

City University of New York (CUNY)

CUNY Academic Works

All Dissertations, Theses, and Capstone
Projects

Dissertations, Theses, and Capstone Projects

1988

Prediction of Treatment Response in Chronic Pain Patients: The Relationship Between Illness Behavior and Self-Concept

Andrew Bruce Rosenblum

The Graduate Center, City University of New York

[How does access to this work benefit you? Let us know!](#)

More information about this work at: https://academicworks.cuny.edu/gc_etds/1675

Discover additional works at: <https://academicworks.cuny.edu>

This work is made publicly available by the City University of New York (CUNY).

Contact: AcademicWorks@cuny.edu

INFORMATION TO USERS

The most advanced technology has been used to photograph and reproduce this manuscript from the microfilm master. UMI films the original text directly from the copy submitted. Thus, some dissertation copies are in typewriter face, while others may be from a computer printer.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyrighted material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is available as one exposure on a standard 35 mm slide or as a 17" × 23" black and white photographic print for an additional charge.

Photographs included in the original manuscript have been reproduced xerographically in this copy. 35 mm slides or 6" × 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



Accessing the World's Information since 1938

300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA



Order Number 8821117

**Prediction of treatment response in chronic pain patients: The
relationship between illness behavior and self-concept**

Rosenblum, Andrew Bruce, Ph.D.

City University of New York, 1988

Copyright ©1988 by Rosenblum, Andrew Bruce. All rights reserved.

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106



PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark .

1. Glossy photographs or pages _____
2. Colored illustrations, paper or print _____
3. Photographs with dark background _____
4. Illustrations are poor copy _____
5. Pages with black marks, not original copy
6. Print shows through as there is text on both sides of page _____
7. Indistinct, broken or small print on several pages
8. Print exceeds margin requirements _____
9. Tightly bound copy with print lost in spine _____
10. Computer printout pages with indistinct print _____
11. Page(s) _____ lacking when material received, and not available from school or author.
12. Page(s) _____ seem to be missing in numbering only as text follows.
13. Two pages numbered _____. Text follows.
14. Curling and wrinkled pages _____
15. Dissertation contains pages with print at a slant, filmed as received _____
16. Other _____

U·M·I



PREDICTION OF TREATMENT RESPONSE IN CHRONIC PAIN PATIENTS:
THE RELATIONSHIP BETWEEN ILLNESS BEHAVIOR AND SELF-CONCEPT

by

ANDREW ROSENBLUM

A dissertation submitted to the Graduate Faculty in
Psychology in partial fulfillment of the requirements
for the degree of Doctor of Philosophy, The City
University of New York.

1988

© 1988

ANDREW ROSENBLUM

All Rights Reserved

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

[signature]

APRIL 22, 1988
Date

Chair of Examining Committee

[signature]

APRIL 22, 1988
Date

Executive Officer

Prof. Howard Ehrlichman

Prof. Suzanne C. Ouellette Kobasa

Prof. Herbert Saltzstein
Supervisory Committee

The City University of New York

Abstract

PREDICTION OF TREATMENT RESPONSE IN CHRONIC PAIN PATIENTS: THE RELATIONSHIP BETWEEN ILLNESS BEHAVIOR AND SELF-CONCEPT

by

Andrew Rosenblum

Adviser: Professor Howard Ehrlichman

This study investigated self-concepts held by chronic pain patients. It was hypothesized that self-schemas of probable and ideal levels of control, dependence on medical care, physical vulnerability, affiliation and conflict with physicians would predict response to treatment.

At intake into a three week in-patient program 72 pain patients were given a self perception scale which measured these five dimensions across three "possible selves" (now self, probable self and ideal self). Patients were also given at intake, and at follow-up (5 weeks after discharge), a battery of psychological and behavioral measures. Control, dependence on medical care, and vulnerability (CDV) were identified as the three most important constructs since patients rated themselves lower and identified themselves more

frequently on these dimensions than they did on affiliation or conflict with physicians. Three types of analyses of outcome were conducted. 1) Follow-up measures were regressed upon the three CDV scales, a global measure of optimism and a measure of negative affectivity. Negative affectivity was found to be the measure most consistently related to changes in mood and pain; and Probable Self was found to be the best predictor of behavioral improvement. 2) Patients' subjective estimates of improvement showed the strongest pattern of correlations with Self and Probable Self. 3) Differences in the intake scores of patients identified at follow-up as active (N=23) and inactive (N=33) were also examined. Probable Self and Ideal Self discriminated between active and inactive patients. Now Self was marginally related to active status at follow-up. Negative affectivity, optimism, mood, self-esteem, pain and physical activities at intake were unrelated to active status at follow-up. Implications for the importance of a domain specific measure of a self-schema of future functioning are discussed.

ACKNOWLEDGMENTS

I would first like to thank Dr. Howard Ehrlichman. Never one to read or listen without thinking, his comments and support proved extremely valuable to me during the preparation of this manuscript. I am also indebted to Dr. Suzanne C. Ouellette Kobasa for helping me to clarify my ideas about the self-concept and for encouraging me to interview my subjects. Appreciation is extended to Dr. Herbert Saltzstein for his encouragement and support of my efforts. I am grateful to Dr. Alan Gross for statistical help, and to Dr. Kay Deaux and Dr. Tracey Revenson for serving as outside readers. I would also like to thank Dr. Revenson for sharpening my interpretation of the regression analysis. I want to thank Laurie Hopp for her support and for helping me to clarify statistical problems. I would like to extend my appreciation to Sherri Weiser for her review of my manuscript and to Dr. Barry R. Snow and Dr. Isaac Pinter for providing me institutional support for my research. I owe a special debt to Miriam Fisher and Sally Downes for their interest in my work and to the pain patients I interviewed as well as to the members of Back-Up, a support group for chronic pain. Their

cooperation with my research has provided me with a greater understanding of the chronic pain experience. Finally, I would like to thank my parents, Laura and Carl Rosenblum; my wife, Marlene; and my children, Michael and Richard. Their love and appreciation of me, though at times distracting, made the labor of this work sweeter.

TABLE OF CONTENTS

COPYRIGHT PAGE.....11
APPROVAL PAGE.....111
ABSTRACT.....iv
ACKNOWLEDGMENTS.....vi
LIST OF TABLES.....x

Chapter

1. INTRODUCTION.....1
 The Chronic Pain Patient.....2
 Medical Evaluation and Treatment of Chronic Pain.....3
 Psychosocial Components of Chronic Pain.....8
 The Multidimensional Model of Chronic Pain..11
 Multidisciplinary Chronic Pain Units.....15
 The Importance of Self-concept among Chronic Pain Patients.....20
2. METHOD.....43
 Treatment.....43
 Instruments and Procedure.....44
3. RESULTS.....50
 Initial Status.....50
 Follow-up Sample.....56
 Self Perception Scale and Optimism.....56
 Self Perception Scale, Optimism and other Pre-treatment Measures.....61
 Self Perceptions, Optimism and the Follow-up Measures.....67

Negative Affectivity.....	69
Predicting Change.....	72
Status at Outcome.....	82
Discrepancy Scores.....	84
4. DISCUSSION	87
Negative Affectivity and Outcome.....	89
Contextualism and the Dynamic Self Concept.....	91
Discrepancy Scores.....	95
Implications & Recommendations for Research and Treatment.....	95
Methodological Issues.....	100
Conclusion.....	104
 APPENDICES	
A. THE SELF PERCEPTION SURVEY (SPS).....	105
B. DOMAINS AND ITEMS OF CURRENT AND POSSIBLE SELVES.....	109
C. LIFE ORIENTATION TEST.....	110
D. INTAKE ASSESSMENT PACKAGE.....	111
E. CATEGORICAL LIST OF THE INTAKE VARIABLES....	145
F. FOLLOW-UP QUESTIONNAIRE.....	154
G. SPS INTERVIEW.....	170
H. LIST OF ABBREVIATIONS.....	171
I. PROPERTIES OF THE SELF PERCEPTION SCALE.... (Supplement to the Results chapter)	172
REFERENCES.....	181

LIST OF TABLES

	Page
1. Demographic Characteristics of Intake Sample.....	51
2. Medical and Behavioral Characteristics of Intake Sample.....	52
3. Psychological Measures at Intake.....	54
4. Relative Frequency Counts for Intensity and Frequency of Pain at Intake.....	55
5. Post Treatment Assessment: Response Rate.....	57
6. Factor Analysis of the 15 Scales from the SPS...59	
7. Intercorrelations of the Self Perception Scales, Optimism and Negative Affectivity.....	62
8. Correlations of the Self Perception Scales, Optimism and NA with Measures of Distress, Pain and Activity at Intake.....	63
9. Correlations of the SPS Scales, Optimism and NA with Measures of Distress, Pain and Activity at Follow-up.....	70
10. Regression Analysis of Mood, Self-esteem, Pain and Activity at Follow-up.....	74
11. Change Predicted at the .10 Level among the 21 Regression Analyses.....	79
12. Correlations of Self Perception, Optimism, and Negative Affectivity with Follow-up Estimates of Improvement.....	81
13. Comparisons of Pretreatment Scores of Patients Reporting an Active or Inactive Status at Follow-up.....	83
14. Correlations of the Self Perception Discrepancy Scores with Measures of Pain, Distress and Activity at Intake and at Follow-up.....	86

