INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of “sectioning” the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.
Lowe, Beal David

THE RELATIONSHIP BETWEEN EXPECTATIONS OF SELF-EFFICACY FOR CAREER DECISION-MAKING TASKS AND CHANGES IN CAREER DECIDEDNESS

The Ohio State University Ph.D. 1983

University Microfilms International 300 N. Zeeb Road, Ann Arbor, MI 48106
THE RELATIONSHIP BETWEEN EXPECTATIONS OF SELF-EFFICACY FOR
CAREER DECISION-MAKING TASKS AND CHANGES IN CAREER DECIDEDNESS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Beal David Lowe, B.A., M.A.

* * * * * * *

The Ohio State University
1983

Reading Committee:
Samuel Osipow, PhD
W. Bruce Walsh, PhD
Thomas Milburn, PhD

Approved By

Adviser
Department of Psychology
Copyright by
Beal David Lowe
1983
To Dorie
ACKNOWLEDGEMENTS

My somewhat belated education in Psychology has been rich beyond expression. I offer hearty thanks to all of my colleagues and teachers for their contribution to this outcome. I freely acknowledge special and unending debts to my Adviser, Dr. Samuel Osipow and to Drs. W. Bruce Walsh, Thomas Milburn, David Hothersoll and Theodore Kaul.
VITA

April 4, 1947 ............. Born - Sycamore, Illinois

1968 .................... Volunteer In Service to America (VISTA)
                     Huntsville, Alabama

1971 ..................... B.A., Political Science/Sociology
                     Earlham College, Richmond, Indiana

1971-1974 ............... Chief Work Evaluator
                     Goodwill Industries, Cincinnati, Ohio

1974-76 .................. Director, STAR Rehabilitation Center
                     Cincinnati, Ohio

1976-78 .................. Work Evaluator, Career Development Center
                     Columbus, Ohio

1978-81 .................. Academic Advisor, Continuing Education
                     The Ohio State University, Columbus, Ohio

1980 ...................... M.A. Counseling Psychology
                     The Ohio State University, Columbus, Ohio

                     Columbus, Ohio

1981-1983 ............... Psychology Intern, Industrial Commission
                     of Ohio, Rehabilitation Division, Columbus, Ohio

PUBLICATIONS


FIELDS OF STUDY

Major Field: Counseling Psychology. Professor Samuel Osipow
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>VITA</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>x</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>1</td>
</tr>
<tr>
<td>Expectation Research</td>
<td>4</td>
</tr>
<tr>
<td>Career Undecidedness Research</td>
<td>9</td>
</tr>
<tr>
<td>Design of the Study</td>
<td>11</td>
</tr>
<tr>
<td>Hypotheses to be Tested</td>
<td>14</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>16</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td></td>
</tr>
<tr>
<td>Presumed Mechanisms of Influence</td>
<td>16</td>
</tr>
<tr>
<td>Variables Effecting Outcome Expectations</td>
<td>19</td>
</tr>
<tr>
<td>Measurement of Outcome Expectations</td>
<td>21</td>
</tr>
<tr>
<td>Empirical Evidence For Expectation Effects</td>
<td>24</td>
</tr>
<tr>
<td>Conclusions</td>
<td>25</td>
</tr>
<tr>
<td>Self-Efficacy Expectations</td>
<td>26</td>
</tr>
<tr>
<td>Contrasted with other Expectancy Theories</td>
<td>28</td>
</tr>
<tr>
<td>Sources of Efficacy Beliefs</td>
<td>29</td>
</tr>
<tr>
<td>Performance Accomplishments</td>
<td>30</td>
</tr>
<tr>
<td>Vicarious Learning</td>
<td>32</td>
</tr>
<tr>
<td>Physiological States</td>
<td>36</td>
</tr>
<tr>
<td>Verbal Persuasion</td>
<td>38</td>
</tr>
</tbody>
</table>
CHAPTER

<table>
<thead>
<tr>
<th>Domains in Which Efficacy Has Been Studied</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Behavior</td>
<td>39</td>
</tr>
<tr>
<td>Phobic Reactions</td>
<td>40</td>
</tr>
<tr>
<td>Physical Stamina</td>
<td>41</td>
</tr>
<tr>
<td>Self-regulation</td>
<td>42</td>
</tr>
<tr>
<td>Achievement Strivings</td>
<td>43</td>
</tr>
<tr>
<td>Career Development and Decision-Making</td>
<td>44</td>
</tr>
<tr>
<td>Summary</td>
<td>45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedures in Efficacy Measurement</th>
<th>46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitions</td>
<td>46</td>
</tr>
<tr>
<td>General Procedures</td>
<td>47</td>
</tr>
<tr>
<td>Efficacy-Performance Links</td>
<td>48</td>
</tr>
<tr>
<td>Subject Selection/Rejection</td>
<td>49</td>
</tr>
<tr>
<td>Efficacy-Performance Discrepancies</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Critiques of Standard Efficacy Procedures</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitions</td>
<td>51</td>
</tr>
<tr>
<td>Self-Report Procedures</td>
<td>53</td>
</tr>
<tr>
<td>Experimental Demand</td>
<td>53</td>
</tr>
<tr>
<td>Subjects' Mis-interpretation</td>
<td>54</td>
</tr>
<tr>
<td>Unintended Effects</td>
<td>55</td>
</tr>
<tr>
<td>Analysis and Interpretation</td>
<td>56</td>
</tr>
</tbody>
</table>

| Summary                                 | 57 |

<table>
<thead>
<tr>
<th>Expectation Theories of Depression</th>
<th>59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectation Theories of Depression</td>
<td>59</td>
</tr>
<tr>
<td>Evaluation Theories of Depression</td>
<td>61</td>
</tr>
<tr>
<td>Empirical Evidence</td>
<td>62</td>
</tr>
<tr>
<td>Self-Efficacy Expectations and Depression</td>
<td>65</td>
</tr>
<tr>
<td>Summary</td>
<td>67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Career Undecidedness</th>
<th>68</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of Undecided Persons</td>
<td>68</td>
</tr>
<tr>
<td>Measurement of Vocational Undecidedness</td>
<td>76</td>
</tr>
<tr>
<td>Summary</td>
<td>79</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ANOVA Table for Treatment Effects on Undecidedness and Efficacy</td>
<td>95</td>
</tr>
<tr>
<td>2. Regression Analysis for the Prediction of Career Undecidedness at Outcome</td>
<td>96</td>
</tr>
<tr>
<td>3. Regression Analysis for the Prediction of Change in Career Undecidedness from Admission to Discharge</td>
<td>98</td>
</tr>
<tr>
<td>4. Interrelationships of Age, Duration of Disability, Change Scores and Efficacy Scores at Discharge</td>
<td>99</td>
</tr>
<tr>
<td>5. Means, Standard Deviations and Ranges for Test Instruments</td>
<td>101</td>
</tr>
<tr>
<td>7. Results of Discriminant Analysis of Change Scores for Surgery and No Surgery Groups</td>
<td>105</td>
</tr>
<tr>
<td>8. Classification Matrix for Surgery and No Surgery Groups Based on Change in Undecidedness Scores</td>
<td>106</td>
</tr>
<tr>
<td>9. MANOVA Table for Treatment Effects on Undecidedness and Efficacy - No Surgery Group</td>
<td>107</td>
</tr>
<tr>
<td>10. MANOVA Table for Treatment Effects on Undecidedness and Efficacy - Surgery Group</td>
<td>108</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Range, Frequency and Distribution Plot for Efficacy (ESES) Scores at Admission</td>
<td>102</td>
</tr>
<tr>
<td>2.</td>
<td>Range, Frequency and Distribution Plot for Undecidedness Scores at Admission</td>
<td>102</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

The experiment described and reported in this paper was designed with several purposes in mind. These purposes derive from an underlying interest in better understanding the role which patient expectations of self-efficacy may play in promoting successful career decision-making interventions. This introductory chapter will briefly describe these purposes before outlining the theoretical and empirical antecedents of this work. The introduction will conclude with a description of the present research methodology and a listing of hypothesis to be tested.

PURPOSES OF THE STUDY

The first purpose of this experiment is to test the value of subjects' pre-treatment efficacy expectations in predicting successful outcomes for a career decision-making intervention. Despite optimistic beginnings (Frank, 1961) research which has attempted to empirically demonstrate the "common sense" relationship between patient expectations and psychotherapy outcomes, has produced no conclusive evidence (Wilkins, 1973; Shapiro and Morris, 1978). Recently, however, Bandura (1977) has suggested that this previous research produced little because it studied outcome, rather than self-efficacy expectations and because it assessed amorphous rather than specific expectations. A
self-efficacy expectation is the anticipated ability to perform a behavior and is not concerned with the outcomes which may result from the behavior. Bandura has suggested that efficacy expectations will predict outcomes because these expectations tend to motivate successful striving toward the treatment objective - in this case, career decidedness. This study is designed to test this contention.

A second purpose of this study is to further examine the relationship between expectations of career decision-making self-efficacy and career decidedness. Taylor and Betz (1983) in an exploratory investigation, have reported finding a significant negative correlation between students' expectations of efficacy for career decision-making and students' levels of career decidedness. The present study was designed to permit an examination of the relative changes which may occur in these variables during an extended intervention. Findings which indicate a significant relationship over time between efficacy expectations and career decidedness would have implications for the design of treatments which seek to promote career decidedness.

A third purpose of this study is to explore the utility of the self-efficacy concept in assessing the impact of a career decision-making intervention. If expectations of career decision-making self-efficacy are found to effectively predict future progress toward decidedness, then measurement of these expectations would provide an appropriate assessment of treatment effectiveness. Treatments which raise these expectations could be considered as successful even if they have produced little, or no, increase in decidedness.
A fourth purpose is to attempt the derivation of a reliable instrument to measure levels of career decision-making self-efficacy expectations. Specifically, this study has attempted to create a valid, reliable efficacy questionnaire by transforming items which, in their original form, comprise the Career Decision Scale - a valid, reliable measure of career decidedness (Osipow, Carney, Winer, Yanico & Koschir, 1976; Osipow, 1980). For example, a CDS item which asks subjects to indicate how career decided they are now, when transformed into an efficacy item, asks subjects how confident they are that they will be ready and able to become decided within the next six months. At issue is whether an effective decision-making self-efficacy questionnaire can be derived by simple transformations of the questions which make up a decidedness instrument. Effectiveness will be assessed by comparing the relative power of pre-treatment efficacy and decidedness scores to predict decidedness scores at outcome.

The fifth, and last, purpose of this study is to explicate the extent to which efficacy expectations for career decision-making will covary with levels of depression. Several theories of depression suggest that pessimistic expectations are both a significant cause and a result of depression (Layne, 1980). Applied to the present topic, these theories suggest that low expectations of decision-making self-efficacy may be more related to subjects' general depression than to specific doubts related to career decision-making tasks. This study attempts to assess the degree to which depression and efficacy expectations are independent. Significant independence would suggest that low self-efficacy could be treated most effectively through an
intervention aimed at specific efficacy expectations. Significant
covariance might suggest that low self-efficacy be treated via an
explicit intervention for depression.

EXPECTATION RESEARCH

From the publication of Frank's *Persuasion and Healing* (in 1961) it
has been widely assumed that patient expectations play a major role in
producing successful psychotherapy outcomes (Wilkins, 1973). In that
book, Frank made a persuasive case - based heavily on anecdotal and
anthropological evidence - for a therapeutic placebo effect which seemed
to result from patients' expectations of treatment success. Frank
argued that patients' level of faith in treatment was the most significant
determinant of psychotherapy outcome and that, with sufficient
patient faith, even an inert psychological treatment would produce
success. The "discovery" of this common placebo effect seemed to offer
an explanation for Eysenck's (1952) assertion that psychotherapy is no
more therapeutic than non-specific treatments.

Other researchers picked up Frank's lead and attempted to empirically
demonstrate the effects of expectations in producing psychotherapy
outcomes. Not all of these researchers accepted the placebo explanation for expectancy effects, preferring to attribute treatment
success to the motivation produced by positive expectations (Cartwright & Cartwright, 1958). In this view, positive expectations produce their
effects, not through a mystical placebo effect but through their ability
to promote effort, persistence and cooperation with the therapist.
Without producing a reliable conclusion regarding the "placebo" or "motivational" mechanism of expectancy effects, most expectancy research produced during the late 1950's and early 1960's continued to offer support for the presumed significance of outcome expectations. This research generally employed correlational analyses and studied the effects of pre-existing (not experimentally induced) outcome expectations. Goldstein (1960) found that high patient expectations were associated with positive outcomes in a study which measured outcome expectations and self-reported improvement during a seven week period of psychotherapy. Added to Lipkin's (1954) previous findings of expectancy effects in psychotherapy, these results seemed to demonstrate the replicability of expectancy effects. Goldstein and Shipman (1961) and Freidman (1963) reported that subjects with higher expectations of therapeutic gain felt better after an initial interview than did subjects with lower expectations. These findings suggested that expectations begin to exercise their influence from the very beginning of treatment.

Later in the 1960's the focus of expectancy research shifted. In a flurry of studies, subject expectancy was used as a "state" which was differentially induced in subjects. The aim of these studies was to test the relative effects on therapy outcomes of high or low induced expectancy for improvement (Wilkins, 1973). If subject were told that they were receiving a very effective treatment, would they improve more than subjects who were told that were in a weak treatment? Wilkins (1973), in reviewing twelve of these studies, found that results supportive of the expectancy effect were produced in only four. In these
four, experimenters were not blind. Wilkins found that in the eight studies which showed non-significant effects for expectancy manipulations, the experimenters were blind.

After reviewing the existing outcome expectation literature, Wilkins (1973, 1979) concluded that there was insufficient evidence to support a belief that expectations have a causal relationship with outcomes. The limitations of patient self-report methods, correlational analysis, and inadequate safeguards against experimenter bias had, in Wilkin's view, produced a body of research which did not support the causal attributions sometimes made to outcome expectations. Shapiro and Morris (1978) in reviewing essentially the same literature, reached a similar conclusion. Thus, the early promise of expectancy research appeared to have produced little progress in resolving the philosophical and empirical questions about expectancy effects.

In 1977, Bandura stimulated a renaissance of expectancy research by once again redirecting its focus. Bandura (1977) suggested that previous expectancy research had become stalemated because it studied outcome rather than efficacy expectations. Efficacy expectations refer to an individual's perceived ability to perform a behavior, while outcome expectations refer to the perceived consequences of the behavior if it is performed. A further mistake, according to Bandura, was the examination of global or phenomenological outcomes rather than specific, observable outcomes. Ascribing to efficacy expectations a motivational rather than a placebogenic mechanism Bandura asserted that knowledge of patient efficacy expectations would permit predictions of treatment outcomes. Further, Bandura contended that all psychological treatments,
whatever their form achieve their success through their ability to raise efficacy expectations. Changes in efficacy expectations, whether naturalistic or treatment-induced, were attributed to the cognitive processing of information gained through actual performances, observed modeling, verbal persuasion, and/or awareness of physiological arousal levels. Thus, Bandura provided the impetus for a new chapter in expectancy research.

Research investigating self-efficacy has, to date, generally offered support for Bandura's assertions. Various types of performance and modeling treatments have been found to raise subjects' efficacy levels. Self-efficacy expectations have been found to correlate significantly with outcome behaviors. Evidence supporting the generality of efficacy effects has been found by investigators studying self-efficacy in a wide variety of behavioral domains - avoidance, physical endurance, social assertiveness, self-regulation, achievement, strivings, and career decision-making (Bandura, 1982 a). This research is not without critics. Contaminative effects of experimental demand, problems with self-report methods, inconsistencies in concept definitions, and theoretical errors are among the problems which have been attributed to this research. Detailed examination of these criticisms, and the theory itself, are to be found in the literature review section of this paper. Attention here will now shift to that efficacy-related research which has been directly concerned with careers and career decision-making.

Betz and Hackett (1981) studied the career-related efficacy expectations of college men and woman. These subjects were asked to
indicate their expectations of ability to succeed in meeting both the training and employment demands of 20 occupations. Ten of these occupations were traditionally male occupations while the other ten were traditionally female occupations. Results supported an earlier hypothesis (Hackett & Betz, 1981) that women would have lower overall expectations of career efficacy. Women were found to have significantly lower expectations for male occupations than for female occupations. Males demonstrated equivalent efficacy expectations for both types of occupations. Men and women in this sample were objectively equivalent with regard to abilities. Hackett & Betz (1981) had predicted this outcome based on the differential socialization of women with regard to their vocational roles and qualifications.

Another study of efficacy effects in career decision-making was the immediate stimulus for the present research. Taylor and Betz (1983) found a negative correlation between career decision-making self-efficacy expectations and career decidedness in college students. This finding suggested that low self-efficacy expectations with regard to the tasks required to make a career decision (information gathering, conflict resolution, self-assessment) might preclude or impede individuals' progress toward career decidedness. In light of this possibility, Taylor and Betz (1983) suggest that research be directed at examining any causal role which efficacy expectations may play in career decision-making interventions.
CAREER UNDECIDEDNESS RESEARCH

Many individuals experience difficulty and delay in career decision-making. College students, reentry women, adult career changers and the disabled are among the populations which experience problems in choosing careers. Counseling staffs in schools, universities, and vocational rehabilitation facilities have long attempted to expedite and assist in these career problems. Concurrent with this applied activity, research has attempted to provide information which would clarify the nature of undecidedness and point toward more effective interventions.

Consistent effort in undecidedness research has been aimed at identifying those personality or demographic characteristics which might differentiate decided and undecided individuals. Among the variables which have been studied are: preferred school subjects, sports, activities, and hobbies (Holland & Nichols, 1964) achievements, competencies, backgrounds, attitudes, self-descriptions, high school grades, and goals (Baird, 1969); personality (Ashby, Wall & Osipow, 1966; Elton & Rose, 1972; Harmon, 1973; Lunneborg, 1975); and interest differentiation (Lowe, 1981). Various researchers have found and reported statistically significant differences between decided and undecided students on these variables.

Holland and Nichols (1964) suggested that undecided students may have a complex world view, may be personally confused, or may have inadequate career information. Baird (1969) suggested that some bright students delay decision-making in order to better consider their alternatives. Ashby, Wall and Osipow (1966) found that undecided students appeared to be more dependent and in need of encouragement. Harmon
(1973) suggested that students may remain undecided if they have difficulty concentrating on decisions. Lunneborg (1975) found that low academic achievement was the best predictor of undecidenedness (though inadequate for applied use). Holland and Holland (1977) suggested that undecided students lack a sense of clear identity.

As a result of these diverse findings, reviewers of the undecidenedness literature have consistently concluded that no clear, consistent psychological or social differences have been found (Harmon, 1973; Holland & Holland, 1977; Slaney, 1980). Holland and Holland, (1977) conclude that it would be best if researchers discarded the notion of an "undecided" type. After noting that many undecided students appear to feel no urgency about this "problem", Holland and Holland suggest that undecided persons may best be considered as a heterogeneous group united only by a general (and perhaps temporary) disposition toward indecisiveness.

Recent work by Taylor and Betz (1983) appears to suggest a new approach to research in undecidenedness. Using the Career Decision Scale (Osipow et al, 1976; Osipow, 1980) as a measure of decidedness and a 50-item questionnaire as a measure of career decision-making self-efficacy, Taylor and Betz found a negative correlation between decidedness and efficacy. This result seems to suggest that undecided students may be those who lack self-efficacy expectations with regard to the tasks required in career decision-making. Taylor and Betz suggest that further research be undertaken to test this hypothesis.
DESIGN OF THE STUDY

Twenty disabled industrial workers, each having suffered a serious work-related accident were studied. Subjects were in four consecutive treatment groups. All but three of the subjects were men. All of the subjects were undergoing treatment for the chronic pain which resulted from their injuries. Most had suffered low back strains. 8 had had surgeries. As a result of their injuries and the resulting pain, these subjects had been unable to return to their previous jobs or occupations. Length of unemployment ranged from 11 months to almost five years. They entered the comprehensive rehabilitation program not knowing what kind of employment they were capable of, and, in general, were anxious and depressed. Most subjects were receiving disability-based compensation. While such payments are undoubtedly a frequent disincentive to actual job-seeking after discharge from the rehabilitation program, they appeared to have a negligible effect on participants' willingness to assess their skills and occupational preferences during the treatment program.

Each subject participated in a multi-disciplinary rehabilitation program over a six-week period. During this period, many of the subjects lived in local hotels because commuting distances were prohibitive. Treatment consisted of strength and tolerance building in physical and occupational therapy areas; group instruction and practice in relaxation, pain-management and self-hypnosis skills; individual counseling aimed at resolving personal and family problems and at reinforcing relaxation and pain management procedures; biofeedback practice to promote effective relaxations; dietary consultations designed
to promote weight loss and general health; and group instruction in a Career Decision-Making Class.

