or other Verbal Ability Score _____ Performance Score _____

Specify Test: _____

___ Pre-Vocational Evaluation ___ Vocational Evaluation

___ Post-Vocational Evaluation Other: _____

Past Employment: (Job Title) (How Long)

1. _____ Dates: _____
2. _____ Dates: _____
3. _____ Dates: _____

Favorite Job: 1 2 3 (Circle One)

Educational Level: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
College Graduate School

Special Training: _____

Parental Employment: Father: _____

Mother: _____

APPENDIX H

Career Maturity Inventory - Attitude Scale: Instructions

CAREER MATURITY INVENTORY - ATTITUDE SCALE: INSTRUCTIONS

1. Pass out an answer sheet to each person.

2. Pass out a pencil to each person.

3. Read these instructions to clients:

   "Look at the answer sheet. In the upper right hand corner is a part that has name, date, age and so on printed on it. Fill in the 'name' section by putting the first letter of your last name over where it says 'Last". Then write in your first name. Fill in your date of birth (month and year). Do not fill in any other information."

4. Check to see that the requested information has been filled in.

5. Then read the following statement to the clients:

   "The Career Maturity Inventory has been constructed to survey the various attitudes and competencies which are important in making decisions about your career; it is not a personality inventory, an interest inventory, an achievement test, or an aptitude test.

   The Attitude Scale, which you are about to take, asks you about your attitudes and feelings toward making a career choice and entering the world of work. Please complete this inventory carefully and thoughtfully.

   I will be reading a number of statements about career choice. Career choice means the kind of job or work which you thiank you will probably be doing when you have finished all of your schooling or training.

   I will read the statements and you should mark your answers in the section marked ATTITUDE SCALE on the Answer Sheet. If you agree or mostly agree with the statement, use your pencil to blacken the space marked with a T. If you disagree or mostly disagree with the statement, blacken the space marked with an F. Be sure that your marks are heavy and black and that they completely fill the spaces. Cross out or erase completely any answer you wish to change. Do not make any stray pencil marks on the Answer Sheet."

6. Begin reading each statement. Be sure to read the number of the statement, then read the statement slowly. Pause briefly at the end of each statement before reading the next statement.

APPENDIX I

Counselor/Evaluator Form

DECISION-MAKING INTERVIEW (DMI) - COUNSELOR/EVALUATOR

1. Is the occupational choice made by the client in question #3 realistic (given what you presently know about the client) ?

___YES

___NO

___NOT SURE

Comments:

2. Is the career-training choice made by the client in Question #5 realistic (given what you presently know about the client)?

___YES

___NO

___NOT SURE

Comments:

3. Did this client " independently " make a decision about a job/career selection?

___YES

___NO

___NOT SURE

Comments:

APPENDIX J

Instructions for Content Validity Study

RATER:

The following 68 items were written as part of a research project which has been designed to describe rehabilitation client's vocational decision-making problems. Together, the items make up a first draft of the Decision-Making Interview (DMI), which will be used as the primary measurement instrument of the project. We would greatly appreciate your help in refining the DMI for use with clients.

This project was initiated because success of the rehabilitation process often depends upon the ability of clients to make independent, realistic vocational decicisons. This is especially true of clients who enter Vocational Evaluation to explore their own interests and the world of work. The DMI was designed to evaluate and diagnose several potential difficulties that a client might have in deciding about a job or career.

Clients will be individually interviewed using the DMI. After each statement is read, clients will be asked to respond "true," "false," or "not sure." If necessary, they will also be asked to answer a prompt question which validates their initial response to the statement. Your help is needed to sort the items so that the best ones are retained, and the others eliminated.