(The Tables listed below are found in Appendix I)

I-1.	Reliabilities of the Self Perception Scales..	176
I-2.	Intercorrelations of the Total SPS Scales....	176
I-3.	Intercorrelations of the Five Scales of the Now Self.....	177
I-4.	Intercorrelations of the Five Scales of the Probable Self.....	177
I-5.	Intercorrelations of the Five Scales of the Ideal Self.....	177
I-6.	Means, Standard Deviations and Ranges on the Self Perception Scales.....	178
I-7.	Hopes and Fears Reported by Pain Patients....	179

Introduction

This research was designed to assess the role of self-concept in the recovery of chronic pain patients. These patients typically show limitations in physical activity, reduced capacity or inability to work, sleep disturbances, depression, increased number of medical contacts and dependence on narcotics or other contraindicated medications. Although only a few studies have directly assessed the self-concept of chronic pain patients these patients are usually described as having low self-esteem, and viewing themselves as entitled to solicitous care and incapable of healthy functioning (e.g., Fordyce, 1985; Ng, 1981; Sternbach, 1974). Recent developments, such as a link between stressful cognitions and EMG disturbances in the lower back (Flor, Turk, & Birbaumer, 1985), the frequency of cognitive errors in depressed lower back pain patients (Lefebvre, 1981), and elevated self/ideal-self discrepancy as a predictor of favorable response to treatment (Large, 1985) have emphasized the role of cognitive factors among chronic pain patients.

The Chronic Pain Patient

Chronic pain is distinct from acute pain. Acute pain is self-limiting, and directly related to tissue damage. Chronic pain is typically defined as benign but intractable, of several or more months duration, for which pain behavior appears disproportionate to actual tissue damage, and which has remained unresponsive to conventional medical treatment (Blackwell, Galbraith, & Dahl, 1984). In the past two decades there has been a remarkable shift from the consideration of peripheral factors, such as tissue damage, to that of central, psychological, and social factors in chronic pain (Blumer & Heilbronn, 1982; Melzack, 1973). The current literature shows an appreciation of neurochemical activity (Hendler, 1982), social factors (Fordyce, 1976), and cognitive processes (Turk & Rudy, 1986a) in the maintenance of chronic pain.

Chronic pain has a significant impact on the quality of life. Bonica (1981) estimates that over one-third of the United States population has persistent or recurrent chronic pain. Among the yearly economic costs are 700 million lost work-days and an estimated \$90 billion spent on medical care, insurance, and lost wages (Aronoff, 1985). Back pain is the most frequent

source of disability of people under 45, and as many as six to eight million persons are permanently disabled by it (Mooney, 1983). Although for 98% of back pain patients the condition does not persist for more than six months (cf. Nachemson, 1985), for those patients where the pain extends beyond this date only 50% will return to work (Vallfors, 1985). It is further reported that in instances where chronic painful conditions occur, it is not the underlying pathology but the pain that primarily impairs functioning. Chronic pain has become an area of increasing interest to social scientists due to the recognition of the cultural (e.g., Zbrowski, 1969) and social (e.g., Fordyce, 1976) factors which impact upon it, as well as disappointment over the efficacy of conservative and invasive medical treatments, such as bedrest and surgery.

Medical Treatment and Evaluation of Chronic Pain

Flor & Turk (1984) note that chronic pain is usually attributed to degenerative processes (e.g., osteoarthritis, herniated disc), and less frequently thought to be of inflammatory (e.g., ankylosing spondylitis, peripheral neuropathy), structural (e.g.,

congenital deformities), or traumatic origin (such as injury to the spine from a motor vehicle accident). However, no significant differences in disc degeneration between low back pain patients and healthy controls have been found in studies drawing upon radiological findings. In fact, disc degeneration may be ubiquitous, since it appears to be a natural process of aging (Finneson, 1980). This difficulty of finding organic pathology as the sole cause or even as one of the contributing agents of chronic pain points to the complexity of the chronic pain syndrome and limitations with the medical model.

Schneider and Karoly (1983) identify three medically oriented approaches to pain management:

- 1) Surgery, the most invasive form of medical treatment for chronic pain, has come under increasing criticism. Schneider and Karoly concluded that, "...operations generally have failed to produce pain relief, and have often left the patient in more severe pain than before the surgery" (pp. 75-76). Critics report that surgery for both chronic and non-chronic back pain is over utilized. In the United States there are approximately seven times more back surgeries performed than in either Great Britain or Sweden (Addison, 1981; Nachemson, 1983). This is in spite of

any dissimilarity in severity or incidence in low back pain between these countries (Wilkinson, 1983).

Finneson (1979; cited by Flor & Turk, 1984) concluded that 80% of surgical patients should never have entered surgery. Elsewhere, Finneson (1980) writes that 20 to 40% of the operations for lumbar disc disease performed each year will be unsuccessful. The Swedish orthopedist Alf Nachemson has written about the excessive use of back surgery (Nachemson, 1984). His arguments are that in most cases of acute back pain the patients eventually get well and that disc surgery should only occur after two months of back pain.

Repeat surgery, which is not an uncommon condition among chronic pain patients (cf. Ng, 1981; Wilkinson, 1983), is generally far less effective than first time surgery. Burton (1981; cited by Flor & Turk, 1984) reports that success rate for repeated surgery rapidly decreases down to 5% after the fourth operation. Nachemson (1984) concluded that even among his own patients more patients were worse after repeat surgery than better. It has been estimated that 2/3 of all patients in chronic pain centers have had previous unsuccessful surgery for their pain (Wilkinson, 1983).

2) Physically disrupting sensory transmission to the brain, such as anesthetic blocking, and less frequently, electrical stimulation does produce short term results. However these blocking procedures often fail to provide sustained relief for back pain (Fields & Levine, 1985; Flor & Turk, 1984; Schneider & Karoly, 1983).

3) The use of narcotic and non-narcotic analgesics, though particularly effective in relieving acute pain are usually contraindicated in the treatment of benign chronic pain. Not only is there the risk of addiction or dependency but there is also an increasing body of evidence that certain medications, such as the benzodiazepines, because of their influence on neurotransmitters actually reduce tolerance to pain (cf. Hendler, 1981). Iatrogenic effects may also arise in other ways. Valium, for example, which may be prescribed as a muscle relaxant to pain patients, might also exacerbate depression (Physicians Desk Reference, 1986). The manner in which drugs are taken may also prove problematic. Medication taken on a PRN basis (in which dosage and frequency is typically pain contingent) is more likely to reinforce pain behaviors than medication taken on a fixed interval schedule

(Fordyce, 1976; Fordyce, Brockway, Bergman, & Spengler, 1985).

Chronic pain patients are also often prescribed anti-depressants. This is based not only on the belief that chronic pain is a consequent or an aggravating factor of depression (cf. Romano & Turner, 1985) but also on the theory that pain is an epiphenomenon of the same biochemical processes that produce depression (Hendler, 1981). Depletion of central serotonin activity can result in sleep disturbance, lowered pain tolerance, and depression. Tricyclic antidepressants enhance the activity of serotonin by blocking its reuptake (Hendler, 1984). Another indicant of the pain depression link is that a significant number of depressed patients have pain as a major symptom (Romano & Turner, 1985). Though the use of anti-depressant medication appears prevalent among chronic pain clinics its use has been questioned. Flor and Turk (1984) have argued that studies assessing the efficacy of anti-depressants in the treatment of chronic pain have failed to demonstrate more than a placebo effect. Romano and Turner (1985) concluded, in their review of chronic pain and depression, that there is not enough evidence to establish a clear relationship between use of anti-depressants and pain reduction.

The Psychosocial Components of Chronic Pain

Sternbach (1984) provides a summary of the effects of chronic pain. Physiological consequences are sleep disturbances, decreased pain tolerance, and changes in appetite. The persistent pain and lack of sleep may in turn be followed by fatigue, irritability, depression, social withdrawal, and decreased self-esteem. When patients are compared with others or themselves before the onset of their pain they are found to be less active, frequently bedridden, and to have diminished interpersonal interactions. Typically their relationship with others is mediated by the sick role. Patients may feel entitled to solicitous caretaking, financial compensation, and exempt from responsibilities. Patients will typically attribute their pain to physical disease (Pilowsky, 1978) and engage in an interminable search for a medical cure. They have increased number of medical contacts, solicit more surgery, and over use analgesics. The putative "benefits" of chronic pain are that the pain may serve as a "sink" for all interpersonal and intrapersonal problems. (Both the patient, through primary and secondary gain, and the patient's family, via tertiary gain, may become invested in the chronic pain). The

illness gains listed by Sternbach (1984) are that patients may become oblivious to sources of tension, dependency needs may be satisfied through invalidism, and depression may be masked by symptom preoccupation. The pain may also allow for a legitimate source of narcotics.