The decision-making course consisted of four, forty-five minute sessions each week for five weeks (admission processing consumed most of the first week of the six week program). The purposes of the course, which were communicated to subjects only after pretesting, were to:

1) promote self-assessments of skills, interests and work needs;
2) provide exposure to career information resources; 3) encourage renewed effort aimed at identifying "good" vocational options and;
4) build confidence in their ability to successfully present themselves in employment interviews.

The first part of the course consisted of group activities designed to promote self-assessment of vocationally relevant personal qualities, technical skills, financial needs, psychological needs (independence, recognition, friendly co-workers, etc.), physical limitations, and preferred working conditions. Following this listing, a prioritization of needs, skills, and limitations, was undertaken to produce, for each participant, a list of the ten most important "things" to have in the next job. A typical list might consist of: $8 per hour, use my mechanical skills, have good job security, work indoors, make use of my abilities, keep me busy most of the time. Next, participants brainstormed in a group to identify for each other possible occupations which would meet these specifications. From the brainstorming, and from sessions in which they studied newspaper want-ads, participants developed a list of occupations which looked "interesting". Instructions and practice was then given in the use of printed and community
resources which can be used to gain insight into job demands, labor market forecasts, and training requirements. The last part of the program consisted of didactic instruction in job seeking skills (networking, utilization of community resources, structuring the search) and practice in job interviewing. Interviewing practice employed videotape playback procedures to enhance learning. At the end of their six-week program subjects generally ranked this course as being the second or third most valuable part of their rehabilitation program - physical therapy was first for nearly all participants and pain management groups were a common second choice.

Participants were tested one-to-two weeks prior to admission (via telephone), at admission, and immediately prior to discharge. The Career Decision Scale (Osipow et al, 1976; Osipow, 1980) and the Experimental Self-efficacy Scale (ESES; designed for this study and partially derived from the CDS) were administered verbally at all three measurement points. Verbal administration was selected because reading difficulties were anticipated in this poorly educated population. The ESES consists of 16 items which ask subjects: "How confident are you that, within six months, you will be ready and able ......: "to make a career choice?"; "to identify your best skills?"; "to commit yourself to your career choice?"; "to make the best career choice possible?." ESES items were derived from CDS items. Six months was chosen as the time frame for efficacy questions both because it represents a reasonable allotment for a difficult career decision and because it implies a substantial period of post-treatment time at home to be used for further effort, consultation, discussion, and information gathering.
The CDS consists of 16 items related to problems in making career decisions. The CDS was slightly modified to make it more applicable to the population under study. The Beck Depression Inventory (BDI; Beck, 1967) was administered only at admission and discharge due to its unsuitability for administration via telephone. Language in the BDI was judged to be simple and common enough for all subjects to read independently.

**HYPOTHESES TO BE TESTED**

1. Treatment will produce significant changes in both career decision-making self-efficacy and decidedness. Efficacy changes will be larger.
   - Repeated measures ANOVA will be used to test this hypothesis.

2. Scores for career decision-making self-efficacy at admission will be significant predictors of career undecidedness scores at discharge.
   - Multiple regression procedures will be used to test this hypothesis.

3. Scores for career undecidedness at pre-admission will be significant predictors of change in career decidedness from admission to discharge.
   - Multiple regression procedures will be used to test this hypothesis.
4. Career decision-making self-efficacy scores at discharge will correlate positively and significantly with the "Need for Structure and Confidence" subscale of the CDS at discharge.
   - Correlation analysis will be used to test this hypothesis.

5. Duration of disability and participant age will correlate significantly and negatively with changes in efficacy and undecidedness scores.
   - Correlational analysis will be used to test this hypothesis.

6. Changes in depression, from admission to discharge, will correlate significantly with changes in undecidedness and changes in efficacy.
   - Correlational analysis will be used to test this hypothesis.
CHAPTER 2

LITERATURE REVIEW

The following selective review of research literature will focus on four areas: outcome expectations, self-efficacy expectations, expectation theories of depression and career undecidedness.

OUTCOME EXPECTATIONS

Patient's expectations have long been considered to have significant impact on treatment outcomes (Frank, 1961). High expectations have been commonly accepted as predictors, if not causes, of high gain and low expectations and have been seen to have opposite effects. These patient expectations - sometimes referred to as outcome expectancies, expectations of therapeutic gain, or expectations of improvement - have been studied by psychological researchers in anticipation of understanding, and perhaps eventually enhancing, their presumed therapeutic utility. The following review will examine research which has investigated the presumed mechanisms by which outcome expectations may influence actual outcomes; the variables which may effect the formation and alteration of expectations; the methods used to measure outcome expectations; and the empirical evidence regarding the effects of expectations on treatment outcomes.

PRESUMED MECHANISMS OF INFLUENCE

Two different mechanisms have been attributed to outcome expectations in order to explain how they presumably influence actual outcomes. Both of these - placebo effects and motivational effects - have been
studied and both will be briefly explicated in the following sections.

Frank (1961) popularized the notion that outcome expectations should be considered as placebogenic both because their effect on patient improvement is unintentional and because the actual mechanisms of their influence are unspecifiable. Rosenthal and Frank (1956) proposed that "faith in treatment" would be enough to produce favorable outcomes even if a subject's "treatment" was deliberately designed to be ineffective, but credible. In this placebo view, outcome expectations have an aura of magic and mystery.

Granting the role of faith in treatment, Cartwright and Cartwright (1958) nonetheless considered the placebo explanation to be unnecessarily vague. They proposed that concepts such as anticipation, belief, confidence, and conviction should be considered as specific, motivating factors in producing treatment outcomes. Cartwright and Cartwright suggest that positive patient outcome beliefs may produce therapeutic benefits, not by triggering a mystical "placebo effect", but by motivating effort, persistence, and cooperation with the therapist.

Other researchers have also attributed motivation properties to expectations and suggested that this motivation, and not the expectations which produce it, is directly responsible for any favorable outcomes. Krause (1967) suggests that outcome expectations provide the basis for patients' evaluations of therapy. To the extent that therapy, as experienced by an individual, is perceived as likely to promote the realization of desired outcomes, motivation to participate and work is created. Level of aspiration research (LOA; Lewin, Dembo, Festinger & Sears, 1944) appears to provide additional support for this
motivational perspective on outcome expectations. LOA theory suggests that behavior is motivated and directed by goal striving. Applied to psychotherapy, LOA theory would suggest that expectations of successful goal attainment (positive therapeutic outcomes) would motivate effort toward achieving that goal. Frank (1959) appears to lend support to the motivational position by suggesting that patients' desire for (motivation for) symptom relief is related to their ultimate success in psychotherapy.

Reviewing the literature regarding outcome expectations' role in therapy outcomes, Wilkins (1979) has suggested that careless extrapolations from correlational studies and uncritical acceptance of placebo theories have combined to produce faulty conclusions about the causal role of outcome expectations. Rather than being related on a causal basis, Wilkins suggests that expectations may be statiscally related to outcomes only because people are good predictors of near-future events and behaviors. After reviewing the literature, Wilkins concluded that outcome expectations may well be irrelevant interpretive artifacts with no real role in producing outcomes.

Summary

Both placebo and motivational concepts have been advanced to explain the process by which outcome expectations presumably promote psychotherapy outcomes. Empirical evidence appears to cast doubt on both of these causal explanations and it has been suggested (Wilkins, 1973) that outcome expectations are merely interpretive artifacts produced by more significant therapeutic events.
VARIABLES EFFECTING OUTCOME EXPECTATIONS

In addition to considering the presumed mechanisms by which outcome expectations may influence therapeutic outcomes, researchers have also identified a wide variety of variables which effect the formation and alteration of outcome expectations. Patient, environmental, and therapist variables have all received consideration. Because of the great variety of these variables and the complexity with which they presumably interact with each other and with any treatment, the present consideration of these variables must serve more as an acknowledgement regarding the complexity of the problem than as an explanation for the formation of outcome expectations.

Patient variables which have been shown to effect the formation and alteration of outcome expectations include previous experience with a specific treatment; personality traits (e.g., susceptibility, persuasibility); affective state (e.g., optimism, depression, anger); motivation for participation; symptom intensity; and demographic characteristics. (Lick and Bootzin, 1975; Shapiro and Morris, 1978). In addition Lick and Bootzin (1975) suggest that experimental subjects who had not sought treatment would be likely to respond differently to expectancy manipulation than would S's who sought treatment in order to alleviate symptoms.

Patient outcome expectations may also be influenced by environmental effects. Subjects who believe they are being given a treatment tend to establish different expectations than do those who believe they are participating in an experiment (Lick & Bootzin, 1975). Labeling of a treatment as very effective or ineffective has been shown to effect
level of expectations (Kazdin & Wilcoxon, 1976). Type and nature of referral was suggested by Frank (1959) as important in the establishment of initial expectations. Goldstein and Shipman (1961) found inconclusive evidence regarding this hypothesis. The treatment milieu, and the other patients in the milieu, have also been hypothesized to be factors in the development of outcome expectations (Goldstein and Shipman, 1961).

Therapist variables appear to be very influential in determining patients' expectations of therapeutic gain. Goldstein (1962) and Rosenthal (1968) have reviewed at length the effects of therapist behavior and attitude on patients' or subjects' expectancies. Shapiro and Morris (1978) have identified two general categories of therapist variables which may influence patient expectancies: attitudes toward the treatment and attitude toward the patient. The therapist's attitude toward the treatment may reflect faith, enthusiasm, conviction, positive expectations, or pessimism. All of these characteristics have been demonstrated to effect treatment outcomes (Shapiro and Morris, 1978). Salient attitudes toward the patient may include the therapist's interest, warmth, friendliness, liking, sympathy, empathy, lack of interest, rejection or hostility. In general, positive attitudes toward the patient are associated with higher patient expectations and better outcomes (Shapiro & Morris, 1978).

Research focusing on the effect of patient/therapist congruence of outcome expectations has failed to show that congruence of expectation is related to patient improvement (Shapiro & Morris, 1978). However, congruence of expectations has been demonstrated to effect patient
The formation and alteration of outcome expectations appears to involve interactions between a wide variety of patient, therapist and environmental factors. Careful control for these factors are necessary for optimally productive research. When inconsistencies are found across expectation research reports, a thorough review of these variables and of the efforts made to control them, may offer valuable insight into "what went wrong".

MEASUREMENT OF OUTCOME EXPECTATIONS

Various strategies and methods have been employed to measure outcome expectancies. Deficiencies in measurement systems have tended to cloud the meta-interpretation of outcome expectation research (Heitler, 1976; Kazdin & Wilcoxon, 1976; Lick & Bootzin, 1975). Of expectancy researchers, Bandura (1977) appears to have most carefully considered the choice of measurement means. The following discussion will examine the various measurement strategies which have been employed in this literature.

In their research, investigators have often reported outcome expectations as being either present or not present, high or low (Kazdin & Wilcoxon, 1978). This oversimplified view, usually adopted for methodological convenience, does not reflect reality and therefore has not promoted a genuine understanding of the role of outcome expectations. In addition to being high or low, present or not present, expectations may range from realistic to unrealistic, from relevant to irrelevant and from strongly held to lightly considered (Cartwright and Cartwright,
To these dimensions, Bandura (1977) adds that expectations may be task specific or global. Cartwright and Cartwright (1958) also point out that patients often enter therapy with expectations for a kind of improvement which is unlikely to be accomplished by the type of treatment which they will receive. These expectations may be benignly inert or they may have a significant effect - positive or negative - on outcomes.

Researchers who attempt to measure one dimension or type of expectation without considering these other potentially relevant dimensions, seem likely to be drawn toward trivial or contradictory results (Heitler, 1976; Kazdin and Wilcoxon, 1976, Lick and Bootzin, 1975). Bandura (1977) suggests that careful expectation analysis requires examination of specific, discrete behaviorally-measurable expectations.

Goldstein and Shipman (1961) had subjects in a psychotherapy study twice complete a symptom intensity checklist. On first administration, subjects were to indicate how they felt at present and on second administration they were to indicate how they expected to feel at the termination of treatment. This method has the virtue of measuring present and anticipated states on the same scale. Given the presumed role of symptom intensity in motivating therapeutic effort (Frank, 1961) the choice of outcome criteria also appears to have value.

In systematic desenitization studies, outcome expectations have been assumed to exist at predicted levels once subjects have been exposed to an expectancy induction message (Lick & Bootzin, 1975; Wilkins, 1979). In these studies, no efforts were made to measure the expectations at the time of their presumed creation. Self-report Likert
scales were used only at the end of treatment to assess the levels of expectations which then existed. Obviously, it is a methodological weakness to assume that the untested induction message produced whatever expectations were found at termination. Expectations were induced in this type of research in an effort to provide a control of this important variable.

Reacting to the problems inherent in self-report methods of expectations measurement, Kazdin and Wilcoxon (1976) suggest that the best alternative to self-report measures would be simulated and/or unobtrusive measures. Simulated measures would have subjects describe how they would expect to act or feel if the treatment they are undergoing were successful. Unobtrusive or bogus measures might follow the example of McReynolds, Barnes, Brooks and Rehagen (1973) who asked subject to perform a bogus (irrelevant to the treatment) task both before and after treatment. Comparison of pre- and post-treatment performances on this task permitted some insight into the behavior changes which subjects were "faking" in order to conform with their outcome expectations and situational demands.

Though more concerned with efficacy than outcome expectations, Bandura (1977, 1982a) has developed assessment techniques and safeguards which might usefully be employed in measuring any type of expectations. Bandura suggests that subjects should be selected to represent people with similar problems and have equivalent motivation for treatment success. Bandura also suggests special precautions intended to minimize the potentially contaminating effects of assessments made before and during treatment. First, subjects should indicate their
expectations in private rather than in public. Second, subjects should make expectancy judgments for specific outcome behaviors and all of these judgments should be made at one time, rather than before each discrete outcome performance. Bandura also proposes that adequate measurement of expectations must include pre-, during- and post-treatment assessment of the level, strength and generality of expectations. Level of expectancy is assessed by determining how many problematic behaviors an individual says she/he can do. Strength of expectations is measured by having subjects indicate their degree of certainty that they can indeed perform a behavior which they have identified as "can do". Generality of expectations is assessed by examining the variety of conditions under which subjects anticipate being able to perform the behavior. A more extensive description of Bandura's procedures is included in the review of self-efficacy literature which follows the present presentation.

EMPIRICAL EVIDENCE FOR EXPECTATION EFFECTS

Empirical investigations of outcome expectations' effects on therapy outcomes have presented an equivocal picture (Garfield, 1978; Rosen, 1976; Wilkins, 1973; Wilkins, 1979). Research has been criticized on both methodological and conceptual grounds, and criticism has been directed at those who have inferred causality from correlation (Wilkins, 1973).

Wilkins (1973) observes that most studies which support the presumed placebo effect of outcome expectations (Friedman, 1963; Goldstein, 1960; Goldstein & Shipman, 1961; Lipkin, 1954) have relied on
self-report and have not objectively measured outcomes. Goldstein and Shipman (1961) and Friedman (1963) assessed treatment outcome changes with a thrice-administered symptom intensity rating scale. No independent rating was employed. Goldstein (1960) also relied exclusively on self-report to assess outcome changes. Only Lipkin (1954) supplemented self-report data with observer judgment and Thematic Apperception Test results. Brady, Reznikoff and Zeller (1960), employing projective techniques and therapist ratings rather than self-report outcome measures, were unable to demonstrate a consistent relationship between expectations and improvement. This evidential weakness, added to the fact that only correlational links have been reported in these studies, led Wilkins (1973) to conclude that the evidence produced by these studies is not nearly as convincing as is often believed.

Wilkins (1973) also cast doubt on the validity of results from the experimental studies in which patients' outcome expectations were manipulated in attempts to influence outcomes. Wilkins (1973) listed four studies which showed positive results, eight that showed negative results, and one which showed both effects. Wilkins reported that, without exception, therapists were not experimentally blind in the studies which reported no effects from expectation manipulations.

**CONCLUSIONS**

On the basis of his review, Wilkins (1973) concluded that little (if any) causality can be attributed to outcome expectations, regardless of what "mechanism" is assumed to produce their effects. Wilkins believes that too much uncritical acceptance of an "expectancy effect"
has lead investigators to ignore the lack of support for causality. Wilkins (1979) suggests that evidence of correlations between client expectancy and therapy can properly be assumed to indicate only that clients are able to predict their future behavior and emotional state.

Essentially reviewing the same studies, Shapiro and Morris (1978) concluded that the importance of outcome expectations for psychotherapy is yet to be determined. Shapiro and Morris (1978) suggest that the issue will not be clarified without more specification of the expectations being investigated and without the development of more sophisticated measurement methods. Shapiro and Morris also maintain that a clear understanding of the effect of expectations will not be achieved without examination of the interaction effects between expectations of different types and between expectations and patient, therapist and environmental variables.

**SELF-EFFICACY EXPECTATIONS**

Bandura (1977) has developed an expectancy theory which states that behavior is heavily influenced, and often determined, by individual expectations of self-efficacy. This theory postulates that, when incentives and skills are adequate, perceptions of personal efficacy (capability) will often be the major determinants of choice, initiation, alteration and persistence of behavior. Efficacy expectations are expectations of personal capability with regard to a specific behavior. The term may be used synonymously with "self-confidence" when referring to an individual's perception of ability to perform a specific task. Efficacy expectations are differentiated from outcome
expectations which concern, not the ability to perform a given behavior, but the presumed causal relationship between the behavior and some outcome.

Self-efficacy theory states that efficacy expectations are cognitive products mediated by social learning influences. Expectations are seen as being formed on the basis of information gained through enactive experience, observations of modeling, verbal persuasion, and perceived physiological cues. Bandura (1977) asserts that increases in self-efficacy expectations may be the most common and important effect of successful psychological treatments. This assertion is based on Bandura's belief that psychological treatments derive much of their effectiveness from their success, intended or not, in creating and strengthening patients' expectations that they can cope efficaciously with the situations and behavioral deficits which are troubling them.

The following review of empirical findings, produced since the original (Bandura, 1977) formulation of efficacy theory, appears to provide considerable support (though not without controversy) for the theory. Significant efficacy-action linkages have been found to exist in several modes of psychological intervention, in a variety of psychological problems, and in both inter-group and intra-subject analyses. The following selective literature review will present relevant information from the empirical literature and from critical assessments of the theory and its "supporting" data.
CONTRASTED WITH OTHER EXPECTANCY THEORIES

Self-efficacy theory is an expectancy theory of human behavior. Like other expectancy theories (Bolles, 1972; Rotter, 1966; Maier and Seligman, 1976) it ascribes to expectations a central role in behavior selection and production. However, unlike other expectancy theories, self-efficacy theory de-emphasizes the role of action-outcome expectancies and emphasizes the influence of performance capability expectations.

Other expectancy theories appear to be built upon Tolman's (1932) perception that behavior is selected, initiated and shaped by outcome expectations created through previous experience. In this view, probabilistic links between behaviors and outcomes are learned and these probabilities determine what behavior will be produced. Most recent expectancy theories have refined this perception. Bolles (1972) has proposed that behavior is emitted when environmental cues suggest an impending event or situation and when previous experience has produced an expectation that a given behavior will produce a desired avoidance, alteration or enhancement of that impending event. Learned helplessness theory (Abramson, Seligman & Teasdale, 1978; Seligman, 1975) proposes that behavior is emitted when expectations predict that a desired outcome may be obtained as a result of this behavior. In this conception, expectations of action-outcome independence lead to inaction while perceptions of action-outcome dependence promote action. Similarly, Rotter's locus of control theory (1966) suggests that behaviors are produced when expectations predict that a given outcome can be achieved and is not determined by external events or forces.
Level of aspiration theory (Lewin, Dembo, Festinger & Sears, 1944) is another important antecedent of self-efficacy theory. LOA theory postulates that behavior results from a striving for goals and suggests that behavior is produced when the goals toward which it is directed appear to be attainable. Thus, like efficacy theory, level of aspiration theory attaches importance to individual expectations of performance capability.

Bandura (1977) does not dismiss the importance of outcome expectations. However, efficacy theory proposes that, when skills are adequate and incentives are appropriate, an individual's expectations of personal efficacy will largely determine the initiation and persistence of coping behaviors. This change in emphasis is what sets efficacy theory apart from other expectancy theories.

**SOURCES OF EFFICACY BELIEFS**

Bandura (1977, 1982a) has identified four major sources of efficacy expectations: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. Efficacy expectations are thought to be formed when information from these sources is cognitively processed by an individual. Confidence in the resulting expectations is thought to vary based on the source of the information, the inference rules used in appraising the information, and contextual factors. The following sections will provide detail regarding the relative effects of these sources and the factors which mediate their impact. Bandura's theoretical explanation for the expectation formation phenomena will be reviewed as will empirical results of studies which have
tested these theoretical assertions.