There are two basic sorts that need to be made. First, items should be divided according to the category of problem they follow (information, decision-making, environmental, or undefined). Secondly, items within each category should be sorted into four sub-categories, including good, bad, modifiable, and redundant. These two sorts are described below:

I. Sort all of the items into the following major categories (four large envelopes):

A. Information Problems (Input): Items to be sorted into this category include those that probe a lack of information clients have about themselves:
1. needs
2. beliefs
3. interests
4. abilities
5. personality

or occupations:
1. opportunities available
2. educational requirements
3. experience needed
4. tasks and duties
5. pleasant aspects of various jobs
6. unpleasant aspects of various jobs

B. Decision-Making Problems (Process): Items to be sorted into this category include those that probe problems in making a vocational decision. These include:

1. acquiring occupational information
2. relating that information to self-knowledge
3. systematically making a decision
4. lack of success in previous choices
5. assuming responsibility for making decisions, and
6. anxiety/ fear of decision-making

C. Environmental Problems (Constraints): Items to be sorted into this category would include those that probe problems that are external constraints to making an indepepdent vocational decision. These include:

1. coercion from friends, family, or spouse.
2. lack of reinforcement from friends, family, or spouse
3. economic disincentives
4. problems of mobility

D. Undefined (Will fit none or more than one categroy); Items to be sorted into this category would include those that you cannot fit under any of the above three categories, or fit more than one of the categories.

Large envelopes are provided for each of the four major categories. Simply insert the items into the envelopes as you sort them.

II. After all items are sorted into the four major categories (envelopes), sort the items within each category into the following sub-categories:

A. Good Items: A good item is one which would validly measure one of the problems in that category.

B. Bad Items: A bad item is one which would not validly measure one of the problems in that category.

C. Modifiable Items: A modifiable item is one which would validly measure one of the problems in that category, given a change in wording. Please take a blank index card, write the number of the item on the card, and then rewrite the item. Insert both cards in the "modifiable items" envelope.

D. Redundant Items: A redundant item is one which is addressing a problem that has been addressed by an item you have already reviewed. Please put the redundant item only (not both) in the "redundant items" envelope.

Smaller envelopes are provided for each sub-category. After all of the items have been sorted into the small envelopes, please insert them into the larger envelopes. In order to be consistent while sorting, please follow this procedure:

1. Carefully read the item.
2. Decide which category of problems (or quality sub-category) the item best fits into.
3. Review the categories if you have trouble deciding which category the item best fits into.

THANK YOU FOR YOUR HELP !

APPENDIX K

Non-Prompted Question Scoring Format

NON-PROMPTED QUESTION SCORING FORMAT

1. T=3
2. T=3
6. T=3
7. T=3
12. T=3
20. F=3
21. T=3
22. T=3
42. T=3
49. T=3
50. T=3
51. T=3
52. F=3
53. F=3
54. T=3
55. T=3
56. F=3
57. F=3
58. F=3
59. F=3
60. T=3
61. F=3
62. T=3
63. F=3
64. T=3
65. F=3
66. T=3
67. T=3
68. F=3
69. T=3
70. F=3
71. T=3
72. F=3
73. T=3
74. T=3
75. T=3
76. T=3
77. F=3

APPENDIX L

Prompted and General Question Scoring Format

SCORING FORMAT

Needs: 1. I know how much money I would need to earn from a job.
How much money?

Assign 3 points - specific dollar amount, that is reasonable based on the subjects demographic characteristics.

Assign 2 points - not used.

Assign 1 point - no response or unreasonable response.

2. I have a preference for the part of town, state, or country that I have a job in.
Where would you prefer?

Assign 3 points - specific town or state.

Assign 2 points - vague response, e.g., big city, rural area.

Assign 1 point - no response or unacceptable response, e.g., wife does.

3. I know what types of work I would not do, even if I made a lot of money.
What types of work?

Assign 3 points - specific job.

Assign 2 points - general job characteristics, e.g., heavy work, slop jobs, factory work.

Assign 1 point - none or unacceptable, e.g., student.

4. I know enough about my needs to decide about jobs.
List three of your needs:

Assign 3 points - must be 3 needs a job can provide, and must come from atleast 2 of the 3 categories listed below:
1. economic needs.
2. work related needs.
3. personal needs.

Assign 2 points - one or more needs in only 1 of the categories.

Assign 1 point - no response or unacceptable,
e.g., vague response
1. improvements in self
2. live comfortabley
3. assistance
4. to get along

(GO TO PAGE TWO)

Beliefs: 2. I know enough about my beliefs to decide about jobs. List three of your beliefs that would help you decide to take or not take a job.