The traditional somatosensory model of pain does not adequately explain the chronic pain condition. In the 1950's and 1960's psychoanalytic explanations were advanced. In these cases (e.g., Engel, 1959; Mersky, 1968; Spear, 1967; Walters, 1961) chronic pain was explained in terms of a conversion neurosis or a hypochondriacal reaction (cf. Turk & Flor, 1984). Within this framework chronic pain tended to be attributed to a "pain prone" personality. Such individuals were thought to have a prominence of guilt and aggression, and to have a history of suffering, defeat and an intolerance of success (Engel, 1959). More recently Blumer and Heilbronn (1982) have described chronic pain as a depressive equivalent. According to these authors chronic pain patients are characterized by alexithymia, anhedonia, dependency needs, and a family history of depression, alcoholism, and chronic pain. For these patients psychological distress is expressed somatically. There is evidence

that many of these conditions are likely to be found within a chronic pain population. Recent studies have produced evidence of a relationship between chronic pain and depression (Romano & Turner, 1985), a family history of chronic pain (Edwards, Zeichner, Kuczmierczyk, & Boczkowski, 1984; Violon & Giurgea, 1984), and alexithymia (Blumer & Heilbronn, 1981; Ford, 1983). Also an association between psychological stress and EMG activity has recently been indicated (Flor, Turk, & Birbaumer, 1985). (In this study, which is discussed at greater length later in this paper, low back pain patients displayed EMG reactivity in their paravertebral musculature when subjected to personally-relevant stress.) However, despite this evidence, a psychogenic theory of chronic pain has lost favor. Research has failed to demonstrate whether the personality characteristics are premorbid (Turk & Flor, 1984). In fact some studies suggest that psychopathology, mood disturbances, and behavior problems are consequences rather than precursors of chronic pain (Rudy, Kerns, & Turk, 1985; Sternbach, 1974). Another problem is that less than half of chronic pain patients meet the DSM III criteria for psychiatric illness (Bouckoms, 1985).

The Multidimensional Model of Chronic Pain

Current research has suggested the appropriateness of a model in which chronic pain is multiply determined. Within this model reciprocal influence is found between biological, psychological, and social factors. The theoretical underpinnings of this model have been provided by the gate-control theory and, somewhat more broadly, by the biopsychosocial model popular in health psychology (Melzack, 1973; Turk, Meichenbaum, & Genest, 1983; Ng, 1981).

Biological factors have included the primary and secondary consequences of injury and disease, such as fatigue, low-stamina, drug dependence and stress induced muscle tension (Blackwell et al., 1984). Within the nervous system abnormal information processing such as pain responses to non-noxious stimuli, and memory-like mechanisms for pain have also been implicated as contributors to chronic pain (Melzack, 1973). In addition neurotransmitters, endogenous opiates, and pain-eliciting substances (e.g., bradykinin) play a role in the regulation of chronic pain (Hendler, 1981; Fine & Hare, 1985; Fields & Levine, 1984).

The psychological models of chronic pain have been enumerated by Turk and Flor (1984). Within the respondent model acute pain may lead to a pain-tension cycle wherein fear of repeated injury or fear of pain leads to greater pain, muscle tension, and muscle atrophy. The operant approach proposes that pain behavior, such as inactivity, drug dependence, and complaining may be reinforced by either the family or the medical practitioner (Fordyce, 1976). More systemic types of reinforcement, such as disability insurance and workman's compensation have also been reported (Cott, 1985; Edwards et al., 1985; Belkin, 1985).

Cognitive factors, whether acquired prior to or after the onset of chronic pain can play a significant role. Here cognitive processes are defined rather broadly as the way patients experience and assign meaning to events. My guiding premise is one entertained by many cognitive theorists (e.g., Kelly, 1955; Lazarus, 1981; Mischel, 1981) that perceptions and interpretations of events may be as critical or even more critical than the events themselves. Beecher's (1959) classic study was one of the first to provide evidence for this position within the context of the pain experience. He found that U.S. soldiers

wounded at Anzio complained less and requested less pain medication than civilian surgical patients with similar lesions. For the wounded combatants the injury meant a break from the danger of battle, while for the surgical patients the pain was associated with dependency and anxiety. Zbrowski's (1969) work described cultural differences in pain perception among a group of patients with herniated disks and spinal lesions. In this study "Old Americans" (mostly white, Anglo-Saxon Protestants) described their pain in sensory terms. They rarely complained and when in severe pain withdrew from others. First generation or immigrant Jews and Italians showed no inhibitions about complaining. An interesting difference appeared between these two ethnic groups. Italians would complain when in pain but would appear at ease once the pain ended. Jews, however, would still express discomfort even after the pain had ceased. For Jews it seemed the implications of the pain ("is it some disease?") were of concern, while for Italians it was just the pain itself that was troublesome.

More recent studies have produced evidence of a specific link between pain and cognitions. Lefebvre (1981) found that depressed low back pain patients were more likely to make cognitive errors that

distorted the impact of their pain than either non-depressed pain patients or depressed psychiatric patients. The implication of this study was that depression in these patients is a function of both low back pain and cognitive errors, such as catastrophizing, overgeneralization and selective abstraction. Rudy et al. (1985), using a structural equations model, suggested a more complex relationship between chronic pain and depression. In this study, although there was a correlation between pain and depression, no direct path between these two variables appeared when social reinforcement (as described by Lewinsohn, Sullivan & Grosscup, 1982) and self-control were entered into the equation. Rather, chronic pain was shown to interfere with family and social networks and to lower self-control. These two mediating variables, in turn, elevated depression. In a study by Flor et al. (1985) chronic back pain patients reacted with strong EMG increases in their lower back when exposed to personally relevant stressors. Summarizing these studies, there is a growing body of evidence that the distress and disability associated with chronic pain is significantly mediated by cognitive factors such as the meaning of the pain, cognitive errors and self control.

Multidisciplinary Chronic Pain Units

With the increasing recognition of the multidimensional nature of chronic pain multidisciplinary chronic pain clinics have been established. In the past 10 years there has been a burgeoning growth of these clinics, from 20 in 1976 to 250 in 1979 (Blackwell, et al., 1984). Currently it is estimated that there are over 1,000 (Turk & Rudy, 1986b).

The growth and popularity of these clinics has been attributed to utilization of procedures derived from or inspired by the gate-control theory of pain (Aronoff, 1985; Wall & Melzack, 1984), improved communication among clinicians and researchers (Blackwell et al., 1984), and the growing popularity of the biopsychosocial model (Chapman & Brena, 1985). The establishment of the International Association for the Study of Pain, as well as the publication of the journal Pain are two events of particular importance in the development of cross fertilization among various health care professionals (Ng, 1981).

Within these clinics physical and medical interventions may include such treatments as trigger point injections, nerve blocks, nerve stimulation,

physical therapy, and antidepressant medication. Psychosocial treatments include occupational therapy, group therapy, hypnosis, behavior therapy, and cognitive-behavior therapy. As a result of Fordyce's influential 1976 book most clinics attempt to incorporate an operant model. The staff is trained to respond to well behaviors and not to respond to pain behaviors, such as grimaces and pain complaints. When pain medications are prescribed it is done on an interval schedule rather than on a PRN basis. For problems of drug addiction or dependency a "Pain Cocktail" is prescribed. A pain cocktail is a flavored liquid mixture of pain medications which is given at reduced amounts over regular intervals. In many cases patients are required to sign a contract in which they make goals. These include reduction in pain behaviors, and an increase in social, vocational, and occupational activities. Most clinics, including the Orthopedic Institute, emphasize behavioral changes rather than reduction of the pain.

Along with the prevailing behaviorist perspective there is an emphasis on self-control (which might be thought of as a cognitive element in the treatment). Patients are encouraged to take an active part in their treatments. They are asked to set goals for themselves

and to agree on the steps necessary to achieve these goals. In collaboration with various therapists patients choose the physical exercises, and vocational and occupational activities they will engage in.