**Performance Accomplishments**

Bandura has asserted that information obtained through performance accomplishments is the most potent in forming efficacy expectations (1977). Reasons given for this relative strength include the unique power of experience to disconfirm efficacy misbeliefs; to provide a realistic test of ability; to provide opportunity for acquisition of relevant coping skills; and to provide success and mastery experiences. Results of empirical research, while not always permitting a comparison of performance effects with those attributable to other presumed efficacy sources, generally support a contention that successful performance accomplishments increase individual estimates of efficacy.

Biran and Wilson (1981) compared the relative effects of guided, active exposure and cognitive restructuring treatments on 22 persons with height, elevator and darkness phobias. These individuals were all judged to have moderate to severe phobias on the basis of pre-testing. Expectations for treatment outcomes were found to be similar for participants in the two treatment groups. Results indicate that the guided exposure treatment (a performance-based procedure) produced significantly greater increases in efficacy expectations than did the cognitive restructuring treatment which was based on the work of Ellis (1970).

Feltz, Landers, and Raeder (1979) conducted a study which permitted an examination of the relative effects of modeling and performance-based treatment on self-efficacy expectations. Female swimming
students with a pre-tested aversion to the required back dive were divided into three groups. Each group was exposed to a different treatment to determine which treatment had the most effect in producing successful dives after 8 trials. The three treatments were participant modeling; in-person modeling; and modeling as seen via videotape. Results indicate that women who learned through their own performances showed greater increases in self-efficacy than did those who learned through modeling.

Bandura and Adams (1977) found that an active performance treatment produced significant improvements in the approach behaviors of snake phobics. These phobics had previously failed to benefit significantly from non-enactive systematic desensitization treatment.

A review of relevant literature reveals only one study which failed to support a contention that performance-based treatments produce more change in self-efficacy than other kinds of psychological treatment. This study, reported by Bourque and Ladouceur (1980), attempted to measure the outcome effects of treatments designed to vary with regard to the amount of information they provided for cognitive processing. Fifty acrophobics were randomly divided into five groups, each of which received one of the following treatments: participant modeling; participant modeling without physical contact with the therapist (e.g. no touching at a fearful moment); modeling and response rehearsal; therapist controlled exposure; and client controlled exposure. The modeling and response rehearsal treatment involved a live model and the patient's mental rehearsal for the behavioral test. The therapist-controlled exposure treatment had the therapist instruct the patient
when to climb higher while the client-controlled exposure treatment had
the patient climb increasing heights at his/her own pace. Results on a
behavioral outcome test indicate no significant group differences, al­
though subjects in all groups increased their expectations of coping
efficacy.

In conclusion, performance treatments appear to reliably produce
changes in efficacy. Evidence regarding the superiority of performance
treatments as a source of efficacy is somewhat inconsistent, though
more evidence exists to support this view than to refute it.

**Vicarious Learning**

Vicarious learning is another mode of efficacy learning identified
by Bandura (1977). Vicarious learning is that which occurs either as a
result of observing another person performing the desired behavior or
as a result of imagining another person performing this behavior
(Kazdin, 1979). This kind of learning occurs both naturally and in
treatment. Bandura (1977, 1982a) has identified several factors which
presumably influence the impact of modeled performances on self-effi­
cacy formation. Bandura predicts that efficacy learning will be maxi­
mized when the model achieves a performance goal as a result of deter­
mined, rather than facile, effort; when the models observed, and their
attainments, are diverse in nature; and when modeled behaviors lead to
clear, rather than ambiguous, outcomes. The model's similarity to the
patient on demographics such as sex, age, and ability may also be of
importance, especially if these variable are seen as relevant to achieve­
ment. With reference to the modeling of phobic behaviors (eg, snake
Bandura (1982a) suggests that models should emphasize the predictability of the phobic object and the control of these objects which is possible when one possesses a variety of coping skills.

Several studies appear to support Bandura's assertion that self-efficacy expectations can be influenced through modeling and that attributes of the model, and of the modeling performance, can mediate efficacy formation.

Kazdin (1979) divided 48 unassertive subjects into four treatment groups each of which received a different form of covert modeling treatment. Covert modeling, referred to as "cognitive modeling" by Bandura (1982a), is a process in which subjects imagine a model performing a desired behavior. Kazdin (1979) exposed subjects to four variations of this procedure: covert modeling; covert modeling plus elaboration; covert modeling plus yoked elaboration; imagined scene plus elaboration. These procedures were designed to effect the amount and quality of the subject's imagery in order to test the effects of this variable on treatment outcomes. Subjects were shown a videotape in which a model encountered a situation which called for assertiveness. At that point, the videotape was shut off and subjects were asked to imagine assertive behavior for the model. Subjects were then asked to describe the responses they had imagined. Results indicate that all forms of covert modeling produced increases in self-efficacy with regard to assertive behaviors.

In a similar study involving 17 snake phobics, Bandura, Adams, Hardy & Howells (1980) found that five, 45-minute cognitive modeling sessions produced significant changes in efficacy expectations. These
treatment sessions had subjects imagine four different models handling snakes. Self-efficacy was measured on a 29-item behavior scale comprised of various snake handling behaviors. Significant increases were found between subjects' pre- and post-treatment efficacy expectations.

Four studies have investigated the effects of model similarity on the formation of self-efficacy. Results indicate that similarity is important in determining the efficacy changes which may result from modeling treatments.

Brown and Inouye (1978) exposed 40 male undergraduates to models who were observed as they appeared to "fail" an anagram solution task. Two groups of subjects had been induced to believe that they were either similar to, or superior to, the models. Subjects in a third group, were given no similarity induction. Subjects induced to think of themselves as similar to the failing model expressed lower efficacy expectation for the anagram tasks than did subjects who had been induced to think of themselves as superior to the model. Efficacy was measured by asking S's how certain they were that they could solve the anagram problem which was confounding the model. Thus, efficacy ratings were not based on exposure to any particular anagram but on the observed experience of a model and presumed similarity to the model was the mediating variable which determined post-treatment efficacy levels.

Three studies have examined the relationship between model similarity and expectations of efficacy for a muscular endurance task. (Gould and Weiss, 1981; Weinberg, Gould and Jackson, 1979; Weinberg, Yukelson and Jackson, 1980). Each of these studies assessed subject's expectation for efficacy for a task in which subjects must, from a sitting
position, extend one leg horizontally for a specified period of time. Weinberg et al (1979) administered this test to 60 male and female undergraduates who were induced to see themselves as competing with a model (actually a confederate). Model similarity was induced by introducing confederates as either athletes (low self-efficacy) or non-athletes (high self-efficacy). Subjects were asked, in a pre-test, what they thought their chances were of out-enduring the confederate and this estimate was used as the self-efficacy measure. The pre-tests were arranged so that subjects in both similarity conditions always lost to the confederate. Results indicate that subjects with high initial expectations of efficacy extended their legs for longer times than did low self-efficacy subjects. In addition, high self-efficacy subjects endured longer on a second trial and reported that they engaged in more positive self-talk on both trials than did the low self-efficacy subjects. Weinberg et al (1980) replicated this study with minor modifications and found similar results.

Gould and Weis (1981) exposed 150 female non-athletes to videotape modeling presentations of this same leg-extension task. Models were varied on the similarity dimension (athlete, non-athlete) and on the self-talk which they emitted as they performed. Self-talk was either positive, negative, irrelevant, or not emitted. Self-efficacy was assessed after initial observation of the model and was measured in terms of expected endurance and expressed confidence in this expectation. Results indicate that only negative comments from a similar model effected levels of expected self-efficacy.
Schunk (1981) used a dissimilar, but presumably very credible model, to demonstrate arithmetic division tasks to elementary school children with low math abilities. This treatment was contrasted with one in which only didactic instruction was offered. Both treatments included practice after instruction. Subjects were shown 25 cards displaying division problems and, after 2 seconds of observing each card, asked how sure they were that they could solve a problem like the one shown. Both the modeling and the didactic treatments produced significant increases in efficacy.

In summary, empirical evidence appears to support a view that efficacy expectations can be increased through vicarious learning. Differential effects for models of varying similarity have sometimes been found, leading to the tentative conclusion that modeling effects may vary as a function of the perceived similarity of the model.

**Physiological States**

Self-efficacy theory considers emotional arousal to be another information source which may mediate self-efficacy formation (Bandura, 1977). People are thought to assess their emotional and visceral arousal levels when they attempt to estimate their probabilities of success, their anxiety levels, and their degree of vulnerability. Like information from other sources, information from arousal is interpreted in accordance with situational facts (Hunt, Cole, and Reis, 1958; Schachter and Singer, 1962). As with efforts to interpret environmental information, efforts to interpret arousal can be faulty and misleading. Bandura (1977) considers physiological arousal to be a result of
inefficacy perceptions and suggests that increases in self-efficacy perceptions will lead to decreases in arousal levels. Empirical evidence from studies which have measured self-efficacy suggests that arousal and efficacy levels are sometimes associated. Causal inferences are inappropriate because of the correlational nature of the evidence.

Bandura et al (1980) report finding a consistent relationship between efficacy and arousal levels. In this study severe phobics self-reported the levels of arousal they felt as they anticipated feared tasks and as they performed these tasks. High arousal was found on tasks for which efficacy was perceived as low and these results were found whether efficacy was influenced by enactive, vicarious or enactive procedures. Arousal decreased as efficacy increased. Bandura, Reese and Adams (1982) reported that blood pressure and cardiac acceleration were measured in severe spider phobics during anticipation of, and during performance of, intimidating tasks for which subjects reported strong, medium or weak self-efficacy. Following efficacy-enhancing treatments, subjects showed no visceral reaction to tasks for which they felt efficacious. Similar outcomes are reported by Bourque and Ladoucer (1980) in their work with height phobics. In that study, treatment produced comparable changes in both self-efficacy, self-reported fear, and heart rate.

Only Biran and Wilson (1981) report finding no significant relation between self-efficacy changes and fear arousal levels. In their study of three types of phobics receiving guided exposure and cognitive restructuring treatments, they found no evidence of a relationship between heart rate or skin potential and perceived self-efficacy. The
treatment procedure involved the visualization of phobic scenes and not actual involvement in phobic situations as was the case with Bandura et. al. (1982).

In conclusion, studies which have compared the arousal levels, self-reported fear levels, and efficacy levels of subjects, have generally found significant correlations between these entities. No attributions of a causal basis for these findings is possible however, since the data are of a correlational nature.

Verbal Persuasion

Persuasion is the last of the information sources identified by Bandura (1977) to be considered here. Bandura (1982a) suggests that persuasion will have its greatest effect on individuals who possess some pre-existing reason to believe that they can produce a behavior or set of behaviors. In addition to being less influential in establishing efficacy beliefs, persuasion-based efficacy beliefs are also considered to be subject to easy extinguishing by disconfirming experiences. Persuasive effects on efficacy expectations are assumed to be heavily dependent on perceived characteristics of the persuader. Research in attitude formation (Bandura, 1982a) suggests that prestige, trustworthiness, expertise, and confidence are among the persuader characteristics necessary for persuasion.

A review of the self-efficacy literature reveals no research in which verbal persuasion is exclusively employed to influence efficacy perceptions. Persuasion appears to be a part of some participant modeling treatments in which a therapist encourages the subject to
believe that he/she is capable to some action (Biran and Wilson, 1981; Feltz, Landers & Raeder, 1979; Bourque and Ladoucer, 1980). The lack of empirical evidence prevents conclusions regarding the effects of persuasion on efficacy beliefs.

BEHAVIORAL DOMAINS IN WHICH EFFICACY HAS BEEN STUDIED

Bandura (1977, 1982a) has stated that knowledge of self-efficacy expectations can be used to predict behavior. The following review of empirical evidence will attempt to assess the degree to which this statement has been found to be true in several areas of empirical investigation.

Social Behavior

Kazdin (1979) treated 48 unassertive subjects with a variety of covert modeling procedures. Using the assertiveness of their responses to videotape-presented situations as a dependent variable, it was found that improvements in assertiveness were significantly related to increases in perceptions of self-efficacy for assertive acts. That is, S's who reported becoming more confident of their ability (efficacy) to respond assertively did, in fact, produce more assertive responses.

Moe and Zeiss (1982) assessed social self-efficacy by asking 115 college students to estimate their ability to demonstrate 12 personal attributes in a variety of interpersonal situations. Attributes included warmth, attractiveness, friendliness, trust, assertiveness and humor, among others. These attributes were selected because of previous research which had indicated that they were common dimensions for
self-evaluation of social performance. The situations in which students were to predict their ability to demonstrate these attributes varied on three dimensions: familiarity (friends, acquaintances, strangers), number of people (one, or a small group), and level of interest in the conversation (lively, dull). After making these estimates, subjects were told to return in one week. Upon returning, subjects were informed that they would next be asked to demonstrate two specific attributes in a small group. These two attributes were selected by the experimenter and represented those attributes which the individual had previously indicated to be easiest and most difficult to demonstrate. Subjects were asked to indicate which of these attributes they would prefer to perform. Consistent with predictions based on self-efficacy theory, most subjects chose to demonstrate the attribute toward which they had previously expressed more efficacy.

**Phobic Reactions**

Several studies of treatments for a variety of phobias have provided support for Bandura's contention that perceived self-efficacy predicts coping behavior. Three studies of snake phobics (Bandura & Adams, 1977; Bandura, et. al., 1980) have demonstrated that overall increases in self-efficacy are associated with later increases in snake-handling behaviors. In addition, microanalysis of individual items found congruence between expected snake-handling efficacy and subsequent actual ability to be .81 and .84 and .92. Similar studies will agoraphobics (Bandura et. al., 1980), height phobics (Bourque and Ladouceur, 1980), and a mixed group of height phobics, elevator phobics, and darkness
phobics (Biran and Wilson, 1981) produced similar results. In the Biran Wilson (1981) study, analysis revealed a .96 efficacy-behavior congruence for subjects in the guided exposure treatment group and a .71 congruence for subjects in the cognitive restructuring group. This result suggests that efficacy estimates may vary in accuracy as a function of treatment modes, with more accurate estimates being derived from performance treatments.

Physical Stamina

Three studies have examined efficacy expectations and physical endurance (Weinberg et. al., 1979; Weinberg et. al. 1980; Gould and Weiss, 1982) in a leg extension task. This task required subjects to sit with one leg extended for as long as they can endure. In the Weinberg et. al. (1979) and Weinberg et. al. (1980) studies, endurance for the leg extension task was significantly longer for high self-efficacy subjects. Efficacy was determined by asking participants how long they could keep the leg extended. Consistent with Bandura's prediction (1977) that efficacy and persistence are related, subjects with high self-efficacy demonstrated higher endurance on the second trial than on the first.

Gould and Weiss (1982), measuring the effect of a videotape modeling treatment on endurance, found that increases in self-efficacy reliably predicted increases in performance in only one of four treatment conditions. Feltz, Landers, and Raeder (1979), studying a modeling treatment for swimmers anxious about performing a back dive, found that subjects with highest self-efficacy performed more correct dives.
In summary, these studies suggest that modeling treatments can increase efficacy expectations and performances for physical stamina tasks. In three of four studies reviewed, efficacy increases have correlated significantly with performance improvements. Only in the Gould and Weiss (1982) study did treatment-induced efficacy changes not reliably predict actual performance.

**Self-regulation**

Studies in self-regulation have contributed to the understanding of efficacy-behavior links because they have measured behavior at a considerably delayed follow-up point. DiClemente (1981) assessed self-efficacy expectations for 63 adults who had abstained from cigarette smoking for 4 weeks at the time of pre-testing. These subjects had all previously quit smoking and relapsed, but all had been abstainers since the conclusion of their most recent treatment. Subjects had most recently quit smoking through participation in aversion or behavior management treatments or through their independent efforts. Self-efficacy was assessed by asking subjects to estimate their degree of certainty that they could resist the urge to smoke in 12 situations. Estimates were made on a 7-point Likert scale. No significant differences were found between groups of subjects representing different cessation processes. Follow-up at five months revealed that successful abstainers had higher initial efficacy scores than did relapsers (p. .005).

Conditte and Lichtenstein (1981) report a study involving 78 smokers engaged in the last phases of their cessation treatments. Efficacy was measured with a 48-item list of situations or events. Subjects
were to indicate those situations in which they felt they could abstain. This test was administered pre-treatment, post-treatment and at 5, 8, and 12 week follow-up times. Results of data analysis indicate that efficacy expectations were enhanced in all treated subjects and that efficacy levels were effective predictors of relapsers. Individual's efficacy levels, determined for each of 6 clusters of related situations, were predictive of the situations which precipitated relapse. High self-efficacy relapsers were found to be able to reinstate control after a relapse, while low self-efficacy relapsers were unable to reinstate control.

Achievement Strivings

Bandura and Schunk (1981) investigated the relative effects on self-efficacy of two math-deficiency treatments. Subjects were elementary school children with marked math deficits and low interest in math. One treatment involved assisting students to establish proximal goals for their math work while another offered students a math improvement program based on distal goals. The rationale behind these treatments was that proximal goals would promote self-motivation through the experience of repeated small successes, while the distal goal treatment would provide little motivation. At pre- and post-testing, students were asked to judge their ability to successfully solve 25 math problems which were presented to them on flash cards which were exposed for only 2 seconds. Data analysis indicates that subjects in the proximal treatment group demonstrated significantly greater increases in both efficacy and performance than did subjects in the other group. In addition, subjects in the proximal group were significantly more accurate in their post-test
assessments of their problem solving capacity and they showed more persistence in attempting difficult problems.

Studying similar groups of children with low math achievement, Schunk (1981) attempted to assess the differential effect of modeling and didactic treatments on self-efficacy expectations. Efficacy judgments were made as in the Bandura and Schunk (1981) study. Analysis of data indicates that both treatments increased persistence, accuracy and self-efficacy. In addition, perceptions of efficacy predicted arithmetic performance in both modes of treatment.

Career Development and Decision-Making

Hackett and Betz (1981) have attempted to apply self-efficacy theory to understand the career development of women. Hackett and Betz suggest that, as a result of differential and discriminatory socialization, women may lack the self-efficacy expectations required for optimal career selection and development. Not only may these low expectations of efficacy effect choice of careers, but they may also contribute to a "dropping-out" phenomenon when real discrimination and obstacles are encountered in careers.

Betz and Hackett (1981) found support for this prediction in an empirical study of 134 female and 101 male college students. These students were asked to indicate their expectations of ability to succeed in meeting both the training requirements and the job demands of 10 traditionally male occupations and 10 traditionally female occupations. Males were found to have equivalent efficacy expectations for both training and job demands for all 20 occupations. Females were found to
have significantly higher efficacy expectations for traditionally female occupations than for the male occupations. This finding is consistent with self-efficacy theory as applied to the career development of women, (Hackett & Betz, 1981). No significant differences in ability existed between the men and women.

Taylor and Betz (1983) have extended these findings in a study intended to examine the relationship between perceived career decision-making self-efficacy and career decidedness. The authors' prediction was that undecided subjects would demonstrate lower levels of efficacy than would more decided subjects. Three hundred and forty-six subjects, male and female undergraduates (70% freshmen), were asked to indicate their self-efficacy expectations for each of 50 items representing tasks or problems in career decision making. In addition, subjects were administered the Career Decision Scale (Osipow et. al., 1976; Osipow, 1980). This scale has been shown to provide a reliable measure of career decidedness. Correlational analysis indicated that levels of career decision-making self-efficacy were inversely related to levels of career decidedness. In addition, decision-making efficacy expectations were found to be most strongly and negatively correlated with those CDS items which assess the perceived need for increases in career decision-making structure and skill.

Summary

Efficacy levels have been shown to be correlated with performance levels in a variety of behavioral domains. Varied treatments for behavioral deficiencies in these domains have generally been shown to
have a similar effect on both efficacy expectations and performance. Bandura's (1977) predictions of a significant efficacy behavior relation appear to have considerable support.

PROCEDURES IN EFFICACY MEASUREMENT

Bandura (1977) has detailed preferred methods for assessing level, strength and generality of efficacy expectations. In Bandura's opinion, previous expectancy research was not sufficiently careful in differentiating specific expectations from hopes, wishful thinking, beliefs in procedures and faith in therapists. Because of this inexplicitness, reviewers of the research have been unable to arrive at definite conclusions about the potency of expectations (Lick and Bootzin, 1975; Wilkins, 1973, 1979). Adequate expectancy analysis requires that expectations be measured with the same precision as is applied to behavioral measurement (Bandura, 1977).