Assign 3 points - three or two beliefs from one or more of the following categories:
1. ethical
2. religious
3. legal

Assign 2 points - one belief from the categories

Assign 1 point - no response or unacceptable:
eg:
1. money
2. beliefs about co-workers
3. security of family
4. loyal
5. work hard

3. I know what types of work would be interesting to me. What types of work?

Assign 3 points - listed specific job.

Assign 2 points - listed one or more characteristics of a job, (must be consistent - eg., outside /inside work are not consistent)

Assign 1 point - no response or unacceptable, eg,
1. day work
2. skiing
3. cars
4. union work

4. I know enough about my interests to decide about jobs. List three of your interests:

Acceptable responses; specific jobs, characteristics of jobs, job related hobbies.

Assign 3 points - listed three acceptables

Assign 2 points - listed two acceptables

Assign 1 point - listed one or no acceptables

Unacceptable responses: eg., being productive, to get along, have a nice car, home/family.

Abilities:

1. I know what kinds of work I am good at doing. What types of work?

Acceptable responses; specific jobs, or duties/characteristics of jobs.

Unacceptable response; vague or nonsensical responses
eg.,making up games, things I know best, physical/mental

Assign 3 points - three or two acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable responses

2. If I had more training I know what kinds of work I could do. What kinds of work?

Acceptable responses: a specific job

Unacceptable responses; less than a specific job

Assign 3 points - three or two acceptables

Assign 2 points - one acceptable

Assign 1 point - no acceptables or no response

3. I know how my disability limits the kinds of work I could do. How does it limit the kinds of work you can do?

Acceptable responses: a specific physical, mental, or emotional limitation.

Unacceptable responses: other less specific limitations.
eg.,long hours, education, flexibility,

Assign 3 points - one or more acceptable ; or to anyone in high school group

Assign 2 points - not used

Assign 1 point - no response or no acceptable response

4. I know enough about my abilities to decide about jobs. List three of your abilities:

Acceptable responses; a specific, realistic job or other specific work related abilities.

Unacceptable responses: vague or [illegible] job related abilities,
eg.,service to public, interests, work well, to cope, hobbies, building things

Assign 3 points - three acceptables

Assign 2 points - two acceptables

Assign 1 point - one or no acceptables.

Personality :

4. I know enough about myself to decide about jobs. List three things about yourself :

Acceptable Responses : any response in the following areas : worker quality, personal or personality characteristics, physical limitations or abilities.

Unacceptable Responses : any response not falling in above areas, e.g., individual characteristics (name, age, etc.), like to be outside, hobbies - vague characteristic.

Assign 3 points - three acceptable responses

Assign 2 points - two acceptable responses

Assign 1 point - one or no acceptable responses

Opportunities and Requirements:

1. <u>There are some jobs that I have been thinking about. Name three jobs that you have been thinking about.</u>

<u>Acceptable responses</u>: a specific job realistic based on the subject demographic data.

<u>Unacceptable responses</u>: non-specific types of work, or other inappropriate answers.

Assign 3 points - three acceptable responses

Assign 2 points - two acceptable responses

Assign 1 point - one or no acceptable responses

2. <u>I know how much education or training I need for the jobs that I would like to have. How much education or training?</u>

<u>Acceptable responses</u>: a response reasonable for atleast one of the jobs listed in question 1.

<u>Unacceptable responses</u>: a response not reasonable for atleast one of the jobs listed, or a response not specific enough to judge. eg., sorting things, math related

Assign 3 points - atleast one acceptable response

Assign 2 points - not used

Assign 1 point - no acceptable responses

3. <u>I know how much experience I need for the jobs I would like to have. How much experience?</u>

<u>Acceptable responses</u>: specific and reasonable for the job listed.

<u>Unacceptable responses</u>: no response or not reasonable or realistic.

Assign 3 points - one reasonable response

Assign 2 points - not used

Assign 1 point - no response/ unreasonable response

4. <u>(A) I have enough information on opportunities and requirements to decide about jobs. Name three job opportunities:</u>

<u>Acceptable responses</u>: specific occupation, specific company, specific job, apprenticeship

Unacceptable Responses : non-specific jobs and other inappropriate responses.

Assign 3 points - three acceptable responses.

Assign 2 points - one or two acceptable responses.

Assign 1 point - no acceptable responses.

4. (B) I have enough information on opportunities and requirements to decide about jobs.
Name three requirements :

Acceptable responses : specific job requirements.