A good part of the treatment efforts at pain clinics are attempts to reverse the process that brought the patient there in the first place. Patients' treatment prior to their arrival at a pain clinic can best be understood with the medical model. The medical model views others or factors outside of the self as responsible for the problem and the cure (Brickman, et al, 1982). During the early career of the chronic pain patient little work was done by the patient directly. Instead health professionals were expected to provide a diagnosis and prescribe treatment. Coping efforts were often limited to selecting the proper agents of diagnosis and treatment. While this model is usually appropriate for acute pain it becomes inappropriate for chronic pain (Ng, 1981). The usual regimen of medical treatments prior to the patients arrival at a pain clinic makes iatrogenesis a very likely possibility. Addison (1983), in his review of patient data from a chronic pain unit, attributes this to: entrenchment of psychosocial problems due to delayed identification and

treatment; counter productive interactions between patient and physician as a consequence of multiple medical procedures; and unnecessary treatments resulting from problematic interactions between the patient and physicians. As noted earlier, an additional problem with conventional medical treatment of pain is that this type of treatment is pain contingent. Medications are prescribed for as long as the patient is in pain and pain is used as a guide for length of bed rest and resumption of activities. A recent empirical study by Fordyce, et al. (1985), in which traditional management techniques were compared with behavioral methods, found that pain contingent treatments led to significant increases in claimed impairment.

In addition to the feelings of dependency, powerlessness, and vulnerability resulting from medical care, the patient may also confront difficulties at work and with friends and family members. The statistics on the impact of chronic pain on work are disquieting. As noted earlier, Bonica (1981) reviewing 1978 health data concluded that as a result of chronic pain well over 700 million work days were lost. In a study by Strang (1985) of 111 disabled workers with chronic low back pain 83% were rated as having

insufficient objective findings to warrant work incapacity. However only 5.1% of these patients returned to work. Patients described an adversarial relationship with their employer, demanded financial compensation, and displayed rigid and negative attitudes about returning to work. Compared to other non-life threatening chronic illnesses chronic pain appears to be one of the most debilitating (Gaston-Johansson, Johansson, Feldin, & Sanne, 1985; Kames, Nabiloff, Heinrich, & Schag, 1984).

Antonovsky's (1982) theory of coherence may be appropriate here. For the chronic pain patient the sense of coherence is shattered. Coping resources are diminished. Physical endurance is impaired, roles contributing to self-esteem, such as provider and worker may be lost. Income is often reduced (and in instances where it is maintained or increased it is usually linked to disability, such as workmen's compensation). Contact with primary social resources is either reduced or impaired and dependence upon secondary social resources, such as physicians and social service agencies, is increased. This shift from primary to secondary social resources has been linked to a further exacerbation of psychosocial distress (Ben-Sira, 1984).

The Importance of Self-Concept among Chronic Pain Patients

Given the array of long term stressors and the reduced coping resources that the chronic pain patient faces there is a good reason to believe that chronic pain has a significant impact on self image. In fact, this occurrence is entertained, if only covertly, by most writers on the subject. Two writers who have paid special attention to the impact of chronic illness on self image are Charmaz (1983) and Kotarba (1983).

Charmaz (1983) conducted in-depth interviews with chronically ill patients, family members and practitioners. Though her subject population consisted of patients with various types of debilitating chronic illnesses (such as cardiovascular disease, diabetes, cancer and multiple sclerosis) her findings do appear to contribute to a better understanding of the chronic pain condition. Chronic pain patients, like the patients suffering from the severe forms of the illnesses she describes, are disabled by their illness. Her theoretical perspective is symbolic interactionism; her major finding is that loss of self is a fundamental form of suffering in the chronically ill. This loss is accumulating: positive self-images

fall and new valued ones do not develop. Four sources of this suffering are identified: leading a restricted life; social isolation; being discredited, and becoming a burden.

Kotarba (1983) identifies three major stages of chronic pain: 1) onset of pain; 2) failure of conservative treatments and attempts at radical interventions; 3) and awareness of failure of all medical interventions, designation of chronicity, and search for alternative forms of help. During this process people in pain are thought to almost never resign themselves to a blind and passive acceptance of their suffering. Chronic pain imposes a two-fold meaning upon the patient: there is no cure - but you must learn to live with it. One example of learning to live with the pain is the control the pain afflicted person exercises over the intrusion of pain into certain social interactions. However for patients seen in chronic pain clinics mastery over the pain may be lacking. And this loss of control over their pain (actually their pain behavior) may demean them in the eyes of others and themselves. Patients, according to Kotarba interpret the label chronic pain patient (imposed upon them when medical treatments have failed

to treat their pain) as a negative evaluation of the self.

There are at least three reports in the literature of the relationship between self-concept scores and chronic pain. Armentrout (1979) using Fitts' (1965) Tennessee Self-Concept Scales (TSCS) found that chronic pain patients had significantly lower self-concept scores than other medical patients. He concluded that the experience of protracted pain contributed to changes in physical activities, family patterns, occupation, and abilities, and that these social and personal changes initiated a downward trend in the individual's self-perception. In a study conducted in Holland (Schmidt, 1985) with 39 chronic low back pain patients and an equal number of controls matched for age and sex, pain patients were found to have lower self-esteem scores, and were more critical and distrustful of others. Beekman, Axtell, Noland, and West (1982) assessed changes in self-concept in 50 chronic back pain patients who underwent a four week multidisciplinary inpatient program and 12 rheumatoid arthritis patients whose treatment was restricted to outpatient medical care. For the pain patients treated within a multidisciplinary framework, eight self-concept scores, as measured by the TSCS, improved at

discharge. However, a closer look at the data reveal that there was a steady decline in the self concept scores so that by six months after discharge only one of the self-concept scores (Physical Self) remained significantly higher than the pretrial scores. This suggests that self-concept may be less responsive to short term inpatient treatment than the authors had concluded.

Recently there has been a growing body of work on the importance of the self in psychology and a recognition of the impact of self-knowledge on behavior (e.g., Bandura, 1977; Markus, 1983; Kihlstrom & Cantor, 1984). As Markus (1983) notes, theories of the self have had a long history in psychology. The recent attention paid to the self seems to be a recognition and expansion of the insights made by earlier writers such as James (1890) and Kelly (1955).

Some of the problems involved in the treatment of chronic pain may be clarified by investigating self-perceptions of chronic pain patients. Patients who judge themselves as having coping resources and whose goal is to engage in a more vigorous life style should be more likely to respond to behavioral treatments than patients who lack goals and who are pessimistic about developing coping skills. This would appear to be an important issue in chronic pain research.

In other domains of behavioral medicine the study of self perceptions has met with some success. Bandura and his colleagues (e.g., Bandura, 1986; Condiotte & Lichtenstein, 1981) have produced evidence on the importance of perceived self-efficacy in postcoronary rehabilitation and consumptive behavior. Shelley Taylor's (1983) work on cognitive adaptation has provided evidence that self-generated feelings of mastery and self-esteem restoration play a critical role in the adjustment to breast cancer. And learned helplessness theory has apparently been strengthened once it paid closer attention to self-perceptions by employing an attributional framework (Abramson, Seligman, & Teasdale, 1978). The learned helplessness model has been applied to patients with rheumatoid arthritis (Anderson, Bradley, Young, McDaniel, Wise, 1985). However, assessment of self-perceptions as predictors of treatment outcome has not occurred in chronic pain research.

Since the late 1970's dozens of follow-up studies have been conducted on chronic pain patients. The majority of these studies have been criticized for poor methodology (Aronoff, Evans, & Enders, 1985; Nigl, 1984). Among the problems cited are that the criteria for improvement have not been clearly presented, there has been a failure to use standardized instruments, and

there has been inconsistency between pre-and post treatment measures. Rates for general improvement among chronic pain patients have ranged from 37% (Malec, Cayner, Harvey, & Timming, 1981) to 87% (Rosomoff, Green, Silbert, & Steel, 1981). Similar ranges have been reported for pain relief, increase in physical activities, and reduction in use of pain medication (e.g., Crue & Pinsky, 1981; Malec et al, 1981; Wang, Ilstrup, Nauss, Nelson & Wilson, 1980). Rates for return to employment have tended to be lower (Newman, Seares, Yospe, & Garlington, 1978; Painter, Sears, & Newman, 1980). These findings suggest that pain programs do have a significant impact on pain behavior. However, there still appears to be a sizable number of pain patients who remain unresponsive to treatment. An important question is why some patients respond to treatment and others do not.