Definition

Such precise measurements must begin with precise definition. "An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). In clarifying this definition, Bandura (1978) has indicated that the term "successfully" refers to the execution of the behavior, not to the outcome. The phrase "required to produce the outcomes" is intended only to identify the behavior in question and not to imply that efficacy expectations are defined in terms of potential outcomes (Bandura, 1978). In contrast with efficacy expectations: "An outcome
expectation is defined as a person's estimate that a given behavior will lead to certain outcomes". (Bandura, 1977).

General Procedures

Bandura (1978) has suggested that honest and accurate self-efficacy estimates are most likely to be produced by subjects when their responses can be made in private, when there are positive incentives for honesty, and in situations where evaluative apprehension is minimized. In addition, questions about mastery expectations should refer to specific behaviors and should require descriptive rather than interpretive processes from the subject. Ideally, efficacy questionnaires should present items in hierarchical order (Bandura, 1982a).

When presented with the efficacy items, subjects should be instructed to answer as frankly as possible and should be assured that there is no possible gain from other approaches (Bandura, 1982b). It is important that subjects not be asked "whether or not they would perform" (emphasis added) given behaviors and that instructions clearly indicate that the questions are aimed at understanding what the subject believes he/she is maximally, not habitually, capable of doing. (Bandura, 1982b). In this way, the experimenter attempts to insure that capability estimates, and not behavioral intentions, are being elicited.

Efforts to minimize the motivational or demand characteristics of the experimental situation are important to accurate assessment. For this reason, efficacy judgments are generally made in private. Judgments are requested for all performance items at one time rather than one-at-a-time prior to the performance attempt (Bandura, et. al., 1980).
Specific Procedures

**Level of efficacy** is determined by counting the number of tasks on the efficacy questionnaire which each subject indicates he/she is capable of performing. A subject who indicates confidence in his/her ability to perform 15 of the behaviors is said to have an efficacy level of 15.

**Strength of efficacy** is determined by asking each subject how confident he/she is of the capability to perform those tasks which have been identified as "can do". Bandura (1977, 1982a) has consistently employed a scale, ranging from 10 to 100, on which 10 indicates "no confidence" and 100 indicates "total confidence".

**Generality of efficacy** has not been assessed in any consistent way and Bandura has not offered a standard to other experimenters. The original motive for measuring generality (Bandura, 1977) was to assess whether treatment-derived efficacy changes influenced other phobic behaviors and whether efficacy changes carried over to environments outside the treatment laboratory. Thus, delayed measures of outcome (Conditte and Lichtenstein, 1981; Kendrick 1982), measures of self-reported changes in reactions to vivo experiences (Biran and Wilson, 1981), and increased confidence in handling dissimilar snakes (Bandura, 1977), may all be considered as generality measures.

Efficacy-Performance Links

Perhaps the most common efficacy analysis involves a comparison of changes in treatment group efficacy and performance levels. In the standard paradigm, pre- and post-testing are used to assess efficacy and
performance levels for individuals in groups. Correlational methods are commonly employed to analyze the relationship between these changes.

Another common analytic method is to determine congruence between performance expectations and actual performance on an item-by-item basis. This microanalysis permits examination of the predictive value of each specific efficacy estimate. Congruence is determined by computing the percentage of accurate efficacy estimates. Occasionally, only strongly held expectations (e.g., 60/100) are studied in this type of analysis.

Subject Selection/Rejection

It has been common practice to exclude from study any potential subjects who do not appear, during pre-testing, to possess a significant level of the phobia, anxiety, or other psychological characteristics to be treated. Behavioral pre-testing has been used to identify strongly efficacious subjects who seem unlikely to benefit from treatment. In phobic studies, those excused have been those with insufficient phobia—those who are able to pick up the snake (Bandura, 1977), or to climb above a specified height (Bourque and Ladouceur, 1980). Efficacy pre-testing has been similarly used and subjects have been released if they indicated efficacy expectations for most performance tasks (Biran and Wilson, 1981; Feltz, Landers, & Raeder, 1981).

Subject motivation has not been employed as a rejection criteria in any reviewed studies. Bandura (1977) has indicated that phobics' motivation for improvement can be assumed to be high because of the discomfort which results from their condition.
Efficacy-Performance Discrepancies

Bandura (1982a) has reported that efficacy judgments rarely constitute a perfect reflection of actual performance. This is so because individuals tend not to base their efficacy expectancies solely on their past performance. People tend to be more influenced by how they "read" their performance than by the actual performance. Self-efficacy are often found to be higher than actual post-treatment performance (Bandura and Adams, 1977; DiClemente, 1981; Kendrick, Craig, Lawson & Davidson, 1982). Bandura (1982b) attributes this tendency to inadequate confidence in these expectations.

Bandura (1982b) has identified several other potential sources of efficacy/performance discrepancy and suggests that these should be investigated in cases where expectancies and behavior are found to be significantly unrelated. Factors within subjects include faulty self-knowledge, misjudgement of tasks, disincentives to act, and unforseen (at the time of efficacy rating) situational constraints. Measurement deficiencies which may produce this result include ill-defined or global measures of self-efficacy, inadequate assessments of performance, and failure to measure any self-efficacy reappraisals which may occur during treatment.

CRITIQUES OF STANDARD EFFICACY DEFINITIONS AND PROCEDURES

Bandura's procedures for the study of efficacy changes and their concomitants (1977, 1982) have received critical comments based on several perceived deficiencies. Problems with Bandura's attempts to differentiate efficacy and outcome expectations have been noted
(Teasdale, 1978). Similarly, criticisms have been directed to a presumed over-reliance on self-report measures and at Bandura's inadequate attention to the interpretational problems which arise from the self-report method (Borkovek, 1978; Teasdale, 1978; Tryon, 1981).

Bandura's methods of analysis and of interpretation have also been found wanting (Kirsch, 1980; Reviewer B, 1977). The following section will present these criticisms and, when possible, Bandura's responses.

Definition

While agreeing in principle with Bandura's definition of efficacy and outcome expectations, Teasdale (1978) has suggested that it is difficult, in practice, to separate these two types of expectations. This is so because behaviors are generally not produced except when both efficacy and outcome expectations support the behavioral effort. "Action is performed when a person expects to be able to perform it and when the expected outcome is overall good" (Teasdale, 1978, p.212). From this perspective, a phobic's avoidance of elevators may be due less to deficient efficacy beliefs ("Of course, I can walk into the thing") than to expectations of probable outcomes ("...but I believe that it will immediately plunge me to my death") (Kazdin, 1978).

Maddux, Sherer and Rogers (1982) have performed an empirical test of the independence of efficacy and outcome expectations. In this study, college students read statements which offered different descriptions of the difficulty of producing an assertive social behavior and of the effects which performance of that behavior would have on outcomes. Results indicate that subjects who believed in a difficult behavior
but a likely outcome, expressed greater efficacy than did those who believed in a less likely outcome. The authors note that these results might not generalize to perceived high-risk behaviors such as are involved in phobic studies. Nevertheless, these results seem to underline the need for caution in assuming a clear distinction between efficacy and outcome expectations.

Definitional issues may be significant in interpreting results of efficacy experiments when the efficacy expectations under study appear to be inseparable from outcome expectations. Studies of anagram solving (Brown and Inouye, 1978) and math problem solving (Schunk, 1981) attempt to assess efficacy expectations by asking subjects how sure they are that they could "get right answers" or "solve an anagram". In these studies, where there is no appreciable time delay between the efficacy judgment and the related behaviors - and when the behaviors and the outcomes seem indistinguishable (eg. correct problem solving) - the efficacy/outcome distinction seems to be blurred to the point of non-existence. Similar problems appear to exist in muscular endurance tests of efficacy where subjects are asked if they expect to be able to produce a specific level of endurance (Weinberg, et. al., 1979; Weinberg, et. al., 1980). In these cases, efficacy expectations appear to be isomorphic with outcome expectations insofar as performance of the behavior absolutely guarantees the outcome.

In conclusion, confusion between efficacy and outcome expectations is not only a problem of definitional clarity. These two types of expectations sometimes merge inextricably and, at other times, while clearly distinguishable, operate interactively on each other. The best
operational solutions appear to require both the careful selection of behaviors for study and the measurement of both efficacy and outcome expectations. Only when both expectations are measured is there an empirical basis for a differential analysis of their effects on behaviors.

Self-report Procedures

Borkovek (1978) has suggested that the self-report procedures employed in efficacy research are problematic in several ways. First, such measures are likely to be sensitive to any demand characteristics created by the experimental situation. Second, self-reports can be relied upon only to the extent to which an experimenter assumes that subjects respond literally and exactly to the questions presented to them. Third, self-report procedures conducted prior to treatment may tend to influence the effects of treatment by establishing mediating concepts and percepts in subjects' minds.

Experimental Demand

Supporting Barkovek's (1978) concerns regarding the effects of experimental demand in producing congruence between efficacy self-reports and outcome behaviors, Tyron (1981) has indicated the methodological necessity to "privatize" procedures. Not only should self-efficacy expectations be made in private, but surveillance cues surrounding outcome performance should be eliminated in order to minimize demand characteristics. Alternatively, Tyron (1981) suggests that artificial social demands should be created in such a way as to produce pressure on subjects to behave in the direction opposite the experimenter's thesis.
Bandura (1982b) cites extensively from the empirical efficacy literature to demonstrate that demand features are not responsible for producing efficacy changes or efficacy/behavior congruence. Among the most impressive evidence is that which indicates that efficacy expectations predict behavior at far distant times (Conditto and Lichtenstein, 1981; DiClemente, 1981; Kendrick et. al., 1982) when experimental demands are removed and absent.

Bandura (1982b) cites evidence which supports his belief that efficacy expectations are not influenced by the fact of being made in public or private (Gauthier and Ladouceur, 1981; Telch, Bandura, Vinciguerra, Agras & Stout, 1982; Weinberg et. al., 1980). Bandura (1982b) further asserts that post-treatment performances are not influenced by prior self-efficacy assessment. The reports of Brown and Inouye (1978) and Bandura, et. al. (1980) are cited in support of this contention. Examination of these studies indicates, however, that only the post-treatment efficacy estimation was deleted - subjects did estimate their efficacy expectations prior to treatment. Thus, these studies appear only to support a modified contention that repeated efficacy measurement does not effect post-treatment performance.

Subjects' Mis-Interpretation

As Teasdale (1978) points out, Bandura (1977) assumes that subjects will interpret literally the efficacy questions which are posed to them. Teasdale (1978) and Tyron (1981) suggest that, while an experimenter may believe that subjects are responding to a question regarding their capability to act, subjects may really be responding with an assessment
of their intention to act. Reflecting another kind of concern with subject response to demand characteristics, Teasdale (1978) suggests that subjects may be especially prone to this kind of interpretive transformation in situations where they expect to have to perform the behavior very soon. Teasdale suggests that subjects who interpret efficacy questions as probes of their intentions, will respond by indicating the level and strength of their intentions. Because intentions are good predictors of immediate behavior, "efficacy ratings" (as misinterpreted by the experimenter) appear to correlate significantly with behavior.

Unintended Effects Arising from Assessments of Efficacy

Several reviewers of Bandura's theory have suggested that there exists a strong potential for contaminative effects from clients' efficacy appraisals (Borkovek, 1978; Kazdin, 1978; Lang, 1978; Poser, 1978). These critics have suggested that verbalization and/or estimations of efficacy expectations (whether in private or public) may, in itself, constitute a "treatment" which effects behavioral outcomes.

Bandura's explication of his theory (1977) appears to support these concerns by suggesting at least two ways in which improvements in behavior might be motivated by the performance-related cognitions which are aroused or created by the efficacy appraisal process. First, Bandura suggests that any event which produces cognitive links between behaviors and outcomes may function as a motivator of that behavior. Secondly, Bandura describes a cognitive process whereby the attainment of previously identified proximal goals (behaviors) may motivate
further goal striving. In the typical research paradigm these factors might operate as follows. In assessing their ability to perform a given behavior, subjects may trigger a motivating desire to accomplish that specific behavior, by realizing that they will "feel better" about themselves if they accomplish that goal. The second motivating force may be triggered when, during treatment, subjects come to perceive themselves as having achieved a desired and somewhat difficult goal. This "feeling better" may then promote further striving which appears likely to again produce this satisfying self-assessment.

For these reasons, it seems possible that the completion of efficacy questionnaires may constitute an unintended "treatment" which contaminates every study in which subjects are asked to appraise their efficacy expectations. This is a problem quite separate from the "experimenter demand" problem and Bandura appears to have made no adequate response to it. It appears that a replicable empirical test of two equivalent treatments, one with efficacy assessments and one without, is necessary to resolve the issue.

Analysis and Interpretation of Efficacy Results

Efficacy research methodology has been criticized for often producing merely common sense insights into behavior. That efficacy expectations (measured at post-treatment) are more predictive of outcome behaviors than a behavioral test carried out prior to treatment, is not startling (Reviewer B, 1977). Kirsch (1980) has cautioned against attributing too much significance to findings of high congruence (eg. 84%, Bandura and Adams, 1977) between post-treatment efficacy
expectations and actual post-treatment performance. Suggesting that such congruence is not dependent on chance alone, and therefore would logically be expected to exceed 50%, Kirsch (1980) concludes that such findings are not very informative.

Kirsch (1982) reports an empirical study which suggests that interpretations of efficacy studies must assess whether subjects perceived task difficulty as arising from skill deficits or from approach anxiety. Kirsch (1982) demonstrated that subjects confronted with a difficult skill test (throwing a paper ball into a distant basket) did not raise their efficacy expectancies when offered increasingly valuable incentives to make the attempt. However, even without these incentives, most subjects expressed willingness to attempt the task. Subjects who expressed a fear of snakes did, however, express increasing confidence for snake handling tasks when they were offered increasingly valuable incentives. Kirsch (1982) suggests that this result indicates that efficacy judgments are at least partially dependent on subjects' willingness to experience the anxiety which they anticipate and thus are not solely self-estimates of ability.

SUMMARY AND CONCLUSIONS

Efficacy theory represents a combination of cognitive, social learning, and expectancy theories. The theory postulates that, when incentives and skills are adequate, perceptions of self-efficacy will be the best predictors of behavior. Perceptions of self-efficacy (capability) are seen as influencing the initiation, choice and persistence of behavior. Efficacy theory postulates four sources of
information which can be cognitively processed to produce efficacy expectations - experience, modeling, persuasion, and physiological cues. Improvements from any psychological treatment, regardless of treatment mode or target problem, are attributed to that treatment's capacity to increase patients' perceptions of self-efficacy with regard to problematic behaviors or situations.

A review of empirical literature (Bandura, 1982a) permits the following observations:

1. Changes in self-reported efficacy expectations levels have been found to result from both performance and modeling treatments.

2. Changes in efficacy levels have been shown to correlate significantly with changes in performance levels.

3. Efficacy expectations (strength and level) have been found to correlate significantly with outcome performances.

4. Levels of physiological arousal have been found to be associated with efficacy levels. Changes in efficacy levels have been found to correlate significantly with changes in arousal.

5. Efficacy perceptions have been related to performance levels across a wide variety of psychological problems.

Critical reviewers of the theory have suggested that such effects may often be due to procedural shortcomings - uncritical reliance on self-report measures, subject's misperceptions of efficacy questions as probes of behavioral intentions, and experimenter demands. The unintended treatment and motivation effects produced in subjects when they complete self-efficacy assessments, has been identified as a probable source of experimental error. Bandura has successfully offered
defenses against some of these criticisms but definitive empirical tests remain to be done.

EXPECTATION THEORIES OF DEPRESSION

The major theories of depression ascribe to pessimistic expectations an important role in the etiology and maintenance of depression. (Beck, 1974; Abramson, Seligman & Teadale, 1978). In Beck's formulation, low expectations of future improvement and high expectations of failure are central aspects of depression. Abramson, Seligman and Teasdale (1978), in advancing a learned helplessness theory of depression, cite expectations of uncontrollable and negative future events as the prime cause of depression. Both of these theories and their respective treatment approaches will be described briefly in this review. Empirical evidence related to these "expectation" approaches to depression will also be examined.

EXPECTATION THEORIES OF DEPRESSION

Beck, (1979) theorizes that depression results from - and causes - a triad of troublesome cognitions: a negative view of the self; a tendency to negatively interpret ongoing events; and, most importantly for this discussion, a tendency to expect failure and continued difficulty. In Beck's view, it is an individual's conscious and unconscious dwelling on these cognitions which produces the low motivation, flattened affect, and physical symptoms typical of depressed people (Beck, 1979). The tendency to predict a negative future and to expect failure have
been found by Beck (1973) to be the most common symptoms of depression. Beck has defined this system of negative expectations as "hopelessness" and developed a Hopelessness Scale to measure it (Beck, Weissman, Lester & Trexler, 1974). A description of this scale is contained in a later paragraph. Beck suggests that treatment for depression must lead clients to discover their maladaptive (negative) cognitions, recognize their undesirable impact, and then work to replace them with more adaptive thoughts.

Abramson, Seligman and Teasdale (1978) suggest that depression derives from the perception that events are uncontrollable. In this view, it is perceptions and expectations of helplessness which produce the typical amotivational syndrome of depression. These perceptions are believed to result from previous experiences in which individuals learned to expect that outcomes were frequently uncontrollable (Abramson, et. al., 1978). Generalization from these earlier experiences is thought to produce broad, sometimes all-inclusive, perceptions of ineffectualness which then leads to amotivation and depression.

Abramson et. al. (1978) prescribe four treatment modes to be employed simultaneously, if possible, to reduce depression. Attempts should be made to increase patients' expectations of desired outcomes and to decrease their expectations of aversiveness of unavoidable outcomes and the desirability of unobtainable outcomes. Further effort should be directed toward changing patient expectations from uncontrollability to controllability. Finally, attributions for success should be made to either internal and stable external factors. Specific means to accomplish these objectives are outlined in the report from which these
comments are extracted (Abramson, et. al., 1978).

To summarize, the two theories of depression under discussion both emphasize the role of expectations in producing and maintaining depressive symptomology. In addition, both theories indicate that positive expectations are antithetical to depression.

EVALUATION THEORIES OF DEPRESSION

In contrast to these expectancy theories of depression are theories which attribute depression less to lowered expectations and more to reduced evaluations of, even positive, outcomes (Layne, 1980). Costello (1976) is a representative of this latter school of thought. Costello's view is that depressed people tend to be unmotivated because they devalue the potential rewards of their actions and not because (as learned helplessness theorists would have it) they have low expectations for achieving these outcomes. The contributions of Stein (1968) and Schildkraut (1965) offer some support for this view by suggesting that depressed persons, because of catecholamine deficiencies, are less able to experience pleasure. As a result of their reduced ability to enjoy, depressed people are thought to be less motivated toward rewards.

Lewinsohn's (1974) behavioral theory suggests that depression results when an individual's efforts have repeatedly failed to produce desired results. Individuals who have had this experience become depressed and experience an increased aversion to social disappointments and a tendency to devalue the potential rewards which might result from striving. Treatments derived from these theories aim primarily toward increasing patients' evaluations of potential rewards and toward
reducing the aversiveness of undesirable, but possible, outcomes.
Changes in these perceptions are thought to be useful in re-establishing
motivation and thus overcoming depression.

**EMPIRICAL EVIDENCE**

Empirical evidence appears to offer correlational support for the
expectancy theories presented above. A study involving college students
(Prociuk, Breen, & Lussier, 1976) utilized the Hopelessness Scale (Beck,
Weissman, Lester & Trexler, 1974) as a measure of expectations. This
scale consists of twenty statements about ambiguous future events and
conditions. Typical items include: "I don't expect to get what I
really want" and "The future seems vague and uncertain to me". Res­
pondents indicated whether these statements were true or false for them,
and their total score was taken to represent the level of their expecta­
tions. The Beck Depression Inventory (BDI; Beck, 1967) was admini¬
stered to measure levels of depression. This scale consists of 20 sets
of 4 items. Within each set, the different items express increasing
degrees of depressed ideation and affect. Respondents indicate which
item in each set best describes them at the present time. Correlational
analysis found a significant positive correlation between Hopelessness
and depression scores (r= .42, p .01).

Studies with patient populations have produced similar results.
Erickson, Post and Paige (1975) devised a Hope Scale which enabled them
to assign a "positive goal achievement expectation" to 50 hospitalized
psychiatric patients. The Hope Scale asks respondents how sure they are
that they will be able to achieve life goals which they have identified
as important - a satisfactory sex life, good relations with children, a
good job, etc. Correlational analysis indicates a significant negative
relationship (r = -0.41, p < 0.01) between "positive goal achievement expec-
tations" and depression as measured by MMPI.