Unacceptable responses ; non-specific job requirements.

Assign 3 points - three acceptable responses.

Assign 2 points - two or one acceptable responses.

Assign 1 point - no acceptable responses.

Tasks and Duties:

1. I understand the responsibilities that are common to all jobs.
Name three responsibilities that are common to all jobs.

Acceptable responses : general responsibilities found on any job.

Unacceptable responses : specific job responsibilities, or other inappropriate responses.

Assign 3 points - three reasonable responses

Assign 2 points - two reasonable responses

Assign 1 point - one or no reasonable responses

2. I know what kinds of tasks I would be doing on the jobs I have thought about. Name three tasks:

Acceptable responses : realistic, specific tasks - in relationship to the jobs listed above.

Unacceptable responses : non-realistic, non-specific tasks, and other inappropriate responses.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

3. I know what responsibilities I would have on the jobs I have been thinking about. Name three responsibilities you would have on these jobs.

Acceptable responses : realistic, specific responsibilities relating to jobs listed above.

Unacceptable responses : non-realistic, non-specific responsibilites and other inappropriate responses.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

4. I know enough about what various jobs would be like to decide about jobs. Name three important things about the jobs you are thinking about.

Acceptable responses : accept all responses.

Unacceptable responses : not used.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

Rewards and Punishers:

1. I could name some rewards or good things about some jobs. Name three rewards or good things:

Acceptable responses : any quality of a job that is specific, and may be expected to result from at least some jobs.

Unacceptable responses : any characteristic either inappropriate or not normally derived from employment e.g., non-repetitive jobs, peace of mind, get married.

Assign 3 points - three acceptable responses

Assign 2 points - two acceptable responses

Assign 1 point - one or no acceptable responses

2. I could name some things that I would not like about some jobs. Name three things you wouldn't like:

Acceptable responses : must be a realistic negative aspect of at least some jobs.

Unacceptable responses : non-realistic negative aspects of jobs, no smoking, learning, hurting people.

Assign 3 points - three acceptable responses

Assign 2 points - two acceptable responses

Assign 1 point - one or no acceptable responses

3. I could name some of the benefits I should consider to decide on a job. Name three benefits:

Acceptable responses : must be benefits normally expected from employment, e.g., medical insurance, retirement, vacation.

Unacceptable responses : benefits not normally expected from employer, or responses either too general or not a benefit, e.g. benefits (too general) , self-worth (not a benefit generally expected from employment), good pay, good hours, location.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

4. (A) I know enough about the advantages and disadvantages of different jobs to decide about jobs. Name three advantages:

Acceptable responses : must be a realistic, specific advantage of at least some jobs.

Unacceptable responses : a response that is not a realistic , specific advantage for at least some jobs.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

4. (B) I know enough about the advantages and disadvantages of different jobs to decide about jobs. Name three disadvantages:

Acceptable Responses : must be a realistic, specific disadvantage of at least some jobs.

Unacceptable responses : a response that is not a realistic, specific disadvantage for at least some jobs.

Assign 3 points - three acceptable responses

Assign 2 points - two or one acceptable responses

Assign 1 point - no acceptable responses

Acquisition of Information:

1. I know where to get information on different jobs. Where would you get it?

Acceptable responses: a specific source of vocational information.

Unacceptable responses: a non-specific source of information.

Assign 3 points - two or more acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable responses.

2. I know whom to ask to get information on different jobs. Whom would you ask?

Acceptable responses: a specific source of information.

Unacceptable responses : a non-specific source of information or other inappropriate responses, e.g., the newspaper, or a social worker.

Assign 3 points - two or more acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable responses

3. I know how to find out which jobs I could do. How would you find out?

Acceptable responses : must be a reasonable method of getting information to make a decision with, or reasonable variables used in making a decision.

Unacceptable responses : any unreasonable method of obtain information or variables not useful in making this determination, e.g., I would just know, job title, skill in different areas.

4. I knew how to find out which jobs I would be interested in. How would you find out?

Acceptable responses : must be a reasonable method of contrasting personal interests with job qualities.

Unacceptable responses : a response which is either vague, or does not demonstrate a contrasting of personal interests with job qualities, e.g.,newspapers, good,reliable company, by my interests, what the company does,evaluation.