The attempts to predict treatment outcome have generally focused on either the history of the illness, such as duration of pain and the number of surgical procedures, or psychopathology, such as the Hy and Hs scales of the MMPI. A representative study is that of Maruta, Swanson, and Swenson (1979). In this study seven items were related to treatment efficacy: shorter duration of pain, less time lost from work, fewer

surgical procedures, lower levels of pain intensity, less drug use, and lower Hy and Hs scales. However, subsequent studies (e.g., Heaton et al, 1982; Hamburger, Jennings, Maruta, and Swanson, 1985; Trieff & Yuan, 1983) have failed to identify the Hs and Hy scales as predictors of treatment response. Reliance upon variables related to the history of the illness has also proved problematic. For example in a recent study by Sweet, Breuer, Hazelwood, Toye, and Pawl (1985) no significant correlations were found between outcome and number of surgeries for pain, number of hospitalizations for pain, number of pain medications, or duration of pain condition. One of the reasons for conflicting findings in this area may be that self-perceptions of pain patients have not been assessed. Since chronic pain is a medically unsurpressable condition, the patient's attitudes and behavior plays a vital role in the treatment of this disorder.

Nerenz and Leventhal (1983) have argued that the central issue in chronic illness is how illness representations are related to the self-system. Some patients with chronic illness have a "total" view of their disease. Such patients fail to encapsulate the disease. For such patients all interactions are mediated by their illness. "The uniqueness of life's

varied episodes disintegrates and all life is a life of cancer, a life of heart disease, [... a life of pain]" (Nerenz & Leventhal, 1983, p. 28).

I will argue that chronic pain patients are especially susceptible to a total disease self-schema. I begin with the assumption that the patient's perceptions have been altered by the chronic pain experience. I have already reviewed a body of literature, e.g. Sternbach (1984), which shows that chronic pain patients face dramatic life adjustments and that the normal modes of gaining pleasure and satisfaction are reduced or inaccessible. Considering the findings of Charmaz (1983), Kotarba (1983), and to some degree those of Armentrout (1979) and Schmidt (1985) I argue that impairment extends to self identity. That is, an individual's self-perceptions on dimensions such as personal efficacy, affiliation, trust of physicians, harm avoidance, and dependence upon medical care may have been significantly impaired by the chronic pain experience. These life changes may lead to changes in perceptions of actual self, goals, and personal strivings. Some patients may become resigned to their condition. These patients, while still desiring an end to their pain, may be resistant to making personal changes such as increasing social

activities and returning to work. Another group may be more dissatisfied with their condition and, despite their pain, may be more responsive to opportunities to reduce their pain behavior. Both types of patients would probably rate themselves high along such dimensions as powerlessness, social isolation, dependence on medical care, and physical vulnerability. Resigned patients may also hold these self-concepts for the way they believe they may become (probable self) and for the way they would like to be (ideal self). However, patients who are less resigned to the chronic pain situation - though they may currently appear as distressed as the more resigned patients - may hold self schemas of their probable self and their ideal self that are less closely linked to disability and dysfunction than the probable and ideal self-concepts of the more resigned patients. My hypothesis is that patients who rate their probable and ideal selves high along the dimensions characteristic of the chronic pain experience (such as helplessness, dependency on medical care and physical vulnerability) will be more likely, after treatment, to report distress, pain and inactivity than patients who rate their probable and ideal selves lower on these dimensions.

Support for the hypothesis that future projections of the self can influence behavioral changes comes from recent work by Hazel Markus (Markus, 1983; Markus & Sentis, 1982; Markus & Nurius, 1986) and from some of the studies on self ideal-self discrepancy (e.g., Large, 1985; Phillips & Zigler, 1980; Rogers & Dymond, 1954). Markus (1983) has called for a new look at the self-concept. With the exception of self-discrepancy theory the conventional view of the self-concept has been that of a static entity. Markus argues that the self-concept actually represents a dynamic self. This expanded view of the self-concept includes past, current, and future selves. Particularly important are possible selves which represent "[...] cognitive structures within the self-concept that function as carriers of a person's aspirations, motives, and goals" (Markus, 1983, p. 545). Life changes influence possible selves. Failure and frustration may activate feared or dreaded possible selves. Under conditions in which negative self-knowledge is highly accessible the future will be viewed as bringing continued difficulties and problems. Anticipated future selves primed under these conditions will severely constrain one's present behavioral alternatives.

In one study by Markus and Nurius (1986) healthy subjects were given a list of 150 possibilities for the self. These items were derived from six categories: general descriptors of the self; physical descriptors; life-style possibilities; general abilities; various occupations; and possibilities tied to the opinions of others. These possibilities were selected so that a third were judged as positive, a third as negative, and a third as neutral. For each item respondents were asked whether: 1) the items described them as they were now; 2) whether the item was ever considered as a possible self; 3) how probable the possible self was, and 4) how much they would like the item to be true for them. Affective and motivational states were then assessed with the Affect Balance Scale (Derogatis, 1975), the Rotter Locus of Control Scale (Rotter, 1966), the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974). Partialing out the "now" self and then entering the remaining possible selves in a step-wise regression equation it was found that each of the possible selves (especially the "probable" and the "like to be" selves) contributed significant variance to the measures of self-esteem, negative affect, and hopelessness. In another experiment Markus

and Nurius (1986) presented the possible selves questionnaire to 30 subjects who had recently experienced a life crisis (death of a loved one, loss of a long-standing relationship). Subjects were divided between those who indicated that they had recovered from the crisis and those who reported they had not recovered. An additional 30 subjects who indicated that they had not experienced a life crisis were also assessed. It was found that the now selves of the non-crisis subjects were rated more positively than the now selves of the recovered and unrecovered crisis subjects. The now selves of the two crisis groups did not significantly differ from each other. However when the possible selves of the two crisis groups were compared differences were found. Respondents who reported that they had not recovered from the crisis rated their possible selves more negatively than recovered crisis subjects. In other words, "[...] those who say they are recovered from the crisis, even though they are not doing well currently, think it is possible for them to be motivated, independent, attractive and to win high honors. Most importantly, they find these possible selves to be significantly more likely than do the non-crisis controls" (Markus & Nurius, 1986, p. 25). The

authors argue that these possible selves represent incentives and cognitions of mastery and have facilitated the crisis subjects' recovery.

Although Markus notes that self-concept discrepancy generates affective and motivational states she does not discuss the role played by this discrepancy in her theory of possible selves. However, her theory appears to, at least partially, fall under its domain. What links her theory to self discrepancy theory are her findings that recovered crises subjects hold a negative view of the current self and a highly positive view of the future self (higher even than the non-crisis controls), as well as her argument that this positive cognitive representation facilitates recovery. There are however three important differences: (1) In her theory ideal self is one of many possible selves; (2) It is the cognitive representation of the ideal self (and not its discrepancy with the current self) which provides incentives; and (3) Markus's construct of the ideal self (which she calls the "like to be self") appears to be measured in the context of a possible self, while the ideal self in the discrepancy literature is not measured under this constraint. Despite these differences there appears to be considerable congruence

between these two research areas. Below I discuss some of the work that has come out of self-discrepancy theory, work that may prove helpful in understanding the chronic pain patient.

Large (1985) in a study of preparedness for change, gave 18 patients with chronic musculoskeletal pain a repertory grid which consisted of six self-concepts (elements) and eight constructs. Constructs were drawn from the Illness Behaviour Questionnaire (IBQ) (Pilowsky & Spence, 1976). The IBQ was developed in order to identify syndromes in pain clinic patients (Pilowsky, 1978). The eight constructs were: (1) Worried about illness; (2) Seriousness of illness; (3) Importance of emotional factors; (4) Free in expressing positive and negative feelings to others; (5) Depression; (6) Anxiety; (7) Importance of problems apart from illness; and (8) Irritability. The six elements that Large used were: (1) As I am; (2) As I would like to be; (3) As others see me; (4) As my doctor sees me; (5) Like a hypochondriac; and (6) Like a physically ill person. Patients rated each element on each construct with a visual analogue scale (VAS). Grids were analyzed by means of Slater's (1972, cited by Large, 1985) principle component analysis which provided linear distance between elements. In this

study the linear distance between the self (As I am) and the ideal-self (As I would like to be) elements was used as the independent variable. This self ideal-self discrepancy was defined as a measure of dissatisfaction. Initial evaluation also included VAS for pain, the McGill-Melzack Pain Questionnaire, and a base line measure of EMG activity. An experimental within-subject control design was used. This consisted of a waiting list period, control period, and bio-feedback training. Posttrial evaluation included the same measures used in the pretrial evaluation. In addition, posttrial evaluation included patients' subjective reports of improvement (Large does not mention how this was measured). The main finding was that there was a significant rank correlation between the linear distance of self and ideal-self elements (self-concept discrepancy) and the outcome as measured by pain score change. Reductions in pain were associated with greater distance between self and ideal-self elements. Self/ideal-self discrepancy also predicted subjective improvement.