Minkoff, Bergman, Beck & Beck (1973) studied 68 consecutive suicide
attempters admitted to a psychiatric hospital. The purpose of the
study was to determine what relationship existed between depression,
negative expectancies, and serious suicidal intent. Subjects were
administered the Beck Depression Inventory (Beck, 1967), the Generalized
Expectancy Scale (GES; Vatz, Winig & Beck, 1969) and the Suicidal Int-
tent Scale (SIS; Beck, Herman & Schuyler, 1973). The GES consists of
20 statements about the future which may be marked true or false. Scores
range from zero (no hopelessness) to 20 (maximum hopelessness). The
SIS is a 15-item scale which evaluates the seriousness of suicidal in-
tent through a combination of expert ratings and self-reports. Correla-
tional analysis indicated a significant, positive relationship between
depression and expectancy scores (r = 0.68). A stronger correlation
(r = 0.47, p < 0.001) was found between suicidal intent scores and expect-
ancy scores than between depression and suicidal intent scores (r = 0.26,
p < 0.05). This difference was found to be statistically significant
(p < 0.001). These results support a hypothesis that negative expecta-
tions are an even stronger predictor of serious suicidal intent than is
overall level of depression.

The preceding presentation of empirical evidence appears to sup-
port a tentative conclusion that negative expectations of ambiguous
future events and situations play a major role in depression. Items
in the Hopelessness Scale and the GES were reflective of imprecise and diffuse future expectations - eg. my future seems dark, things just won't work out the way I want them to, my past experiences have prepared me well for the future. The following presentations will describe studies which have examined the relationship between depression and subjects' expectations regarding concrete, immediate events and outcomes.

Miller and Seligman (1973) and Miller, Seligman and Kurlander (1975) found some significant differences between the expectations of depressed and non-depressed college age subjects. Subjects were asked first to keep a rolling ball bearing on a tilting flat platform and then to attempt to guess the next image to be projected in an apparently logical sequence of slide transparencies. Subjects' rate of successes on these tasks were covertly controlled by the experimenter in order to induce various levels of task success expectations. Experimenters also attempted to induce either "skill" or "chance" attributions. Identical success rates on the "skill" attribution tasks, produced greater increases in outcome expectations in non-depressed than in depressed subjects. No differences in expectations changes were found when successes were attributed to "chance".

Similar research with clinical populations has failed to show such differences between depressed and non-depressed patients on similarly concrete and immediate tasks (Abramson, Garber, Edwards & Seligman, 1978; Rizley, 1978; Smoler, 1978).

Reviewing depression and expectation studies, Layne (1980) concludes that depression has a greater impact on expectations of ambiguous situations than on expectations for routine or familiar situations.
Depressed persons tend to have relatively negative expectations primarily when the situations they are anticipating are novel or ambiguous. When regarding unambiguous or routine tasks, their expectations - and changes in their expectations - appear to be much like those of non-depressed people.

**SELF-EFFICACY EXPECTATIONS AND DEPRESSION**

A negative relationship is anticipated between efficacy expectations (Bandura, 1977) and depression. Expectation theories of depression (Beck, 1974; Abramson et. al., 1978) would predict that efficacy expectations in general - like other expectations - will be reduced in depressed individuals. In addition, these theories and some empirical results, lead to a prediction that efficacy expectations regarding novel or ambiguous tasks will be more effected by depression than will efficacy expectations regarding unambiguous or routine tasks. At least two studies have attempted to assess the nature of any relationship which may exist between efficacy and depression.

Moe and Zeiss (1982) designed a study to assess relationships between depression, social skills, and self-efficacy expectations regarding a future in vivo, performance of these social skills. These authors predicted that scores on the BDI (Beck, 1967) would be inversely correlated with efficacy scores. Efficacy scores reflected subjects' confidence in their ability to perform various social skills - demonstrate warmth, friendliness, trust, assertiveness, etc. - in three different kinds of social situations. Situations varied on dimensions of friendship, number of people, and quality of conversation. Results show a
zero order correlation between depression and self-efficacy scores. The mean BDI score in this sample was low ($x = 6.99$, $S.D. = 5.05$) and therefore these results may not be relevant to understanding efficacy/depression relations in more depressed individuals. The low correlation does offer some support to the theoretical contention that depression will least effect expectations regarding concrete and fairly unambiguous tasks - eg. common social skills.

Davis and Yates (1982) tested the relative effects on depression of self/response and response/outcome expectation manipulations. Self-efficacy theory (Bandura, 1977) predicts that depression will occur only when self/response expectations are low and when responses/outcome expectations (regarding a valued outcome) are high. However, learned helplessness theory (Abramson, et. al., 1978) suggests that depression will result from either low self-response expectations, low response/outcome expectations, or a combination of both.

One hundred-eight male and female undergraduates were employed in this study which required S's to solve anagrams. S's were divided into 6 groups, each of which received a manipulation designed to induce either high, medium or low levels of self/response expectations in combination with either high, medium, or low levels of response/outcome expectations. Subjects were simultaneously shown anagrams and a graph purporting to indicate a genuine "ease" score for each anagram. "Ease" scores shown to subjects were manipulated in order to induce desired levels of response/outcome expectations. Self/response and response/outcome expectations were measured repeatedly. Self/response expectations were assessed from subjects' responses on a 11-point scale which
asked how confident they were of their ability to solve each anagram (11 = total confidence). Response/outcome expectancies were assessed by S's estimates of the percentage of college students who could correctly solve each anagram (this estimate was based on information conveyed in the "ease" graph). Depression was measured with the Depression Adjective Checklist (DAC; Lubin, 1967) before and after the manipulations and after performance testing. Performance tests measured the time required to solve each anagram.

Results of this somewhat complex study indicate that performance deficits (longer time required to solve anagrams) and depressed affect (higher scores on the DAC) occurred only for men with low self/response and high response/outcome expectations. This finding is consistent with efficacy theory. However, because women were not similarly affected, this result offers only partial support for efficacy-based notions of depression.

SUMMARY

Empirical evidence generally supports the predictions for an inverse expectations/depression relationship which have been made by expectancy theories of depression. Expectations for ambiguous and novel events have been shown to be more affected by depression than are expectations for routine or unambiguous events and situations. Two studies of efficacy expectations and depression have produced inconclusive evidence regarding the predicted negative relationship between them.
CAREER UNDECIDENESS

Many individuals experience difficulty and delay in career decision-making. Students, re-entry women, career changers, and injured workers, as well as many other groups, frequently encounter persistent delay in deciding on a career direction. Considerable research has been directed toward understanding the phenomenon of undecidenedness and its causes. Young college students have been the most frequent subjects in this research but re-entry women (Slaney, Stafford & Russell, 1981) and adult students (Lowe, 1981) have also been investigated. Reviewers who have summarized research in the area (Harman, 1973; Holland and Holland, 1977; Slaney, 1980) have concluded that there exists no consistent empirical understanding of the correlates and causes of career undecidenedness. Recent research utilizing self-efficacy concepts and methods has found a relationship between indecision and perceived low self-efficacy for aspects of the career decision-making process (Taylor and Betz, 1983). The following literature review will survey the career indecision literature and examine this most recent new development.

CHARACTERISTICS OF UNDECIDED PERSONS

In an early attempt to study the nature of undecidenedness and undecided persons, Holland and Nichols (1964) developed an Indecision Scale. Beginning with an idiosyncratic pool of 273 activities, hobbies, school subjects and sports, the authors identified the fifteen items which best discriminated between the decided and undecided students in their sample. Separate lists for boys and girls were found to be necessary because of sex differences in their response preferences. These
lists become the Indecision Scales. A sample of 500 male and female Merit Finalists was studied. Personality, occupational interest, self-rating, and achievement data was collected for each individual.

Holland and Nichols found that boys with high indecision scores preferred social, persuasive, artistic, aggressive and prestigious activities and occupations. Furthermore, these boys tended to possess unusual potential for artistic and persuasive achievements. Results for girls showed some of these same trends but the relationships were smaller and more ambiguous.

Attempting to look beyond these correlations to the issue of etiology, Holland and Nichols suggested that students seem to be undecided for a variety of reasons – they may have a complex and creative outlook on the world or work, they may be confused, or they may be poorly informed about occupations.

This description of undecided students did not hold up well in Baird's (1968) attempt to cross validate the Indecision Scale. Baird studied two samples of college freshmen representing a wide range of academic ability. Results of this study indicated that the Indecision Scales (one for boys and one for girls) did not discriminate reliably between decided and undecided students. Rather than identifying undecided students, Baird concluded that the scales identified persons with a generalist disposition, with more competencies and a greater range of experiences than the norm. Baird suggested that the students previously identified by the Indecision Scales as being undecided, might simply be bright students who had not chosen a vocation because they were delaying in the face of several genuine alternatives. Thus,
Baird's results cast doubt on the conclusions previously drawn regarding the nature of undecided students.

In two extensive studies which followed this work, Baird (1969) again failed to find any significant difference between decided and undecided students. In the first of these studies, 6,289 male and 6,143 female college freshmen were administered a comprehensive assessment device (American College Survey - ACS). The ACS consists of 118 scales and ratings detailing students' interests, achievements, competencies, backgrounds, personalities, attitudes, self-descriptions, goals and aspirations. Four hundred fifty-one male and 295 females students said that they were undecided failing to find significant correlations between ACS descriptions and expressed undecidedness. Baird concluded that there was no reliable social or psychological difference between a student who is vocationally decided and one who is not.

In a second study, reported in the same monograph (Baird, 1969), the sample under study consisted of 59,618 college-bound students who took the American College Test (ACT) while in high school. Of this total, 13,695 students stated that they were undecided. Independent variables in the study included the ACT composite score, high school GPA and expressed goals for college achievement. Results of this study indicate that no difference in ACT scores or High School GPAs existed between decided and undecided students. The only difference of any possible significance concerned college ambitions - undecided students tended to emphasize developing their minds and intellectual abilities more than did decided students.
Ashby, Wall, and Osipow (1966) did find some differences between decided and undecided groups in their study of approximately 200 college freshmen. These students were divided into three groups on the basis of their vocational orientation - undecided, tentative, and decided. Measurable differences between these groups were sought on a variety of personality, background, and college performance characteristics. The most important conclusion, based on an analysis of data, was that the undecided group tended to be more dependent than the other groups, as measured by the Bernreuter Personality Inventory. These students seemed to be in need of extra support and encouragement in making and carrying out vocational decisions. On measures of academic achievement, no significant differences were found between decided and undecided students, although both these groups had higher academic achievement than did the tentative group.

Several researchers at the University of Kentucky have undertaken longitudinal studies of undecided and decided students. Elton and Rose (1971) studied college seniors to determine if there were differences, at graduation, in personality or ability between students who, as freshmen, had been classified as either decided or undecided. One thousand twenty-three male students, representing all the men in University of Kentucky graduating classes for 1969 and 1970, comprised the sample population. These subjects were divided into three groups: 1) those who said they were undecided as freshmen and who remained undecided as seniors; 2) those who were decided as freshmen but who had changed their decisions before graduation; and 3) those who had maintained their original career decision through college. Factor scores from the
Omnibus Personality Inventory (OPI), Form C, and the American College Test (ACT) Composite Score were the independent variables. Analysis of the data indicated that no statistically significant differences existed in personality or ability among the three groups.

In another study, Rose and Elton (1971) also compared mean OPI and ACT Composite Scores for two groups of students who had been undecided as freshmen. The purpose of this study was to find differences and similarities between undecided students who had left college and other undecided students who had persisted to graduation. The groups under study were composed of 290 vocationally undecided males who had entered the university in 1966. The 85 of these students who had persisted to graduation (Group I) were compared with a randomly selected group of 88 males, chosen from those who had left college before graduation (Group II). Undecided males in Group II were found to be significantly (p .01) more conforming, more masculine in their roles, and less academically able than members of the other group. In addition to finding these differences, the authors also found significant similarities in levels, academic aspiration, family income, and in high-school non-academic achievement.

Rose and Elton concluded from these results that "undecided students" are diverse and impossible to describe as a single type.

Also at the University of Kentucky, Harman (1973) studied undecided students who had requested and received vocational/educational counseling. As part of their counseling, all subjects (30 males and 33 females), completed the Strong Vocational Interest Blank (SVIB). Scores on the Omnibus Personality Inventory (OPI) and the American College
Test (ACT), taken by the students before college entrance, were also used in the study. A follow-up on these students was conducted within a year of their counseling. At follow-up, 13 of the males and 18 of the females were still undecided. Harman looked for differences between the decided and undecided groups on the independent variables.

Harman found no statistically significant differences on SVIB, OPI and ACT measures between females who were either decided or undecided after vocational counseling. For males, there was no significant difference between the groups on the ACT scores or SVIB scores. However, on the OPI, decided males scored significantly higher than did undecided males on the Response Bias Scale. Heist and Yange (1968) have described low scorers on this scale as having more difficulty in concentrating on a problem for a long time. Based on this interpretation, Harman suggests that undecided males may not be able to concentrate long enough to solve their vocational indecision problems.

Also using a longitudinal format, Lunneborg (1975) attempted to find predictors as well as correlates of undecidedness. This study involved 1,622 college juniors and sought to find what differences might exist in pre-college and college measures of personality, interests and achievement between Junior year students who had declared a major and those who had not. Data regarding high school GPA in various subjects, standardized test scores, planned college major (if any), college credits earned, and college GPA were known for each student. In total, 53 variables were known for each student.

Results of a correlational analysis indicate that undecidedness was positively correlated with college credits earned, college GPA,
outdoor interests, a planned major in engineering and business interests. Low academic achievement was found to be the best predictor of undecidedness. From these results Lunneborg derived a portrait of the undecided student as being less achieving in academics, less interested in outdoor activities, less interested in business, and possessing poorer English usage skills than his/her decided counterpart. However, Lunneborg concluded that even these differences were an inadequate basis for predicting future undecidedness for individuals.

Holland and Holland (1977) made a large-scale attempt to delineate differences between vocationally decided and undecided students. One thousand and five high school juniors and 692 college juniors were administered a battery of tests and inventories of personality, decision-making ability, interests and vocational attitudes. A total of 24 independent variables were measured for each subject.

Results of this study indicate that decided and undecided students are alike on most of the measured variables. Only measures of identity, vocational attitude, and artistic orientation produced statistically significant differences for both boys and girls in the high school sample. Only measures of interpersonal competency and identity showed differences between the college men and women. Only differences in the identity scale replicated across all four groups. Holland and Holland interpret these results to mean that undecided students typically lack a sense of clear identity. Such students are seen as having a shifting picture of themselves vis-a-vis occupational possibilities.

Summarizing and integrating these results into the existing literature on vocational undecidedness, Holland and Holland concluded that it
may be most useful to discard the notion of an "undecided type" of student. They suggest, instead, that the group of undecided students should be considered as comprised of at least three subtypes. One subtype would be those for whom there is not any sense of urgency about their undecideness. The authors found this condition to exist for 50 percent of their sample. They further suggest the existence of the two other subgroups, each comprising perhaps 25 per cent of the total undecided population. These two groups consist of those who are: 1) slightly to moderately or; 2) moderately to severely deficient in the following ways: immaturity, interpersonal competency, anxiety and alienation. Taken together, these traits create what the authors call an "indecisive disposition". They see this disposition as the probable result of a life history in which an individual has failed to achieve sufficient cultural involvement, self-confidence, tolerance for ambiguity, sense of identity, and knowledge of self and of the occupational environment.

Lowe (1981) studies a population of adult students to investigate the relationship between vocational interest differentiation and career undecidenedness. Some previous research (Cellini, Note 1; Holland and Holland, 1977; Kazin, Note 2; Lunneborg, 1975) had suggested that indecision might be a result of inadequate vocational interest differentiation. In this view, lack of interest differentiation would create and sustain undecidenedness by failing to provide a sufficient basis for career choice. In this study 54 female and 30 male adult students were administered the Career Decision Scale (CDS: Osipow, Carney, Winer, Yanico & Koschir, 1976; Osipow, 1980) and the 6 occupational scales of
the Vocational Preference Inventory (VPI; Holland, 1965). No significant correlation was found between levels of undecidedness and levels of interests differentiation.

Taylor and Betz (1983) investigated the relationship between expectations of career decision-making self-efficacy and career undecidedness. Viewing career decision-making as a multi-step process, Taylor and Betz devised a 50-item efficacy questionnaire asking respondents how confident they felt that they could perform these steps. A total of 346 college and university subjects participated in the study.

Using the Career Decision Scale (Osipow et al., 1976; Osipow, 1980) as the measure of undecidedness, Taylor and Betz found a significant negative correlation between levels of career decision-making self-efficacy and levels of undecidedness. Taylor and Betz interpret these results to suggest who lack confidence in their ability to complete decision-making tasks tend not to engage in those tasks and thus remain undecided.

MEASUREMENT OF VOCATIONAL UNDECIDEDNESS

Difficulty in establishing a satisfactory way to define and measure undecidedness has been one of the problems blocking research in this area. Undecidedness is not simply the polar opposite of decidedness, neither is it a condition which can be accurately assessed by a response to a yes/no criteria. Undecidedness, logically, is a continuum. However, in the absence of an instrument to adequately measure this continuum, researchers have generally used only two-point, polar systems. In the research reviewed here, four different measurement
methods have been employed: self-report, objective status judgments, subjective evaluation of self-report, essays, and questionnaires. Only questionnaires provide the continuum of scores necessary for effective correlational studies.

Holland and Holland (1977) in their study of high school and college juniors, used a self-report method for deciding whether a student was vocationally undecided. A student was considered decided if he/she responded "true" to the following statement: I have made a tentative occupational choice or I am currently employed fulltime. This method provides only two points on the resulting scale - decidedness and undecidedness.

Lunneborg (1975) used a student's prior selection of an academic major as the criteria of decidedness in a study of college juniors. This scale, too, has only two points. If a student had declared a major, he/she would be considered as decided. The reasoning underlying this method was that, in the American college System, the junior year is the traditional point at which a major must be selected. Not to have selected by this point would indicate - using the preceding logic - undecidedness. Results of this study indicated a meager correlation between student's interest differentiation (measured while they were still in high school) and his/her decision (or lack of a decision) regarding an academic major in the junior year of college.

Another means of developing yes/no criteria for undecidedness was employed by Hartman, Utz and Farnum (1979). In their study, subjective judgment of a written paragraph was used as the means to determine undecidedness. In this procedure, graduate students were asked to write
a statement regarding their career decision status. These statements were then read by master's degree students who were to decide whether the paragraph's author was decided or undecided. This method results in a two-point scale.

The Career Decision Scale (Osipow et al., 1976; Osipow, 1980) has been used as the measure of undecidedness by two investigators whose research is discussed in this review. For this reason, a brief description of this scale is presented here. The CDS consists of a questionnaire which measures 16 antecedents of educational and or vocational undecidedness. These items are derived from experience in interviewing vocational clients. Responses to these items are made on a scale of four (exactly like me) to one (not at all like me). Thus scores for Total Undecidedness can range from 16 (1 x 16) to (4 x 16), with 64 indicating the highest degree of undecidedness. In this way, the CDS provides a continuous scale for the representation of degrees of undecidedness.

Kazin (Note 2) used the CDS to measure undecidedness in three different groups of college students. In his study, Kazin was not concerned with scores for Total Undecidedness. Instead, the focus was on the relationship between differentiation and the four sources of undecidedness which are identified by the CDS - lack of structure and confidence, external barrier, approach-approach conflicts, and personal conflict. Results indicated that interest differentiation (based on data from the Vocational Preference Inventory) did vary with types of undecidedness. This finding suggested that interest differentiation might also vary with the degree of Total Undecidedness but Kazin's data do not permit
examination of this point.

Cellini (Note 2) did take advantage of the CDS's continuous scale for measuring undecidedness. However, in a study of college students, no significant correlation was found between a student's degree of Total Undecidedness and the student's degree of vocational differentiation as based on VPI data.

Recently, Slaney (1980) found the Occupational Alternative Question (OAQ), first used by Zener and Schnuelle (1972), to be useful as a 4-level index of decidedness. The OAQ consists of two parts: a listing of all occupations which are presently being considered and then an identification of the first choice occupation. If no choice has been made, respondents may indicate "undecided". Four possible response categories are created: a first choice with no alternatives; no first choice but several alternatives; no responses. Slaney (1978) found that responses to this question were quite stable over time. Slaney (1980) grouped college students into four groups based on their responses to the OAQ. Slaney found significant group differences for indecision as measured by the CDS (Osipow et. al., 1976; Osipow, 1980) and the Vocational Decision-Making Difficulty Scale (Holland and Holland, 1977).

SUMMARY

The preceding review appears to demonstrate, as have published reviews which have preceded it, the inconclusive state of research into the personality traits, interests, aptitudes, and performances of vocationally undecided individuals. As noted repeatedly in this review,
a variety of traits has been ascribed to this group by different researchers. However, there has been a uniform failure to replicate results and, thus, to reach agreement about the nature of undecided people. The most common conclusion, and perhaps the only one which is supported by the research evidence is that the group of undecided individuals - as well as the group of decided individuals - should be considered to be heterogenous and generally in good psychological health.