Assign 3 points - two or three acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable responses

Processing of Information:

1. If I know what a job is like, I can decide if I could do the work. How would you decide?

Acceptable responses : must give some indication of a comparison of personal abilities/ disabilities/ likes, with a job.

Unacceptable responses : no indication of a comparison of abilities/ disabilities/ likes, with a job.

Assign 3 points - two or three acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable response

2. If I know what a job is like, I can decide if I would be interested in doing the work. How would you decide?

Acceptable responses : an indication of the use of testing or some qualitative evaluation before accepting employment.

Unacceptable responses : no indication of the use of testing or some qualitative evaluation before accepting employment.

Assign 3 points - two or three acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable response

3. There are some jobs I could be good at doing.
Name three jobs:

Acceptable responses : must be a specific and realistic job, or category of work.

Unacceptable responses : a nonspecific or unrealistic category of work, e.g.,sports related, dog sitter, working with people, government work.

Assign 3 points - two or three acceptable responses

Assign 2 points - one acceptable response

Assign 1 point - no acceptable responses

4. There are some jobs that are interesting to me.
Name three jobs:

Acceptable responses : must be specific and realistic jobs.

Unacceptable responses : any nonspecific or unrelaistic response, e.g., president, big factory, non-repetitive.

Assign 3 points - three acceptable responses

Assign 2 points - two acceptable responses

Assign 1 point - no acceptable responses

Skills in Choosing:

1. I can describe the steps I would take to decide about a job.
Describe the steps:

Assign 3 points - for any response with the following steps: gather information, processing it, and then decide based on this analysis.

Assign 2 points - for any of the steps, but not a complete process.

Assign 1 point - vague response, or no response.

2. If there were several jobs that I was interested in, I would know how to choose among them. How would you choose?

Assign 3 points - for any response which uses two or more specific characteristics to discriminate among jobs.

Assign 2 points - for any response which uses one characteristic.

Assign 1 point - for any other response.

General Questions:

1. Of all the things you have been asked about, what are the most important to make a good job or career decision?

Assign 3 points - for any three reasonable and specific aspects of the material covered in the DMI.

Assign 2 points - for two or one reasonable and specific aspects.

Assign 1 point - no acceptable responses

2. Of all the things you have been asked about, what things would you like help on to make a job choice?

Assign 3 points - for three reasonable and specific types of help.

Assign 2 points - for two or one reasonable and specific types of help.

Assign 1 point - no acceptable responses.

3. In general what are your reasons for wanting a job?

Assign 3 points - for three reasonable and specific things that could be realized from working.

Assign 2 points - for two or one reasonable and specific things that could be realized from working.

Assign 1 point - no acceptable responses.

APPENDIX M

Letters of Authorization from A. Chandler and R. Swinth

ADEMIC CAMPUS SCHOOLS
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VIRGINIA COMMONWEALTH UNIVERSITY

May 24, 1979

Mr. Douglas Strohmer
RCTP
Room 432, Erickson Hall
Michigan State University
East Lansing, Michigan 48824

Dear Doug:

Per our phone conversation, you have my permission to reproduce in your doctoral dissertation Table 3.2 (p.50) of my dissertation, Client Change in Self-Concept, Vocational Maturity and Decision-Making Skills Following Vocational Evaluation. Should you find it necessary to reproduce other materials from this for your dissertation, please consider this letter as blanket approval for such reproductions.

Hope your defense goes well!

Best personal regards,

Anne L. Chandler

Anne L. Chandler, Ph.D.
Assistant Professor

ALC/cpg

The School of Business

FACULTY SUITE
913-864-3536

May 4, 1979

Douglas C. Strohmer
424 Apple Lane
Webberville, Michigan 48892

Dear Mr. Strohmer:

You are welcome to reprint Figure 1 from my article, A Decision Process Model in JAP. Please keep me posted on the outcome of your work, I'd be most interested.

Thanks for asking. I have published 2 other articles applying this methodology, one marketing and one to finance. If you are interested in them let me know.

Best,

Robert L. Swinth
Professor of Business Administration
and ~~Professor~~ School of Business
Department of Psychology

RLS/dj

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APPENDIX I

Counselor/Evaluator Form