Further support for the use of self-concept discrepancy as a measure of dissatisfaction comes from the work of Rogers and his colleagues (see Rogers & Dymond, 1954). Patients entering psychotherapy had

higher discrepancy scores, i.e., lower correlations between self and ideal self Q-sorts, than subjects in an equivalent non-clinic control group (Butler & Haigh, 1954). Furthermore, discrepancy scores at the beginning and at the end of a 60 day pre-therapy wait period were able to discriminate between a "continuers" group (subjects who followed through with their initial decision to receive treatment) and an "attrition" group (Subjects who chose not to follow through with their initial decision to receive treatment). Discrepancy scores of the attrition group and the continuers group, at the beginning of the wait period did not significantly differ. However, at the end of this period the attrition group's discrepancy scores were significantly lower, while the discrepancy scores of the continuers group remained high. Grummon (1954a) understood this as reflecting spontaneous recovery in the attrition group. These subjects made some personal adjustment during the period while they were waiting to receive treatment, and therefore, became less motivated for psychotherapy. According to this view, increases in personal adjustment and decreases in motivation for therapy are reflected in greater congruence between self and ideal self ratings. These findings provide some support for the model I am constructing here. In

line with the results of Rogers and his colleagues self-concept discrepancy is understood as an indicant of self dissatisfaction and a motivation to change. However, while self ideal-self congruence for Large (1985), indicates resignation, for Rogers' group this congruence is aligned with psychological health.

The theory that self/ideal-self congruence indicates self-acceptance and personal adjustment has been the traditional view held in self-concept research (Wylie, 1974; Robinson & Shaver, 1969). However, there is some evidence that the association between self-image congruence and psychological health may be more complex. Research on children by Zigler has linked increased self-image disparity with aspirations, age, and intelligence (Katz & Zigler, 1967; Phillips & Zigler, 1980) and research with adult psychiatric and non-psychiatric patients found a positive relationship between self-image disparity and social competence (Achenbach & Zigler, 1963). According to this cognitive developmental theory of self-image disparity, persons with high disparity are thought to have incorporated societal demands, mores, and values, and to make greater self-demands and to experience guilt from having been unable to fulfil them. A second factor contributing to self-image disparity is

cognitive differentiation. These factors provide some support for the study proposed here. The first factor, "social guilt", suggests that pain patients uncomfortable with their illness behavior will have a greater amount of self-image disparity and may be more motivated to change than their more self-accepting cohorts. Their motivation may come from a need to meet social values and mores that they have incorporated but which they are not currently realizing. "Cognitive differentiation", which is thought to represent a higher level of development as articulated by Piaget (Achenbach & Zigler, 1963), suggests that pain patients who are able to make increasingly subtle distinctions about their own behavior may be able to discriminate between "pain behaviors" and "well behaviors".

For example, low social guilt may help to maintain passive resignation to a pain bound life style in which beliefs, such as, one "deserves" to be taken care of, and that one is "exempt" from responsibilities are held. Employment of cognitive differentiation may be observed in patients who are able to reflect upon their own activities. These patients may increasingly be able to identify aspects of their own behavior and the behavior of others which reinforce their

disability, e.g., staying in bed because one is too tired or in too much pain, or eliciting the sympathy of others by grimaces and moans. Cognitive differentiation may also facilitate the articulation of patients' expectations and goals and, as a result, set the conditions for a larger disparity between self and ideal self to emerge.

Gough, Lazzari, and Fioravanti (1978) have remarked that a very high congruence between self and ideal-self statements could reflect insensitivity to personal problems, defensiveness, and other undesirable attributes. Preston and Viney (1984) assessed self and ideal-self perceptions of drug addicts in residential treatment centers. They found that respondents rated their ideal-self high on failure and powerlessness. Preston and Viney interpreted this finding as reflecting an ambivalence about goals and a fear of taking control of their own lives without the protection and security of the drug treatment centers.

It should also be noted that chronic pain patients are quite different from the patients Rogers' had treated. Rogers' psychotherapy patients were described as experiencing anxiety, failure, guilt, and as making reasonably successful adjustments in their life situation (Grummon, 1954b). Chronic pain patients,

while often experiencing emotional disturbance, usually are not making successful life adjustments. It is argued, therefore, that the chronic course of this disability, along with the social reinforcement of pain behaviors, contributes to shifts in self, ideal self and probable self perceptions. Initially we might expect a downward shift in current self perceptions. However, for patients who become so overwhelmed by the chronic pain condition that they have become resigned to it we might observe that probable self and ideal-self ratings would also show a downward trend. This model is also implied by Markus's self-schema theory (Markus, 1983). Repeated encounters with failure would likely prime negative cognitive representations of the self. These cognitive representations would in turn influence subsequent behavior.

The purpose of this study was to determine whether self-images of the possible self would predict whether or not pain patients would respond to treatment. Patients rated their self, their probable self, and their ideal self along the following five dimensions: 1) easily hurt and exploited by physicians; 2) social isolation; 3) control; 4) dependence on medical care; and 5) physical vulnerability (harm avoidance).

Interviews with chronic pain patients and observation of a chronic pain self-help group pointed to the importance of these constructs. 1) Themes of victimization emerged in the stories patients told about how they felt they had been hurt and misled by physicians. Recurring issues were multiple diagnoses, surgery which either did not improve or worsened their condition, and other treatments and diagnostic tests which proved more painful and problematic than they had been led to expect. 2) Stories of isolation, of not being understood by others, of feeling that no one else had pain like theirs, along with the relief of finding (at the hospital or in the self-help group) other people who shared their condition, pointed to social isolation as a significant factor in their lives. 3) The relevance of the constructs of control and powerlessness emerged during patients' discussion of how they often felt helpless about finding a definitive diagnosis for their condition and effective treatment. For many patients the pain and its management had taken control over their lives. Many had stopped working and, for all, social activities had been drastically reduced. Incidents of control appeared to be valuable for these patients. One woman who had been nearly house bound for years attributed her ability to drive

to Buffalo with her husband to her insistence that hourly stops be made so that she could stretch and walk. Another women reported that by consistently taking an hourly lunch break each day she was able to manage her pain during work. 4) Dependence on medical care was evident in just about all patients. Despite repeated disappointments with health professionals discussions in the self-help group repeatedly revolved around treatments for chronic pain. 5) Harm avoidance was also a concern of many patients. A former flamenco dancer who now suffered from muscle atrophy told stories of how, whenever she was recovering, she'd overexert herself and wind up hurt again. Another woman considered delaying a trip to California out of fear it would interfere with the treatments she was receiving in New York. "After all", she said, "the most important thing in my life is my back".

I expected that the majority of the patients would rate their current selves high along the dimensions of powerlessness, dependency on medical care, physical vulnerability, social isolation and conflict with physicians. My hypothesis is that patients who state that they will be (probable self) and that they would like to be (ideal self) less elevated on these dimensions will be more likely respond to treatment

than patients who rate their probable and ideal self high on these dimensions. That is, patients who endorse less disabling images of their probable and ideal selves will, after treatment, report less distress, less pain, and more physical and occupational activity than patients whose probable and ideal selves are more closely linked to the chronic pain experience. Also, it is likely that probable self ratings will show a modest positive correlation with optimism. However, the two constructs should not be thought of as the same thing since the probable self refers to domain specific images of the self, (employed, walking upstairs, taking drugs) while optimism tends to refer to global expectations about the self and the world.

Method

The intake sample consisted of 80 chronic pain patients who were admitted to a three week in-patient program, during the months of June through November 1986, at the Orthopaedic-Arthritis Pain Center, Hospital for Joint Diseases Orthopaedic Institute (OAPC) in New York City. (A detailed demographic profile of the sample is reported in the results section).

Treatment

The treatment team consisted of three physiatrists, one psychiatrist, two psychologists, two physical therapists, two occupational therapists, and two social workers. Nurses on the ward where the patients were treated had been trained in chronic pain management. Usually there were six patients treated during a three week inpatient period. Prior to admission patients were given a medical, psychiatric, physical therapy, and occupational therapy exam, as well as a questionnaire battery. Admissions were decided at team conferences. Efforts were made not to admit patients

with extensive psychopathology. The medical component consisted of a "pain cocktail" to reduce or eliminate dependence on pain medication, and anti-depressants for patients who presented depressive symptoms. The physical therapy included daily exercise, physical activities, massage, and a back school. The psychological component consisted of time management, assertiveness training, occupational therapy, hypnosis, and stress management. After discharge from the hospital most patients received outpatient treatment.