Most of the research considered here has been concerned with high school and college students. Studies using very large samples have proved no more and no less effective than have studies employing smaller samples. Longitudinal studies have not proved to be more consistent or definitive than have present-time studies. At this time, efficacy approaches appear to offer the best apparent hope for an end to this stalemate. Efforts to measure levels of undecidedness have produced some useful instruments with diagnostic and treatment evaluation capabilities.
CHAPTER 3

METHOD

PARTICIPANTS

Twenty disabled industrial workers, each of whom had experienced a disabling work-related accident, were studied. All but three of the participants were men. Mean age was 37 years with a range from 21-50. Most participants had not graduated from high school and mean reading skills were at the sixth-grade level.

Participants were members of 4 consecutive patient groups undergoing treatment at a rehabilitation center for the chronic pain which resulted from their injuries. Ninety percent had suffered low back injuries, forty percent had surgeries. Many used medications for pain and muscle relaxation. As an outcome of their injuries and the resulting pain, these participants had been unable to return to their previous jobs or occupations. Duration of disability ranged from 6 months to almost five years. Mean scores on the Beck Depression Inventory were 9.85 at admission. Scores of 9 or below are indicative of a non-depressed state (Miller & Seligman, 1973).

Participants were from "blue" collar occupations and represent manufacturing, construction, trucking, hospital, restaurant, and service industries. Realistic, Investigative and Conventional were the most common Holland codes found in their Career Assessment Inventories. Most participants expressed low confidence that they would be physically able to return to their previous occupations. At admission, very few
were able to identify an occupation which they were sure they would be able to do after discharge.

Career decision-making is a complex social process for these individuals. Other people are inextricably and powerfully involved in participants' decision-making because of their power to: set physical limitations for employment (physicians and physical therapists); approve or disapprove of reemployment or training goals (Field Workers); continue or discontinue disability compensation (Field workers' Courts); or reject a disabled job applicant (employers). High unemployment rates among non-disabled workers were a source of discouragement to the participants.

Most participants were receiving disability-based compensation. While such payments are probably a common disincentive to actual job-seeking after discharge they appeared to have a negligible effect on participants' willingness to assess their skills and occupational preferences during the treatment program. Their work histories suggest that most participants had previously been able to make satisfactory work adjustments and all expressed a desire to "get back to work".

TREATMENT

Each participant was involved in an intensive multi-disciplinary rehabilitation program over a six-week period. The overall goal of this program was to prepare participants for expeditious return to gainful employment. The treatment environment is intended to be supportive, concerned, enabling, goal-oriented, and serious. Staff members are trained to ignore pain behaviors and to reinforce in participants a
belief that pain alone is not a reason for unemployability. Staff
members also promote a belief that proper pain management skills and
attitudes as described by Sternbach (1978) and Fordyce (1976), will
permit satisfactory and satisfying reemployment, though probably in a
new occupation or job.

The treatment program attempts to graduate individuals who:

- Are capable of managing and tolerating chronic pain for a
  full work day.
- Are physically reconditioned and trained in body mechanics
  and back conservation.
- Possess feasible vocational goals or are prepared to make
  plans based on realistic assessments of their residual
  (post-injury) skills and abilities.
- Have confidence in their ability to develop, with the
  assistance and concurrence of their Field Worker, a reem-
  ployment plan which will probably lead to a "good job".
- Have the skills required for successful job seeking and
  interviewing.

During treatment most of the participants lived in local hotels
because commuting distances from home were prohibitive. At admission,
participants became members of a 4-6 member Treatment Group and received
most of their treatments with this group. These arrangements, combined
with common mealtimes, provided participants with many opportunities
for social interaction and discussion. Participants report that they
enjoyed and profited from this extended association with others who had
similar experiences with pain, disability, role change, unemployment
and frustration.

A week in treatment provides 35 hours of: strength and tolerance building in physical and occupational therapy areas; instruction and practice in relaxation, pain management and psychological self-management skills (assertion, goal setting, handling anger); psychological counseling aimed at minimizing personal and family problems, reinforcing pain management practices, and promoting vocational striving; biofeedback practice to promote effective relation; dietary consultations to promote weight loss; medication reduction/elimination programs; and group instruction in a Career Decision-Making Course.

Physical capacity evaluations assess strength, fitness, flexibility, and endurance at admission and discharge. Progress toward physical goals identified as important for reemployment is carefully monitored and charted. By this means, participants are kept aware of discrepancies between their actual physical capacities and the physical demands of their occupations. Tests of psychological adjustment, academic achievement, vocational aptitude, and career interests are also administered and results are communicated to participants.

Participants attend the meetings in which treatment staff discuss their progress and problems with participants' Field Workers. Through these meetings participants are able to observe, evaluate and participate in the development of plans for job seeking, vocational training, further physical rehabilitation and general post-discharge support.

The Career Decision-Making Course consists of four, forty-five minute sessions each week for five weeks (admission processing consumes most of the first week of the six-week program). Participants attend
the course with the other members of their Treatment Group. The purposes of the course, which were communicated only after pre-testing, are to:

- Develop vocational alternatives if return to former occupations is not possible.
- Provide a sound basis for career decision-making through a self-assessment of skills, interests, financial and psychological needs.
- Provide practice in using occupational information resources.
- Encourage in participants a belief that they can, with effort, identify achievable new vocational goals.
- Build confidence in participants that they can qualify, or prepare for, a new occupation.
- Teach effective job seeking and job interviewing skills and promote confidence in their use.

The two instructors (one of whom taught 3 of the four groups included in this study) were staff members with more than three years of experience in teaching career planning and decision making to handicapped individuals. Instructors did not expect most participants to make new career decisions during treatment, but rather to make progress toward readiness for vocational decision-making. Instructors expected that most participants could be ready for vocational decisions within 6 months. A fundamental goal of the course was to restore and bolster participants' evaluation of their labor market value - their vocational self-esteem - to improve their ability to successfully "sell" themselves to employers after leaving the program.
The first half of the course focuses on the participants and their work histories. This treatment draws heavily on the career planning procedures developed by Crystal and Bolles (1974) and Bolles (1976) and the Theory of Work Adjustment (Dawis, Lofquist & England, 1964; Dawis, Lofquist & Weiss, 1968). Exercises are provided which develop, for each participant, a list of his/her realistic self-assessments of vocationally relevant: personal qualities, technical skills, financial needs, psychological work needs (independence, recognition, friendly co-workers, etc.); physical limitations; and preferred working conditions. Following this listing, a prioritization produces, for each participant, a list of the ten most important "things" desired in the next job. A typical list might consist of: $8 per hour, safe environment, use my mechanical skills, have job security, solve problems, work indoors, have friendly co-workers, make use of my abilities, and keep me busy most of the time. Participants were instructed that they almost certainly could not get all of these things in their next job, but that a job which would meet the most important of these needs would probably be a good choice.

The second half of the course focuses on the labor market and participants' plans to return to it. Participants brainstormed in a group to identify for each other possible occupations which would meet some or most of their desired job specifications. From the brainstorming, and from sessions in which they studied newspaper want-ads, participants developed a list of 2 or 3 occupations which looked "interesting". Instruction and practice was then given in the use of printed and community resources which can be used to gain insight into job demands,
labor market forecasts, and training requirements. The last part of the program consisted of didactic instruction in job seeking skills (networking, utilization of community resources, structuring the search) and practice in job interviewing. Interviewing practice employed videotape playback procedures to enhance learning.

At the end of their six-week program subjects generally ranked this course as being the second or third most valuable part of their rehabilitation program - physical therapy was first for nearly all participants and self-management groups were a common second choice.

ASSESSMENT

Participants were tested one-to-two weeks prior to admission (via telephone), at admission, and immediately prior to discharge. The Career Decision Scale (Osipow et al, 1976; Osipow, 1980) and the Experimental Self-efficacy Scale (ESES: designed for this study and derived from the CDS) were administered orally at all three measurement points. Oral administration was selected because reading difficulties were anticipated in this poorly educated population. The Beck Depression Inventory (BDI; Beck, 1967) was administered only at admission and discharge due to its unsuitability for administration via telephone. Language in the BDI was judged to be simple and common enough for all participants to read independently.

Demographic data regarding age, duration of disability, and surgical history was collected.

Additional descriptive information about participants was obtained by asking them, at admission and discharge, to indicate how confident
they were that, within 6 months, they would be ready and able to:

- Return to their previous job.
- Return to their previous occupation with another employer.
- Work full-time in a sedentary, light, or medium-heavy job.
- Convince an employer to hire them instead of a person who had not been injured.

Participants were instructed to use the same 10-point scale as employed with the ESES. These employment-related expectations are not assessed by the CDS or the ESES because those instruments pertain to career decision-making rather than to employment readiness. Change on these items from admission to discharge, was expected to provide a potentially useful supplementary and/or contrasting index of treatment effectiveness.

**INSTRUMENTS**

**Career Decision Scale.** (Osipow, Carney, Winer, Yanico & Koschir, 1976; Osipow, 1980). This instrument consists of 18 statements. The first two statements ask respondents to rate the degree to which they are presently career-decided. The last 16 items ask respondents to rate various reasons for their undecidedness. Respondents indicate, on a four-point scale, how well each statement describes an aspect of their undecidedness. A rank of 4 corresponds to "exactly like me" while a ranking of 1 corresponds to "not at all like me". The sum of the last 16 items are used as the index of Total Undecidedness. Higher scores indicate more undecidedness.

Osipow, Carney & Barak (1976) studied the reliability of the CDS using an undergraduate population at The Ohio State University. Test-retest correlations for the total indecision scale were .90 and .82 for
two different samples.

The construct validity of the CDS has been partially established. Osipow, Carney and Barak (1976) compared pre- and post-treatment scores for a total of 94 undergraduates in two educational/vocational exploration groups. In both cases, post-testing indicated a significant reduction in the Total Undecidedness score. Sutera (1977) found that undergraduates in a sixteen-week residential career planning program. Concurrent validity was indicated by the fact that students' scores on the Career Maturity Attitude Scale (Crites, 1973) were significantly increased during the same period.

Carney (1977) tested the CDS on another similar undergraduate population involved in a career exploration class. Pre- and post-test comparisons indicated that the group total score on the CDS was significantly reduced upon completion of the course.

A recent study by Hartman, Utz & Farnum (1979) attempted to determine the instrument's utility as a measure of undecidedness in graduate students. They found that the instrument performed very much as it had with undergraduates. Test-retest reliability ($r=.61$), over a one week period, was judged to be marginally acceptable. Pearson correlations of $r=.43$ ($p<.01$) and $r=.44$ ($p<.01$) were found in validity studies which compared CDS scores with clinical assessments of respondents' expressed vocational undecidedness.

Recently published research (Fretz & Leong, 1982) appears to offer additional support for construct validity. In that study of a college population it was found that higher scores for Total Undecidedness were significantly predictive of participants' dissatisfaction with the
process and results of a very brief career intervention. High scores were also significantly predictive of post-treatment incongruence between measured and expressed vocational interests.

Two separate factor analyses of the CDS (Kazin, 1976; Osipow, Carney & Barak, 1976) agreed on four distinct factor groupings of the 16 items. These factors are: Need for Structure and Confidence; Perceived External Barriers; Positive Choice Conflict; Personal Conflict.

**Experimental Self-Efficacy Scale.** The ESES was constructed for this study and is shown in Appendix A. Items are derived from the CDS. This instrument consists of 16 items intended to reflect the same career decision-making tasks as the 16 CDS items from which they are derived. A comparison of CDS and ESES items is provided in Appendix B. The ESES asks respondents: "How confident are you that, within 6 months, you will be ready and able" to perform each of the specific career decision-making tasks? Participants respond in writing to these items on a scale ranging from 1-10, on which a score of 1 indicates "no confidence", scores of 2, 3 or 4 indicate "very little confidence", 5 and 6 indicate "some confidence", 7, 8 or 9 indicate "much confidence" and 10 indicates "total confidence". Potential range of ESES scores is 16-160.

The 6-month time frame for decision-making was chosen because it would encompass the treatment period and a post-treatment period of assessment and preparation. Given the complex task of choosing a new occupation which will be compatible with physical limitations, pain endurance and a high-unemployment job market, 6 months was judged to be a reasonable time parameter for career decision-making.
Test-retest correlation for the total ESES was found to be significant (r = .90 after a four-day interval) in a sample of 34 injured workers not included in the treatment groups. No validity data are available.

**Beck Depression Inventory** (Beck, 1967). The BDI (Appendix C) consists of 21 groups of depressive symptoms and attitudes. Each group consists of 4 graded statements ranked 0-3 reflect their increasing severity. Respondents indicate which statement within each group most accurately reflects their current condition. Scores on the BDI may range from 0-63, with higher scores reflecting more depression. Scores above 9 indicate significant depression (Miller & Seligman, 1973).

This instrument was initially designed for, and tested on, a clinical psychiatric population. Split-half reliability was found to be significant (r = .86) (Beck, 1967). Concurrent validity, assessed by comparisons with clinical evaluations and the MMPI-D Scale, was found to be significant (Beck, 1967). Changes in BDI scores were found to correlate significantly with changes in clinical evaluations.

Miller and Seligman (1973) were early users of the BDE to assess depression in non-clinical populations. They began a convention, still in use (Moe and Zeiss, 1982), by which participants with BDE scores of 9 or less are classified as being non-depressed.

**HYPOTHESES**

1. Treatment will produce significant changes in both career decision-making self-efficacy and decidedness. Efficacy changes will be larger.

   - Repeated measures ANOVA will be used to test this
hypothesis.

2. Scores for career decision-making self-efficacy at admission will be significant predictors of career undecidedness scores at discharge.
   - Multiple regression procedures will be used to test this hypothesis.

3. Scores for career undecidedness at pre-admission will be significant predictors of change in career decidedness from admission to discharge.
   - Multiple regression procedures will be used to test this hypothesis.

4. Career decision-making self-efficacy scores at discharge will correlate positively and significantly with the "Need for Structure and Confidence" subscale of the CDS at discharge.
   - Correlation analysis will be used to test this hypothesis.

5. Duration of disability and participant age will correlate significantly and negatively with changes in efficacy and undecidedness scores.
   - Correlational analysis will be used to test this hypothesis.

6. Changes in depression, from admission to discharge, will correlate significantly with changes in undecidedness and changes in efficacy.
   - Correlational analysis will be used to test this hypothesis.
CHAPTER 4

RESULTS

Analysis of data indicates that treatment produced significant reductions in both career undecision and depression. No significant changes were found for efficacy. Scores for career decision-making self-efficacy at admission failed to contribute significantly to the prediction of undecision scores at discharge. However, undecision scores at admission did contribute significantly to prediction of change in undecision from admission to discharge. Participant age and duration of disability did not correlate significantly with changes in either efficacy or depression. Changes in depression correlated moderately with changes in undecision but not with changes in efficacy. Post hoc analyses indicate that significant changes in undecision and depression occurred only in that group of participants with no history of back surgery. These and other results, and the analytical procedures which produced them, will be discussed in the following paragraphs.

RESULTS OF HYPOTHESIS TESTING

Hypothesis 1. Partially Supported
- Treatment will produce significant changes in both career decision-making self-efficacy and career undecision. Efficacy changes will be larger.
Table 1 shows the results of the two way repeated measures ANOVA procedure used to test this hypothesis. Results indicate that decision scores did change significantly from admission to discharge \((p < .01)\). However, no significant change for efficacy scores was found.

**Hypotheses 2. Unsupported**

Scores for career decision-making self-efficacy at admission will be significant predictors of career undecidedness scores at discharge.

Table 2 shows the results of the multiple regression procedure which was used to test this hypothesis. Results indicate that efficacy levels, whether measured at pre-admission or admission, were not significant predictors of undecidedness scores at discharge.

**Hypothesis 3. Supported**

Scores for career undecidedness at pre-admission will be significant predictors of change in career undecidedness from admission to discharge.

Table 3 shows the results of the multiple regression procedures which were used to test this hypothesis. Results indicate that pre-admission scores for career undecidedness contributed significantly to
**TABLE 1**

ANOVA Table for Treatment Effects on

Undecidedness and Efficacy

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undecidedness (CDS)</td>
<td>1</td>
<td>616.23</td>
<td>10.84**</td>
</tr>
<tr>
<td>Error</td>
<td>19</td>
<td>56.86</td>
<td></td>
</tr>
<tr>
<td>Efficacy (ESES)</td>
<td>1</td>
<td>3.60</td>
<td>.02</td>
</tr>
<tr>
<td>Error</td>
<td>19</td>
<td>227.60</td>
<td></td>
</tr>
</tbody>
</table>

**p<.01.
<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Regression Coefficient</th>
<th>t-value&lt;sup&gt;a&lt;/sup&gt;</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Self-Efficacy Scale - Pre-admission</td>
<td>-.04</td>
<td>-.20</td>
<td>.83</td>
</tr>
<tr>
<td>Experimental Self-Efficacy Scale - Admission</td>
<td>.30</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Beck Depression Inventory - Change&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.15</td>
<td>-.24</td>
<td>.81</td>
</tr>
</tbody>
</table>

<sup>a</sup>Degrees of Freedom for t-values were 3, 16.

<sup>b</sup>"Change" is the difference between admission and discharge scores.
the prediction of changes in career undecidedness (p < .05).

**Hypothesis 4. Unsupported**

- Career decision-making self-efficacy scores at discharge will correlate positively and significantly with the "Need for Structure and Confidence" subscale of the CDS at discharge.

Values of the Pearson product-moment correlations are shown in Table 4. A small, negative correlation (r = -.22) was found between efficacy scores and scores on the "Need for Structure and Confidence" subscale.

**Hypotheses 5. Unsupported**

- Duration of disability and participant age will correlate significantly with changes in efficacy and undecidedness. Correlations will be positive for efficacy changes and negative for undecidedness changes.

Table 4 shows the results of this correlational analysis. Results indicate no significant correlations between duration of disability or participant age and changes in efficacy or undecidedness.

**Hypothesis 6. Partially Supported**

- Changes in depression, from admission to discharge, will be significant and will correlate significantly with, changes in undecidedness
TABLE 3

Regression Analysis for the Prediction of Change in Career Undecidedness From Admission to Discharge

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Regression Coefficient</th>
<th>t-value&lt;sup&gt;a&lt;/sup&gt;</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undecidedness at Pre-Admission (CDS)</td>
<td>.43</td>
<td>2.20</td>
<td>.04</td>
</tr>
<tr>
<td>Age</td>
<td>-.36</td>
<td>-1.33</td>
<td>.20</td>
</tr>
<tr>
<td>Duration of Disability</td>
<td>-.18</td>
<td>-1.47</td>
<td>.16</td>
</tr>
</tbody>
</table>

<sup>a</sup>Degrees of Freedom for t - values were 3,16
TABLE 4
Interrelationships of Age, Duration of Disability Change Scores\textsuperscript{a}, and Efficacy Scores at Discharge

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>1.0</td>
<td>-.04</td>
<td>-.24</td>
<td>.03</td>
<td>.07</td>
<td>-.11</td>
<td>.27</td>
</tr>
<tr>
<td>2. Duration of Disability</td>
<td>1.0</td>
<td>-.23</td>
<td>-.14</td>
<td>-.28</td>
<td>-.21</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>3. Change\textsuperscript{a} in Undecidedness (CDS)</td>
<td>1.0</td>
<td>.08</td>
<td>.43</td>
<td>-.20</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Change\textsuperscript{a} in Efficacy (ESES)</td>
<td>1.0</td>
<td>-.11</td>
<td>.38</td>
<td>-.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Change\textsuperscript{a} in Depression (BDI)</td>
<td>1.0</td>
<td>-.47</td>
<td>-.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Efficacy Expectations (Discharge)</td>
<td>1.0</td>
<td>-.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Need for Structure and Confidence (Discharge)\textsuperscript{b} \hspace{1cm} 1.0

Note: Values shown are \( r \) values produced by Pearson product-moment correlations.

\textsuperscript{a}"Change" is the difference between admission and discharge scores.

\textsuperscript{b}"Need for Structure and Confidence" is Factor 1 of the Career Decision Scale at discharge.
and efficacy.

A T-test procedure was used to assess the significance of depression changes due to treatment. Changes were found to be significant \( p < .005 \). Table 4 shows results of the correlational analysis which tested the relationship between changes in depression and changes in undecidedness and efficacy. Results indicate non-significant covariation between changes in efficacy and changes in depression. A moderate correlation \( r = .43 \) was found for changes in depression and changes in career undecidedness.