Instruments and Procedure

A week or two prior to being admitted demographics, family, social, employment, medical history, pain behaviors, and coping and beliefs about health were assessed with the Computerized Pain History Questionnaire (CPHQ) (Snow, Pinter, Gusmorino, Jimenez, & Weiser, 1985) a questionnaire developed at the OAPC. Items 29A to 29G on the CPHQ assess activities of daily living. These items were drawn from the modified version of the Stanford Health Assessment Questionnaire (Pincus, Summey, Soraci, Wallston, & Hummon, 1983). The standard OAPC assessment battery also included the MMPI, the McGill-Melzack Pain Questionnaire (MMPQ) (Melzack, 1975), the Profile of Mood States (POMS) (McNair, Lorr, & Doppleman, 1971) and the Poor Self-

esteem scale from the Psychiatric Epidemiological Research Inventory (PERI) (Dohrenwend, Shrout, Egri, & Mendelson, 1980). Refer to Appendix D for the intake assessment package and Appendix E for a categorical list of variables assessed. In addition to these tests, patients, within the first three days of their stay, were given a list of 45 possibilities for the self (see Appendix A). These items represent the five domains previously discussed: control; physical vulnerability; dependence on medical care; social isolation; and dependence towards physicians (see Appendix B for breakdown of items by domain). These items were intuitively derived or selected from pain patients' self descriptions, items from various self-concept scales, and from Roget's Thesaurus. Efforts were made to keep these items contextually anchored to the chronic pain experience. Subject's were asked whether the item represented them as they were in the present (now self); 2) whether the item represented them as they believed they would be in one year (probable self); 3) and whether the item represented them as they would like to be in one year (ideal-self). One year was chosen in order to provide patients with a point in time at which treatment gains would have been envisioned as enduring.

In addition to measuring self-concepts linked to the chronic pain experience a generalized measure of dispositional optimism was given to the patients. Since probable and ideal self-percepts represent how one expects or hopes to be in the future they were thought to show some link to generalized outcome expectancies. The 12 item Life Orientation Test (Appendix C) which has been found to predict symptom reports among college students (Scheier & Carver, 1985) and outcome among clinical populations (Strack, Carver & Blaney, in Press; Carver & Gaines, in Press) was used.

During the course of their hospital stay informal semi-structured interviews (see Appendix G for the outline of this interview) were conducted with the patients. These interviews represented an ancillary feature of this study.

Respondents were assessed approximately five weeks after in-patient discharge with an abbreviated version of the OAPC Follow-up Questionnaire (see Appendix F). This questionnaire contains items which assessed patients on such critical variables as post-discharge work and medical history, sexual activity, sleep, and an array of pain behaviors such as walking tolerance, time spent in bed, and pain ratings. In addition

patients were again administered the Profile of Mood States scale, the Poor Self-esteem scale and the McGill-Melzack Pain Questionnaire. In instances where patients refused or failed to return the follow-up questionnaire structured and/or open-ended phone interviews were conducted. The questions typically asked in these interviews were about occupational status and physical activities (items 2, 2A, 4, 4A and 9) and subjective estimates of improvement (items 26 through 29). An earlier study at the OAPC with this population has shown that, in instances where phone contacts have been made with patients, 56% to 76% return the questionnaire and that less than 4% refuse to either fill in a questionnaire or allow a phone interview. In the study discussed here patients were expected to be more responsive since, 1) patients, at intake, were asked for their consent to participate in the follow-up study; 2) follow-up occurred considerably earlier than with the previous in-patient sample; and 3) the follow-up questionnaire for this sample of patients was shorter than the one previously administered. The follow-up questionnaire, along with a self addressed stamped envelop, was given to patients (in a sealed envelop) at their time of discharge from

the hospital. Patients were instructed to complete and return the questionnaire one month after discharge.

The dependent variables were pain relief, employment, vocational, and household activities, decreased use of pain medications, increased physical and social activities, mood disturbance and self-esteem.

Intake findings were compared with the possible selves scores. It was expected that now self, probable self, and ideal self ratings should correlate with the intake measures of mood disturbance, as measured by the POMS, and with self-esteem, as measured by the Psychiatric Epidemiological Research Inventory. Two types of analysis regarding the relationship between possible selves scores and outcome data were undertaken. The first type of analysis used correlational and regression techniques to determine whether possible selves ratings predicted response to treatment. In instances where intake and outcome scores for the same measure were available intake scores were statistically controlled so that a measure of change could be obtained. The major hypothesis was that there would be significant association between outcome scores and the ratings of probable and ideal self. Discrepancy scores (Self/Ideal-self and

Self/Probable-self) were also obtained in order to determine whether increased discrepancy correlated with distress at intake (adjustment hypothesis) and whether high discrepancy would predict a better response to treatment (motivational hypothesis). The second type of analysis utilized a categorical measure of adequate functioning. An operational definition of successful outcome was derived from a modification of the criteria used by Roberts and Reinhardt (1980). In order to meet criteria for a successful outcome patients were required to be: employed, looking for a job, working as a volunteer, in school, or engaged in a hobby or housework more than 50% of the time. Patients who reported that they met none of these criteria were classified as unsuccessful (inactive). It was expected that the Probable Self and Ideal Self means would be higher for the active group than for the inactive group.

Results

Initial status

Demographic, medical and behavioral measures.

Tables 1 and 2 present a breakdown of the demographic, medical and behavioral characteristics of the 80 patients in the intake sample. The overall profile is dominated by a middle aged, Caucasian, reasonably well-educated, Jewish or Catholic and 75% female clientele. Sixty-two (77.5%) of the patients were admitted with some type of back pain, four patients (5.0%) were admitted with chronic intractable cervical pain, four were admitted with some type of lower extremity pain; among the other pain complaints were facial pain, hand pain, and trunk pain. The mean number of years in pain was 6.9. Ninety percent of the patients reported previous hospitalizations for pain; 57.4% had at least one surgery for their pain and 26.5% reported at least two surgeries. Although 71.4% of the patients were employed before the onset of their pain, at intake only 10.3% were working. Ninety percent of the patients reported using pain medications and 50.6% reported using some type of narcotic medication.

Table 1

Demographic Characteristics of Intake Sample N=80*

<u>Variable</u>	<u>N</u>	<u>Percentage</u>
Males	22	27.5%
Females	58	72.5%
Race		
white	63	79.7%
black	9	11.4%
Hispanic	5	6.3%
other	1	1.3%
Education		
grades 1-8	2	2.4%
grades 9-11	13	16.9%
high school	22	28.6%
tech/2 year college	24	31.2%
college	7	9.1%
graduate school	9	11.7%
Marital status		
never married	20	27.0%
married	28	37.8%
separated or divorced	15	19.3%
widowed	11	14.9%
Religion		
Protestant	9	11.5%
Catholic	29	37.2%
Jewish	31	39.7%
other	5	6.4%
none	4	5.1%

Age: Median: 43 Mean: 46.1 S.D.: 15.9 Range: 20-84

* On this table and all subsequent tables sample size may vary for individual items.

Table 2

Medical and Behavioral Characteristics of Intake
Sample N=80

<u>Variable</u>	<u>N</u>	<u>Percentage</u>
Employed prior to pain	55	71.4%
Working at intake	8	10.3
Financial difficulties	49	69.0
Decrease in income since pain	47	77.0
Using pain medication	67	90.5
Using narcotics	39	50.6
Litigation	20	27.0
Using assistive devices	46	59.7

<u>Variable</u>	<u>Median</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Years in pain	4.75	6.90	8.06	.25 to 38
Past treatments for pain	8	8.79	4.33	1 to 17
Past hospitalizations for pain	2	4.00	4.53	0 to 25
Number of surgeries for pain	1	1.26	1.67	0 to 7
Hours in bed during the day	5	4.96	3.38	0 to 12

Clinical measures. The psychological profiles of these patients show high levels of disturbance (Table 3). T-Scores on seven of the 10 clinical scales of the MMPI are over 60. The mean scores for hypochondriasis, depression and hysteria are over 70, placing the average pain patient in this sample two standard deviations above the mean. A high elevation on the left side of the MMPI scale is a typical profile of the chronic pain patient (e.g., Sternbach, 1974; McArthur, Cohen, Gottlieb, Naliboff, & Slander, 1987). This is likely due to a high level of depression and a large number of physical complaints. The Profile of Mood States (POMS) for patients in this sample looks similar to the T-score profile of a group of psychiatric out patients (McNair et al., 1971).

Pain. High levels of pain are indicated by a score of 69.6 on a 0 to 100 point scale from the Computerized Pain History Questionnaire (CPHQ) and a mean of 3.71 on the four point present pain intensity scale (PPI) from the McGill-Melzack Pain Questionnaire (MMPQ). The relative frequencies in Table 4 show that 54.3% of the sample reported their pain as either horrible or excruciating and 77.3% reported that they were constantly in pain. The other MMPQ scores appear (Table 3) to be consistent with what has been previously reported for pain patients (Melzack, 1975).