OTHER RESULTS

Instruments

Table 5 shows means, standard deviations and ranges for the Career Decision Scale, Experimental Self-efficacy Scale, and Back Depression Inventory.

---
Insert Table 5 About Here

---

Experimental Self-Efficacy Scale. Plotting of ESES scores (Figure 1) indicates an adequate distribution of scores between maximum and minimum levels. This distribution suggests that no "ceiling effect" was operating. The potential range of scores is 16-160. Actual range of scores was 91-160 at pre-admission, 57-160 at admission and 90-154 at discharge. At admission, only 3 participants scored above 140 while only 5 participants scored above 140 at discharge. The median score at discharge was 125. Mean score for each item was 7.52 at admission
TABLE 5
Means, Standard Deviation and Ranges
for Test Instruments

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>S.D.</th>
<th>Min.(^a)</th>
<th>Max.(^a)</th>
<th>Potential Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS(^b) - Pre-Admit</td>
<td>37.05</td>
<td>10.86</td>
<td>17</td>
<td>54</td>
<td>16-64</td>
</tr>
<tr>
<td>CDS - Admit</td>
<td>38.70</td>
<td>9.72</td>
<td>18</td>
<td>54</td>
<td>16-64</td>
</tr>
<tr>
<td>CDS - Discharge</td>
<td>30.85</td>
<td>11.01</td>
<td>16</td>
<td>58</td>
<td>16-64</td>
</tr>
<tr>
<td>ESES(^c) - Pre-Admit</td>
<td>126.30</td>
<td>19.04</td>
<td>91</td>
<td>160</td>
<td>16-160</td>
</tr>
<tr>
<td>ESES - Admit</td>
<td>120.95</td>
<td>23.99</td>
<td>57</td>
<td>160</td>
<td>16-160</td>
</tr>
<tr>
<td>ESES - Discharge</td>
<td>121.55</td>
<td>21.87</td>
<td>90</td>
<td>154</td>
<td>16-160</td>
</tr>
<tr>
<td>BDI(^d) - Admit</td>
<td>9.85</td>
<td>5.50</td>
<td>0</td>
<td>24</td>
<td>0-63</td>
</tr>
<tr>
<td>BDI - Discharge</td>
<td>6.55</td>
<td>4.58</td>
<td>0</td>
<td>19</td>
<td>0-63</td>
</tr>
</tbody>
</table>

\(^a\)Actual minimum and maximum values

\(^b\)CDS - Career Decision Scale

\(^c\)ESES - Experimental Self-Efficacy Scale

\(^d\)BDI - Beck Depression Inventory
and 7.59 at discharge (10 is maximum possible score).

Figure 1

Range, Frequency and Distribution Plot for Efficacy (ESES) Scores at Admission

Career Decision Scale. Plotting of CDS scores (Figure 2) indicates an adequate distribution of scores between maximum and minimum levels. The potential range of scores is 16-64. Actual range of scores was 17-54 at admission, 16-58 at discharge. Mean scores were 37.05 at pre-admission, 38.7 at admission and 30.85 at discharge. Mean levels of undecidedness at pre-admission and admission are higher than those found by recent investigators who have used the CDS in assessing college populations. Fretz and Leong (1982) found a mean score of 26.73 while Taylor and Betz (1983) found a mean of 29.4. Participants in the present study evidenced higher mean scores, after treatment, than did college subjects as they entered career intervention treatments.

Figure 2

Range, Frequency and Distribution Plot for Undecidedness Scales at Admission
Beck Depression Inventory. Actual range of scores (0-24 at admission and 0-19 at discharge) extended only over the low end of the potential range. Potential range of scores is 0-63. Mean depression level at admission (9.85) was only marginally above the cut-off score of 9 which researchers have commonly used to separate depressed and non-depressed subjects (Miller and Seligman, 1973). The mean discharge score of 6.55 indicates that participants were non-depressed at discharge.

Post Hoc Analyses

Of the 20 subjects in this study, 8 had undergone back surgery, 10 had back injuries but no surgery, and 2 were not back-injured. Age and duration of disability were very similar for the Surgery and No Surgery groups. A comparison of the Surgery and No Surgery groups was conducted in anticipation that surgical history might provide a useful grouping of participants. Table 6 shows means and standard deviations for demographics (age, duration of disability) and for CDS, ESES and BDI scores.

Discriminant analysis indicated that change scores for undecidedness were significantly different between the two groups (p<.05) with the No Surgery group demonstrating greater reduction in career undecidedness. No significant group differences were found for changes in efficacy or depression. Table 7 shows results of this discriminant analysis.

A classification matrix procedure indicates (Table 8) that differences in group mean change scores for career undecidedness are significant enough that they can be used to classify No Surgery Participants with 90% accuracy and Surgery Participants with 75% accuracy.
<table>
<thead>
<tr>
<th></th>
<th>No Surgery</th>
<th></th>
<th>Surgery</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{X}$</td>
<td>S.D.</td>
<td>$\bar{X}$</td>
<td>S.D.</td>
</tr>
<tr>
<td>Age</td>
<td>37.10</td>
<td>8.55</td>
<td>36.75</td>
<td>8.17</td>
</tr>
<tr>
<td>Duration of Disability</td>
<td>26.70</td>
<td>16.01</td>
<td>29.87</td>
<td>20.14</td>
</tr>
<tr>
<td>Undecidedness(^a) - Admit</td>
<td>37.50</td>
<td>8.99</td>
<td>40.24</td>
<td>12.06</td>
</tr>
<tr>
<td>Undecidedness(^a) - Discharge</td>
<td>24.20</td>
<td>6.89</td>
<td>38.12</td>
<td>11.81</td>
</tr>
<tr>
<td>Efficacy(^b) - Admit</td>
<td>122.39</td>
<td>22.64</td>
<td>116.25</td>
<td>28.88</td>
</tr>
<tr>
<td>Efficacy(^b) - Discharge</td>
<td>123.10</td>
<td>20.28</td>
<td>119.75</td>
<td>27.47</td>
</tr>
<tr>
<td>Depression(^c) - Admit</td>
<td>10.70</td>
<td>7.28</td>
<td>8.25</td>
<td>2.71</td>
</tr>
<tr>
<td>Depression(^c) - Discharge</td>
<td>7.80</td>
<td>5.43</td>
<td>5.75</td>
<td>3.65</td>
</tr>
</tbody>
</table>

\(^a\)Career Decision Scale  
\(^b\)Experimental Self-Afficacy Scale  
\(^c\)Beck Depression Inventory
### TABLE 7

Results of Discriminant Analysis of Change Scores\(^a\)

for Surgery and No Surgery Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Surgery</th>
<th></th>
<th>No Surgery</th>
<th></th>
<th>(F^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(\bar{X})</td>
<td>S.D.</td>
<td>(\bar{X})</td>
<td>S.D.</td>
<td></td>
</tr>
<tr>
<td>Undecidedness (CDS)</td>
<td>-2.13</td>
<td>11.01</td>
<td>-13.30</td>
<td>8.83</td>
<td>5.76*</td>
</tr>
<tr>
<td>Efficacy (ESES)</td>
<td>-3.50</td>
<td>27.46</td>
<td>.70</td>
<td>18.27</td>
<td>.06</td>
</tr>
<tr>
<td>Depression (BDI)</td>
<td>-2.50</td>
<td>4.31</td>
<td>-2.90</td>
<td>3.96</td>
<td>.04</td>
</tr>
</tbody>
</table>

\(^a\) "Change scores" refers to change from admission to discharge.

\(^b\) Degrees of Freedom for \(F\)-values were 1,16.

\(* \ p < .05 \)
Table 8

Classification Matrix For Surgery and No Surgery Groups Based on Change in Undecidedness Scores

<table>
<thead>
<tr>
<th>Actual Group</th>
<th>Predicted Group</th>
<th>Surgery</th>
<th>No Surgery</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Surgery</td>
<td>6</td>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>No Surgery</td>
<td>Surgery</td>
<td>1</td>
<td>9</td>
<td>90</td>
</tr>
</tbody>
</table>

After the discriminant analyses had indicated significant group differences, the original hypotheses for the study were tested in both groups. This analysis was undertaken to determine whether these hypotheses might prove more accurate in one or the other of these groups than they had for the entire participant population. Results indicate that the original hypotheses proved no more accurate in predicting outcomes within Surgery and No Surgery groups than for the participant population as a whole.

Analysis of data for the No Surgery group indicates a significant decrease in undecidedness ($p < .01$) and no significant change in efficacy (Table 8). No significant change on either variable was found for the Surgery group (Table 9). T-tests indicate a significant decrease in depression ($p < .05$) for the No Surgery group and no significant decrease in the Surgery group.

Insert Tables 9 and 10 About Here
TABLE 9

MANOVA Table for Treatment Effects on Undecidedness and Efficacy - No Surgery Group

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undecidedness (CDS)</td>
<td>2</td>
<td>445.90</td>
<td>10.16**</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>43.90</td>
<td></td>
</tr>
<tr>
<td>Efficacy (ESES)</td>
<td>2</td>
<td>50.63</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>117.93</td>
<td></td>
</tr>
</tbody>
</table>

**p < .01.
TABLE 10

MANOVA Table for Treatment Effects on

Undecidedness and Efficacy - Surgery Group

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undecideness (CDS)</td>
<td>2</td>
<td>32.04</td>
<td>.62</td>
</tr>
<tr>
<td>Error</td>
<td>6</td>
<td>51.85</td>
<td></td>
</tr>
<tr>
<td>Efficacy (ESES)</td>
<td>2</td>
<td>318.50</td>
<td>1.23</td>
</tr>
<tr>
<td>Error</td>
<td>6</td>
<td>258.02</td>
<td></td>
</tr>
</tbody>
</table>
Multiple regression analysis indicates that duration of disability was a significant predictor of change in undecidenedness in the No Surgery group. This finding had been hypothesized, but not found, for the entire treatment population. No significant predictor of decidedness change was found in the Surgery group. Correlational analysis indicates that neither group produced data in support of hypotheses regarding predicted relationships of efficacy, undecidenedness, age and duration of disability.
CHAPTER 5
DISCUSSION

SUMMARY OF RESULTS

Analysis of outcome data indicates that the Career Decision-Making Course produced significant decreases \((p < .01)\) in career undecidedness for those participants with no surgical history \((N=10)\). This result suggests that treatment was at least partially successful in achieving its primary purpose. Data also indicate that depression levels for participants without surgical histories were significantly lower at discharge than at admission \((p < .05)\). This change indicates that the overall Pain and Stress Treatment Program (including the career course) produced change on this important dimension of general rehabilitation.

Participants with histories of corrective back surgery \((N=8)\) demonstrated no significant change for either undecidedness or depression. The differential effect of treatment on Surgery and No Surgery groups was not predicted and was identified only in post hoc analyses. A possible explanation of this outcome is that participants with histories of back surgery perceive themselves as being more disabled and thus are less susceptible to influence by a career intervention and more entrenched in their depression.

In contrast to the partially positive results for change in undecidedness data indicate that treatment produced no significant change in levels of career decision-making self-efficacy in either Surgery or No
Surgery groups. In addition, efficacy levels at pre-admission were found to be of no value in predicting the decreases in undecidedness which did occur. These results seem to suggest that efficacy expectations as measured by the ESES are resistant to the type of treatment provided in this study and that, in any event, they are not related to changes in undecidedness as measured by the CDS.

The immediately following paragraphs will relate these and other outcome results to the experimental predictions. A subsequent discussion will present alternative explanation for these results and point toward directions for future research.

Data produced in this study offer partial support for 3 of the 4 hypotheses which predicted performance characteristics of the undecidedness variable. As predicted, data indicate that undecidedness scores were decreased by treatment ($p < .05$), undecidedness scores at pre-admission were significant predictors of undecidedness scores at discharge ($p < .05$), and changes in undecidedness were moderately correlated ($r = .43$) with change in undecidedness. Contrary to predictions, changes in undecidedness were found to correlate only marginally with participant age ($r = .03$) and duration of disability ($r = -.14$).

Outcome data offer no support for the 5 hypotheses which predicted performance characteristics of the career decision-making self-efficacy variable. Contrary to predictions, efficacy levels did not change with treatment and efficacy scores at pre-admission were not significant predictors of undecidedness at discharge. The failure of efficacy scores to change with treatment precluded meaningful tests of predictions that changes in efficacy would correlate significantly with changes in
depression or with participant age and duration of disability. Finally, efficacy scores at discharge did not correlate significantly with participants' measured need for decision-making structure and confidence.

Interpretation of experimental results relating to original hypotheses is made difficult, or impossible, because of problems encountered with instruments, participants and methodology. The validity and adequacy of the ESES are not established and it is not clear whether, or how well, the ESES actually measures important aspects of career decision-making self-efficacy. Expectations that ESES scores would predict CDS scores may have been based on incorrect assumptions about their content and construct similarity. In addition, the attempted use of a cognitive measure of efficacy outcomes (CDS) violates a common, and perhaps important, convention in efficacy research. The population under study was not free to make independent career decisions and thus the importance of self-efficacy expectations in their decision-making may have been diminished. Finally, the study measured presumed efficacy outcomes after only six weeks despite the fact that the efficacy instrument attempted to elicit, and measure, expectations of efficacy "within 6 months". The combined effect of these several errors and problems is to preclude important conclusions regarding the role of efficacy expectations in career decision-making.

The following discussion presents possible explanations for the failure of ESES scores to change with treatment and then proceeds to an examination of possible explanations for the failure of predictive and correlational hypotheses. The discussion concludes with recommendations for future records.
Alternative Explanations for the Apparent Lack of Change in ESES Scores

1. The Experimental Self-Efficacy Scale does not measure career decision-making self-efficacy.

The ESES was designed to assess levels of career decision-making self-efficacy, however, no validity data are available to support a belief that the ESES performs as intended. Thus, it may be that efficacy levels were changed by treatment but that the ESES failed to measure them. The ESES consists of items derived by transforming items from the Career Decision Scale. Because the CDS has been shown to be a valid measure of career decidedness, it was expected that the ESES might "borrow" validity from its parent. Supporting this expectation is the fact that a similar process, undertaken by Taylor and Betz (1983), had produced a measure of career decision-making efficacy (CDMSE) which had correlated significantly ($r = -.40, p < .001$) with levels of undecidedness in a college population. Analysis shows that the ESES and CDMSE produce similar mean item scores and similar ranges of item scores, thus indicating some performance similarities. No additional evidence is available to support a contention that the ESES is a valid measure of efficacy.

2. The career decision-making efficacy expectations measured by the ESES are long-range expectations (6 months) and do not change within the 6-week treatment period.

Common self-efficacy assessments (Bandura, 1982a) measure expectations of efficacies which will be achieved and/or tested before the end of short treatments. Because the ESES attempts to assess
expectations for achieving efficacy within 6 months, it may be unwarranted to expect significant changes in these expectations during the first part of the 6-month time frame.

3. ESES scores accurately reflect the fact that expectation of efficacy did not change during the treatment.

Three explanations for this outcome seem possible.

a. Treatment Ineffectiveness

Evaluation of the Career Decision-Making Course suggests that it may be relatively weak efficacy treatment. It should be noted that the Course was not intended as an efficacy treatment. Efficacy changes were expected to result from the Course because efficacy theory suggests that changes in efficacy, intended or not, are a common outcome of many psychological treatments (Bandura, 1977). The theory also suggests that naturally occurring efficacy expectations (e.g. those measured at admission) and those which result from unintended treatment effects, will be as predictive of outcomes as are efficacy expectations deliberately induced through specific efficacy treatments.

Participants in the course had little opportunity to perform and practice the behaviors which are measured by the ESES. Although the course provided some opportunity for participants to perform self-assessment tasks, it cannot be considered to be a performance-based treatment designed to provide performance achievements which will lead to mastery performances. Most efficacy treatments require participants to actually perform their inadequate behaviors and thus reap the efficacy gains which performance accomplishments provide. Bandura (1977) suggests that such accomplishments are the most effective source of
raised efficacy expectations.

Models of successful career-decision making were not observed by participants in this study. Thus, another potentially powerful contributor to efficacy gains — commonly employed in efficacy treatments — was not available. Bandura (1977) contends that observation of models is the second most potent source of increases in efficacy expectations.

Another way in which the decision-making course may fall short of other reported efficacy treatments, is that it does not provide experimental demands for mastery at discharge. Thus, the course is not able to take advantage of experimental demand characteristics which, in standard efficacy treatments, may provide impetus for changes in efficacy.

Rather than employing performance or modelling techniques to produce changes in efficacy, the course relies most heavily on persuasion and didactic instruction. Persuasion is intended to convince participants that what they are doing in the class is relevant to their eventual career decision-making and that they will be able, based on the preparations they are presently making, to make good career decisions. Bandura (1977) has suggested that persuasion, because it can be easily discounted or disconfirmed, is a poor treatment for efficacy deficits.

Given the apparent weakness of the Course as an efficacy treatment, it is possible that the lack of change in ESES scores accurately reflects a lack of change in efficacy expectations.

b. Relative stability of "6-month" expectations.

The career decision-making self-efficacy expectations which are elicited by the ESES may represent relatively stable
"reasonable" expectations for events which may be 6 months distant. In light of their disabilities, chronic pain, long unemployment and the shortage of jobs in the economy, participants in this study may believe that it is unrealistic to raise their expectations above this "reasonable" level. This level may be set at some time after the injury and may not change until a decision is actually reached.

c. Expectation levels are stable pending final medical evaluation.

Participants may perceive their time in the rehabilitation program as a prolonged diagnostic work-up leading to an all-important and final physical capacities assessment by a physician. If this is the case, then changes in efficacy expectations may not occur until after participants have received the final, specific work release which is often a major factor in their career decisions. Because the ultimate decision about such work releases is often reserved for the physician "back home", participants may not be open to changes in their efficacy expectations until after meeting with this person.

4. Some efficacy losses may obscure other efficacy gains, producing no net change.

Participants in the Surgery group reports less confidence at discharge, than at admission, for returning to their former occupations. This specific change - which did not occur in the No Surgery group - may occur when participants come to believe that they will never regain the physical capacities required for their former occupations. Insofar as admission scores for the ESES may have indirectly reflected the original (higher) expectations of a decision in favor of a return to
former employment, reductions in ESES scores at discharge might be predicted. That these reductions did not occur suggests that treatment may have produced compensatory increases in other expectations related to the capacity for new career decisions.

While there is no available evidence to support a belief that similar erosions and compensations occurred in the No Surgery group, the possibility cannot be entirely discounted.

Alternative Explanations for the Failure of ESES Scores to Predict CDS Scores

1. It may be inappropriate to expect a relationship between expectations of behavioral efficacy and a cognitive measure of outcome. Most efficacy studies employ behavioral tests to measure outcome and Bandura (1977) has stressed the value of this behavioral measure. The present study attempted to measure outcome by means of a written cognitive assessment. It may be that cognitive outcomes, such as those measured by the CDS, are less related to efficacy expectations than are behavioral outcomes. Changes on a written assessment probably are not equivalent to changes in behavior and therefore may not be well predicted by efficacy expectations which refer to behaviors. Weak predictions seem especially likely to occur when the written assessment are not made subsequent to specific behavioral accomplishments, as they often are in conventional efficacy research.

2. The ESES and the CDS do not, as presumed, measure different aspects of the same career decision-making tasks.
a. Conceptual Incongruence.

This study attempted to study relationships between one instrument presumed to measure expectations of efficacy for decision-making tasks and another which measures undecidedness. While these concepts seem to have a rational relationship to each other, they appear to be less interrelated than are the usual measures of efficacy expectations and outcomes. Most efficacy research employs measures of efficacy which correspond unambiguously with outcome measures. For example, snake phobics' expectations for snake handling are measured on the same objective tasks as are their behavioral outcomes. With such procedures there is little change for the kind of conceptual incongruence which may have been present in this study.

b. Inadequate correspondence of test items.

The ESES was derived by transforming items which assess sources of career undecidedness into items which presumably assess efficacy expectations for career decision-making tasks. The validity and accuracy of these transformation is unknown. It may be that the contents of some ESES items are perceived by respondents as being very different from the content of the parent items on the CDS. If this is true, then the ESES may measure different aspects of career decision-making, aspects perhaps irrelevant to the CDS. Certainly it is true that some ESES items do closely resemble their parent items, while others do not. This fact tends to indicate the need for caution in assumptions regarding the relatedness of CDS and ESES.
Alternative Explanations of the Failure to Find Significant Correlations with ESES Change Scores.

1. Failure of ESES scores to change with treatment.

Expected correlations of efficacy change with participant age, duration of disability, and depression were precluded by the lack of change in ESES scores.

2. Expectations of correlations were inappropriate.

Age and duration of disability were investigated because of their possible importance in determining participants' potential to make changes in their undecidedness and efficacy. It was anticipated that older participants, and those who have been disabled for long periods of time, would demonstrate less change, on both dimensions, than would their younger and more recently disabled counterparts. Results indicate that age and duration of disability did not correlate significantly with changes in undecidedness (which were statistically significant). This outcome suggests that these variables might not have correlated with changes in efficacy even if they had occurred.

DISCUSSION OF POST HOC ANALYSES

These analyses appear to contribute little of importance to an understanding of relationship between career decision-making, self-efficacy, undecidedness, and depression. Results of these analyses do, however, suggest that career decision-making may be more difficult for participants who have undergone surgery. It may be that the experience of back surgery, with its long convalescence and permanent reduction in functioning, produces relatively stable convictions that a "good"
vocational decision is not possible. This conviction may, in turn, create resistance to changes in undecidedness.

RECOMMENDATIONS FOR FUTURE RESEARCH

An examination of the present study has revealed several difficulties which must be avoided if future research is to move toward a better understanding of any role which decision-making self-efficacy plays in career decisions. Some of these difficulties may be avoided through the selection of another population for study. Other difficulties may be resolved through changes in instrumentation and refinement in methodology. The remainder of this paper will present recommendations for future research.

In choosing participants for future study, researchers will do well to include only individuals whose career decisions can be made with relative independence from the opinions and decisions of others. The vocational decisions of injured workers are so dependent on other people (primarily physicians and field workers), that the role of efficacy expectations in their decision processes is almost surely diminished relative to other populations. A group of non-disabled, self-supporting adults attempting to change careers would almost certainly permit a clearer examination of the role of efficacy expectations in career decision-making. If a disabled subject pool is employed again it would be advisable to seek a more heterogeneous group in terms of educational level, occupational background, age, and type of disability. The present group was very homogenous and results may reflect characteristics only of this particular group.
Most efficacy treatments have been concerned with changing behaviors that are under the exclusive control of the individuals being treated. Mastery of snake handling tasks, for example, is entirely dependent on the efforts of the individual. In contrast, career decision-making for the population of this study is a social process usually requiring the permission and approval of other individuals. Thus, career decision-making in an industrially injured population appears to be a poor choice for researchers interested in understanding the role of efficacy expectations in more common career decisions.

The present study utilized instruments possessing questionable interrelatedness. One of these instruments presumably measured expectations of decision-making self-efficacy while the other measured undecidedness. Notwithstanding the logical relatedness of these instruments and the constructs they were intended to measure, the functional nature of their relationship is unknown. Thus, it is not possible to make confident interpretations of the data they produced. Parallel instruments must be found, or developed, for future research.

A major prerequisite for future research will be the selection of a treatment outcome goal which is achievable before the final outcome assessment and which participants will clearly perceive as the objective toward which successive efficacy tasks are building. The present study failed to provide either of these conditions and this failure resulted in uninterpretable ambiguity. Despite Bandura's (1977) assertion that behavioral outcome measures are optimum, it seems likely that a cognitive, written outcome assessment can be adequate if participants clearly perceive that the efficacy expectations they assess and the tasks which
they perform are directly related to that outcome assessment.

Career decision-making skill appears to be an outcome goal which meets the conditions outlined above. This construct deals with the acquisition and application of the sequential skills required for a rational career decision, and not with the decision itself. Treatment for improving these skills would teach each in sequence and each efficacy assessment item would probe the expectations of performing specific skills. Orientation to treatment would stress the necessity for developing all skills in sequence and for mastering all elements of the process before attempting a real career decision. Achievement of effective career decision-making skills appears to be an appropriate outcome goal which is attainable within a relatively brief treatment period.

Krumboltz (College Entrance Examination Board, 1977) has developed a Career Decision-Making Skills Assessment Exercise (CDMSAE) which may provide the basis for an effective retesting of the efficacy-related hypotheses which were examined in the present study. The CDMSAE measures career-related competencies for each of the seven steps of a rational decision-making process (Krumboltz & Hamel, 1977). These steps consist of: Defining the problem, Establishing an action plan, clarifying values, Identifying alternatives, Discovering probable outcomes, Eliminating alternatives systematically, and Starting action.

Potential career decision-making self-efficacy items would be derived from CDMSAE and could be created for each of the seven steps. Following selection by a panel of judges (a process neglected in the present study) apparently valid items would be used to create a new efficacy instrument. Instructions would ask participants to indicate
how sure they are, on a 1-10 scale, that they "could perform" these tasks. This new efficacy scale and the CDMSAE would be administered at pre-admission, admission, and at discharge.

A well chosen sample, trained in career decision-making skills and tested with conceptually congruent and clearly related efficacy and outcome measures, seems likely to permit a less ambiguous test of efficacy effects in career decision-making. Such a test might provide a degree of insight into the role of efficacy expectations in career decision-making which the present study was unable to offer.
CHAPTER 6

SUMMARY

PURPOSES OF THE STUDY

Bandura (1977, 1982a) has stated that when motivation is appropriate, expectations of self-efficacy will be major determinants of behavior. Self-efficacy expectations are those which reflect anticipated capability to perform specific behaviors. Supporting Bandura's assertion is an extensive body of research which appears to show that positive efficacy expectations are often strong correlates and effective predictors of treatment outcomes. These results have been found in research investigating treatment effects on phobias, cigarette smoking, social interaction, problem solving and physical endurance. Recently, Taylor and Betz (1983) tested Bandura's proposition in a career development context and found a significant ($r = .41$) correlation between efficacy expectations for career decision-making tasks and career undecidedness. Students in that study who expected more efficacy for such tasks - information gathering, exploring, choosing a major, etc - were found to be more career decided. The present study was intended to extend Taylor and Betz's finding by assessing the extent to which efficacy expectations could predict the changes in career undecidedness which resulted from a career intervention. The further study of efficacy expectations in career decision-making appeared to be of potential value, both to researchers in efficacy and to researchers and practitioners in career
development.

Useful knowledge of efficacy expectations was expected to result from an examination of their role in a complex phenomenon - such as career decision-making - where behavior is a prerequisite to cognitive change. Most efficacy research has studied circumscribed behaviors - snake handling, problem solving, enduring physical discomfort - which are exclusively within individual control and which are to be achieved during brief interventions within controlled environments. Relatively little is known about the importance of efficacy expectations in predicting complex outcomes, - such as career decidedness, - which result from multiple behaviors, which require the involvement of other people and which must take place in unstable environments over an extended period of time. A second contribution to efficacy research was anticipated to result from this study's use of a cognitive measure of treatment outcome. Previous efficacy research has employed behavioral measures of outcome. Taylor and Betz's success in producing a career decision-making instrument which correlated with a cognitive dependent variable (career undecidedness) suggested that treatment-induced changes on such a cognitive measure might be effectively predicted by pre-treatment efficacy levels.

Potential contributions to career development research and practice were anticipated if results of this study offered support for efficacy expectations as important determinants of career decidedness. Previous research in career undecidedness had not examined the possible role of efficacy expectations (Holland & Holland, 1977; Slaney, 1980). If the present research were to demonstrate the role of efficacy expectations
in career decision-making, then practitioners would be encouraged to develop career interventions which would promote these expectations. Further, if this study resulted in the development of a useful efficacy instrument, this instrument would have utility in assessing the success of career interventions. Such interventions typically are brief and career decidedness often does not occur within their time limits. The value of these treatments might be usefully assessed by an efficacy instrument which indicated how well they had succeeded in raising appropriate efficacy expectations.

Another purpose of this study was to examine the relationship between efficacy expectations and affective depression. Depression is known to have a dampening effect on expectations (Layne, 1980) and thus levels of depression were expected to correlate at least moderately with efficacy expectations. Very strong correlations might suggest that lowered efficacy expectations are an artifact of depression and that they might be effectively raised through interventions aimed at reducing depression. Low or moderate correlations would suggest that specific interventions for each variable would be optimum.

METHOD

Participants

The 20 participants in this study (17 men, 3 women) had been injured in industrial accidents which had produced chronic low back pain and which had rendered participants at least temporarily disabled. Mean age for participants was 37 years. Mean duration of disability was 27 months. Most participants had not graduated from high school and mean reading
skills were at the sixth grade level. At admission, few participants were able to specify a satisfactory job which they could physically perform.

**Treatment**

Participants were patients in a comprehensive six-week Pain and Stress Treatment Program designed to increase pain management skills, develop the physical strength and fitness required for a return to previous or new employment, and promote vocational planning. Because participants were under medical care and were receiving disability compensation from a state agency, their selection of vocational goals tended to be a complex social process requiring medical, legal and bureaucratic concurrence with personal plans. In addition to physical therapy, occupational therapy, pain management instruction and individual psychological counseling, participants were enrolled in a Career Decision-Making Course.

The purposes of this course were to promote participants' vocational planning and to encourage striving for satisfactory re-employment. The course offered approximately 25 hours of self-assessment, skill identification, job identification, job application and employment interview practice to groups consisting of from four to six participants. Participants in the present study were members of four such consecutive groups. The two instructors were staff persons with extensive experience in career development and vocational rehabilitation. Instructors did not expect most participants to make final career decisions during the course, but anticipated that the coursework would provide the basis
for career decisions after final medical evaluations and program discharge.

**Assessment**

Participants were assessed two to four weeks prior to admission, at admission and at discharge. Pre-admission assessment was accomplished via telephone. The Career Decision Scale, a 16-item measure of career undecidenedness (CDS; Osipow, Carney, Winer, Yanico & Koschier, 1976; Osipow, 1980), and the Experimental Self-Efficacy Scale were administered orally at each assessment in order to avoid problems which might result from participants' poor reading skills.

The Experimental Self-Efficacy Scale (ESES) was created for this study by transforming each undecidenedness item on the CDS into a career decision-making self-efficacy item. CDS items reflect reasons for undecidenedness and ask respondents to indicate how well each statement describes them. For example, CDS item Number 4 reads: "Several careers have equal appeal to me. I'm having a difficult time deciding among them". Responses are made on a scale of one to four, with "1" representing "Not at all like me" and "4" representing "Exactly like me". The ESES item which corresponds to this CDS item asks: "How confident are you that, within six months, you will be ready and able to make a final decision between the careers which appeal to you?" Responses are made on a scale of one to ten, with "1" representing "No confidence" and "10" representing "Total confidence", and other numbers representing intermediate levels of confidence. The six-month projection of efficacy attainments was intended to suggest to respondents that they would have
ample time and opportunity to complete process of career decision-making. Such an extended time frame has not been previously employed in efficacy research.

No validity data is available for the ESES. Efficacy scales are typically not tested for construct or concurrent validity because their contents are isomorphic with the elements of the behavioral outcome they are used to predict. Because the ESES reflects the item content of the CDS which has been shown to possess adequate validity (Osipow, 1980) it was expected that the ESES would be a valid measure of efficacy expectations for important decision-making tasks. Test-retest correlations over a four-day interval were found to be strong ($r = .90$).

The Beck Depression Inventory (Beck, 1967) was administered only at admission and discharge because it was judged inappropriate for telephone administration.

RESULTS

Data analysis indicates that the Career Decision-Making Course was successful in achieving its primary purpose of reducing career decidedness ($p < .01$). Depression was found to be reduced in participants as a result of the overall treatment program ($p < .005$). Contrary to predictions, treatment did not produce significant changes in career decision-making self-efficacy and self-efficacy scores at admission did not significantly predict the changes which occurred in undecidedness. Changes in depression correlated moderately ($r = .43$) with changes in undecidedness but not with changes in self-efficacy.
Post hoc analyses revealed that changes in depression and undecidedness were significant only for those participants who had not undergone corrective back surgery (N = 10). Participants with surgical histories showed no significant change on these variables. Surgery and No Surgery groups were found to be comparable with regard to mean age and mean duration of disability. Efficacy changes were non-significant in both Surgery and No Surgery groups and efficacy scores at pre-admission were non-significant predictors of undecidedness change in both groups.

DISCUSSION

The unproved validity of the ESES as a measure of career decision-making self-efficacy precludes satisfactory interpretation of the outcome data produced in this study. Validation studies are a prerequisite to understanding the meaning of the ESES's unexpected performance characteristics: its stability across treatment, its failure to predict the changes which did occur in undecidedness, and its failure to correlate significantly with depression. At present, it cannot be known whether the stability of the ESES reflects the actual nature of career decision-making self-efficacy expectations or whether it reflects characteristics of a population for which career decision-making is an especially complex social process in which efficacy are both stable and relatively unimportant. A study testing the concurrent validity of the ESES and the efficacy instrument developed by Taylor and Betz (1983) is indicated as a useful step toward a better understanding of the ESES. Another useful test of the validity of the ESES's contents would be provided by changing its instructions such that respondents indicate
their expectations for attaining efficacy within the treatment period rather than "within six months". It may be that efficacy expectations are more malleable and predictive if they reflect only short-term projections.

Other methodological changes in this study's design which would have been desirable are also apparent in retrospect. In their role as unemployed, chronically pained medical patients receiving disability compensation, participants of this study were enmeshed in a bureaucratic-medical-legal-economic matrix. This situation seems likely to diminish the role of efficacy expectations in promoting progress toward decidedness. Future research would do well to utilize a more heterogenous group of participants who feel free to make independent career decisions and whose decisions are not subject to review and approval by other people.

Finally, the study assessed outcomes after only six weeks despite the fact that the efficacy instrument measured expectations of attaining efficacy "within six months". The assumption that treatment would produce significant changes in efficacy within six-weeks appears to have been inaccurate. A follow-up study at six-months post-discharge is indicated as a way to supplement and check the perhaps premature outcome assessments made at treatment discharge. Alternatively, as suggested above, instructions for the ESES might be changed to elicit participants' expectations for efficacy achievements within the treatment period.

A retrospective examination of the present study suggests that its goals were too ambitious given the complexity of the career decision-
making process and the unproven efficacy instrument. It seems necessary for future research to first examine the role of career decision-making efficacy expectations in predicting more circumscribed and proximal treatment goals. The acquisition of effective career decision-making skills (Krumboltz & Hamel, 1977) appears to be a more appropriate outcome measure. Pre- and post-treatment proficiency in these skills could be assessed by the Career Decision-Making Skills Assessment Exercise (CDMSAE; College Entrance Examination Board, 1977). A panel of judges could be employed to develop and select efficacy items which would accurately reflect the content of the CDMSAE. This narrower and more readily achievable treatment goal, and a more carefully constructed efficacy instrument, seem likely to facilitate a controlled investigation of the role of efficacy expectations in the career decision-making process. With the improved instruments which could be developed in several such well-controlled laboratory studies, investigators might be prepared to study the role of efficacy expectations in actual career decision-making interventions.
APPENDIX A

Experimental Self-Efficacy Scale

Copyright 1983 by Beal Lowe

Instructions: To be read aloud to respondents.

This is a measure of your confidence regarding some aspects of your career decision-making. You will be asked how confident you are that, within 6 months, you will be ready and able to make certain steps toward achieving your vocational goals. Answer on a scale of one to ten, where "one" means "no confidence" and "ten" means "total confidence" and numbers in between represent intermediate levels of confidence. Each question will be read twice. Any questions? Mark your answer sheets in the column marked "ESES". Please indicate your name and the date in the upper right corner of that page.

Tester: Repeat the following preface with both readings of the following items.

Read: "How confident are you that, within 6 months, you will be ready and able to ....

1. Name a couple of good alternatives if your "first choice" career or training is not possible.

2. Make a final decision between the careers that appeal to you.

3. Name an occupation which you will be able to do which offers security and a good future.

4. Make a career choice which pleases you and does not go against the wishes of people who are important to you.

5. Make a career choice based on enough information about yourself and the labor market.

6. Commit yourself to achieving a career goal.

7. Name an occupation which you can do and that will be a good replacement for your previous one.

8. Say that your career choice is the best one for you at the time.

9. Make a career decision and be finished with the insecurity of changing careers.
10. Name a good occupation that you could do if you get the kind of training you want.

11. Name a good occupation that you can physically do and which won't require further training.

12. Name good career possibilities that are related to an interest of yours that really "turns you on".

13. Make a final decision between several occupations which you know you could do well.

14. Find out how to achieve your career goals.

15. Get the information about different occupations that you need to make this career decision.

16. Get all the expert help you need to make this career decision.
APPENDIX B

Comparison of Corresponding Items for the Career Decision Scale and the Experimental Self-Efficacy Scale.

Phrases parenthesized in CDA items indicate original item content which was altered or deleted to make the CDS more applicable to the population under study. Underlined phrases in CDS items indicate the substituted phrase, if any. Items 1 and 2 and the CDS were not used in assessment and therefore are not listed here.

CDS#3 - If I had the skills or the opportunity to know what I would be, but this choice is really not possible for me. I haven’t given much thought to other alternatives, however.

ESES#1 - How confident are you, that within 6 months, you will be ready and able to name a couple of good alternatives if your “first choice” occupation or training is not possible?

CDS#4 - Several careers have equal appeal to me. I’m having a difficult time deciding among them.

ESES#2 - How confident are you that, within 6 months you will be ready and able to make a final decision between the careers which appeal to you?

CDS#5 - I know I will return (have to go) to work eventually but none of the careers I know about appeal to me.
How confident are you, that within 6 months, you will be ready and able to name an occupation that you will be able to do and which offers security and a good future?

I know what I would like to be, but I would be going against the wishes of someone who is important to me if I did so. Because of this, it's difficult for me to make a career decision right now. I hope I can find a way to please them and myself.

How confident are you that, within 6 months, you will be ready and able to make a career choice which pleases you and which does not go against the wishes of people who are important to you?

Until now, I haven't given much thought to choosing a career. I feel lost when I think about it (because I haven't had many experiences in making decisions on my own) and I don't have enough information to make a career decision right now.

How confident are you that, within 6 months, you will be ready and able to make a career choice based on enough information about yourself and the labor market?

I feel discouraged because everything about choosing a career seems so "iffy" and uncertain; I feel discouraged, so much so that I'd like to put off making a decision for right now.

How confident are you that, within 6 months, you will be ready and able to commit yourself to achieving a career goal?

I thought I knew what I wanted for a career, but recently I found out that it wouldn't be possible for me to pursue it.
Now, I've got to start looking for other possible careers.

ESES#7 - How confident are you that, within 6 months, you will be ready and able to name an occupation which you can do and that will be a good replacement for your previous one?

CDS#10 - I want to be absolutely certain that my career choice is the "right" one, but none of the careers I know about seems ideal for me.

ESES#8 - How confident are you that, within 6 months, you will be ready and able to say that your career choice is the best one for you at the time?

CDS#11 - Having to make a career decision bothers me. I'd like to make a decision quickly and get it over with. I wish I could take a test that would tell me what kind of career I should pursue.

ESES#9 - How confident are you that, within 6 months, you will be ready and able to make a career decision and be finished with the insecurity of changing careers?

CDS#12 - I know what I'd like to get training in (major in) but I don't know what careers it can lead to that would satisfy me.

ESES#10 - How confident are you that, within 6 months, you will be ready and able to name a good occupation that you could do if you get the kind of training you want?

CDS#13 - I can't make a career choice right now because I don't know what my abilities are.

ESES#11 - How confident are you that, within 6 months, you will be ready and able to name a good occupation that you can physically
do and which won't require further training?

CDS#14 - I don't know what my interests are. A few things "turn me on" but I'm not certain that they are related in any way to my career possibilities.

ESES#12 - How confident are you that, within 6 months, you will be ready and able to name good career possibilities that are related to an interest that really "turns you on"?

CDS#15 - So many things interest me and I know I have the ability to do well regardless of what career I choose. It's hard for me to find just one thing that I would want as a career.

ESES#13 - How confident are you that, within 6 months, you will be ready and able to make a final decision between several occupations which you know you could do well?

CDS#16 - I have decided on a career but I'm not certain how to go about implementing my choice. (What do I need to do to become a ______________________ anyway?)

ESES#14 - How confident are you that, within 6 months, you will be ready and able to find out how to achieve your career goals?

CDS#17 - I need more information about what different occupations are like before I can make a career decision.

ESES#15 - How confident are you that, within 6 months, you will be ready and able to get the information about different occupations that you need to make this career decision?

CDS#18 - I think I know what I want to get trained in (major in) but feel I need some additional support for it as a choice for myself.
ESES#16 - How confident are you that, within 6 months, you will be ready and able to get all the expert help you need to make this career decision.

Items from the copyrighted Career Decision Scale are reprinted with permission of the authors (Osipow, Carney, Winen, Yanico and Koschier, 1980.)
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

P. 140-142 Beck Depression Inventory

University
Microfilms
International
300 N Zeeb Rd., Ann Arbor, MI 48106 (313) 761-4700
REFERENCE NOTES


LIST OF REFERENCES


Reviewer B., Cognitive Therapy and Research, 1977, 1, 309.