Table 3

Psychological Measures at Intake (N=74)MMPI (validity & clinical scales)

	<u>Mean</u>	<u>SD</u>
Lie	52.4	6.46
Infrequency	59.5	9.02
K (Social desirability)	51.5	7.51
Hs	73.7	11.0
D	79.2	13.8
Hy	75.4	9.82
Pd	65.8	11.3
Mf	51.2	12.7
Pa	61.2	9.94
Pt	66.4	10.9
Sc	68.4	13.8
Ma	57.7	10.8
Si	57.9	10.6
Negative Affectivity#	63.3	11.8

Computerized Pain History Questionnaire

Pain (0 to 100)+	69.6	15.6
Stress (0 to 100)	66.9	20.7

Profile of Mood States*

Anxiety	47.6	8.37
Depression	48.6	9.18
Hostility	50.2	8.76
Activity	48.6	8.52
Fatigue	54.8	8.71
Confusion	46.2	9.31
Total Mood Disturbance	198.8	41.62

McGill-Melzack Pain Questionnaire

Sensory (0-41)	15.4	7.42
Affective (0-16)	3.25	2.58
Evaluative (0-5)	3.54	1.34
Miscellaneous (0-17)	5.47	3.12
Present Pain Intensity (1-5)	3.71	0.95
Number of Words Counted (0-20)	10.4	4.33

Negative Affectivity (NA) is measured by the Taylor Manifest Anxiety Scale.

+ The intervals in parentheses refer to the possible range of the scale.

* The norms for the T-scale used here for the POMS were derived from a psychiatric population.

TABLE 4

Relative Frequency Counts for Intensity and Frequency
of Pain at Intake

Pain Intensity (from the Present Pain Intensity scale
of the McGill-Melzack Pain Questionnaire):

Value label	Frequency	%	Cumulative %
1 Mild	0	--	--
2 Discomforting	6	8.6	8.6
3 Distressing	26	37.1	45.7
4 Horrible	20	28.6	74.3
5 Excruciating	18	25.7	100.0

Pain Frequency (from the CPHQ):

Value label	Frequency	%	Cumulative %
1 80-100% (constant)	58	77.3	77.3
2 50-80%	16	21.3	98.3
3 25-50%	1	1.3	100.0
4 < 25%	0	--	100.0

Follow-up sample

Table 5 displays the response rate for the 80 pain patients originally selected for this study. Follow up data were not obtained for twenty of these patients due to such factors as failure to complete the program, comprehension problems, and refusals. Approximately 75% of the patients were contacted between four and eight weeks after discharge. However, seven patients were not reached until 12 weeks after discharge; therefor the interval between discharge and follow-up is positively skewed ($M=8.39$, $SD=7.33$, median=5).

Self Perception Scale and Optimism

The Now Self, Probable Self and Ideal-self scales were constructed in order to determine whether patients' expectations and idealizations of themselves in the future would predict response to treatment. These three self perception scales originally consisted of five subscales (control, dependency on medical care, physical vulnerability, affiliation and conflict with physicians). Each of these subscales possessed adequate reliability (Refer to Appendix I for a comprehensive description of the reliability of the Self Perception Scale).

Table 5

Post Treatment Assessment: Response Rate

	<u>Intake Sample (N=80)</u>		<u>Posttrt (N=67)</u>
<u>Posttrt assessment</u>	<u>N</u>	<u>%</u>	<u>%</u>
Questionnaire	47	58.7	70.2
Phone Interview	8	10.0	11.9
Brief Phone Int.	5	6.3	7.5
Refused	3	3.8	4.5
No posttrt contact	4	5.0	<u>5.9</u>
			100.00
Comprehension problem*	5	5.0	
Discharged early	<u>8</u>	<u>10.0</u>	
	80	100.00	

* Inadequate command of English or cognitive problem

Validity of the three self concept measures. The 15 Self Perception Scales (SPS) were factor analyzed with principal axis factoring using varimax rotation in order to determine whether Now, Probable and Ideal-self could be viewed as separate dimensions (Table 6). The results provided evidence for the construct validity of the three self-concept measures. Four factors were produced with eigenvalues greater than one. These four factors accounted for 70.6% of the variance. Factor I represented the dependency, control, vulnerability and affiliation scales from Ideal-self. Factors III and IV represented these same SPS scales from the Probable and the Now Self. The scales that loaded on factor II were the Probable, Now and Ideal-self conflict with physicians scales. The interesting finding is that, with the exception of conflict with physicians, the scales cohere along the dimensions of Now Self, Probable Self, and Ideal-self rather than along the dimensions of control, dependency, physical vulnerability and affiliation. This indicates that pain patients are able to think about themselves as they are now, as they expect to be and as they would like to be. On the other hand, the three conflict with physicians scales loaded on one factor. Conflict with

Table 6

Factor Analysis of the 15 Scales from the SPS:
Principal Axis Factoring; Varimax Rotation*

Factor	Eigenvalue	% of Variance		Cum %
1	4.60	30.7		30.7
2	2.77	18.5		49.2
3	1.98	13.2		62.4
4	1.23	8.2		70.6

	I	II	III	IV
Ideal Self Dependency	.83			
Ideal Self Control	.76			
Ideal Self Vulnerab.	.66			
Ideal Self Affiliation	.66			
Probable Self C/W/P#		.86		
"Now" Self C/W/P		.77		
Ideal Self C/W/P		.69		
Probable Self Vulnerability			.91	
Probable Self Control			.66	
Probable Self Dependency			.54	
Probable Self Affiliation			.49	
"Now" Self Control				.76
"Now" Self Affiliation				.73
"Now" Self Vulnerability				.64
"Now" Self Dependency				.50

* All unreported loadings are $\leq .40$.

C/W/P represents conflict with physicians.

physicians appears to represent something different than the other four scales since it was not differentiated by the three self-conflict scales.

Control, dependency and vulnerability. Among the five subscales of the Now Self scale patients scored lowest on control, dependency and physical vulnerability (Appendix I). During interviews with these patients 85% of the hopes and fears reported wererelated to these three dimensions (Appendix I). Since patients appear to identify these constructs as important and as their most disturbed areas of functioning subsequent analyses of the Now Self, Probable Self and Ideal-self scales will focus on the composite score of the control, dependency and physical vulnerability scales.

Optimism. The Life Orientation Test (LOT), Scheier and Carver's (1985) scale for optimism-pessimism, is used in many subsequent analyses along with the three Self Perception Scales. The rationale is that this measure of optimism has been conceptualized to represent a dispositional tendency to hold generalized expectancies about the future (Scheier & Carver, 1985), suggesting a theoretical link to the

probable self construct that I am exploring. The optimism mean obtained for the pain patients ($M = 18.5$, $SD = 5.34$) was significantly lower ($p < .001$) than the norms reported by Scheier & Carver (1985) for college males ($M = 21.03$, $SD = 4.56$, $t = 4.17$) and females ($M = 21.21$, $SD = 5.22$, $t = 4.18$). Optimism significantly correlated with Now Self ($r = .36$, $p \leq .001$) and Probable Self ($r = .34$, $p \leq .005$), but did not correlate with Ideal-self (Table 7).

The Self Perception Scale, Optimism and Other Pre-treatment Measures

In order to get a better understanding of pain patients' current, probable and ideal self-concepts the three self perception scales as well as optimism were correlated with the pain, distress and activity measures taken at intake. I will first review the relationship of the self perception variables and optimism with the pain and distress measures, I will then examine physical activities.

Since Now Self was thought to represent a self-schema of distress and disability it was expected that it should correlate with other scales measuring distress and, such as the Profile of Mood States

(POMS), MMPI, Poor Self-esteem. Convergent validity appears to have been demonstrated given the high proportion of significant correlations between the Now Self scale and various measures of mood disturbance (see Table 8). Coefficients ranging from $-.28$ ($p < .01$) to $-.50$ ($p < .001$) were obtained for correlations between Now Self and the distress measures on the POMS. A similar pattern appears for correlations between Now Self and Poor Self-esteem, and Now Self and the MMPI scales. The relationship between

Table 7

Intercorrelations of the Self Perception Scales+,
Optimism and Negative Affectivity

	1	2	3	4
1. Now Self	--			
2. Probable Self	.36***	--		
3. Ideal-self	-.08	.29**	--	
4. Optimism	.36***	.34**	-.02	--
5. NA	-.53***	-.37***	.00	-.60***

+ On this table and all other tables in the Results section the subscales for the three Self Perception Scales are Control, Dependency on Medical Care, and Physical Vulnerability.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table 8

Correlations of the Self Perception Scales, Optimism and Negative Affectivity with Measures of Distress, Pain and Activity at Intake (N=65)+

	Now	Probable	Ideal		
<u>POMS</u>	<u>Self</u>	<u>Self</u>	<u>Self</u>	<u>Opt</u>	<u>NA</u>
Anxiety	-.28**	.04	.15	-.32**	.40***
Depression	-.44***	-.10	.10	-.47***	.52***
Hostility	-.48***	-.16	-.02	-.35**	.50***
Activity	.33**	.14	-.14	.32**	-.23*
Fatigue	-.41***	-.04	.15	-.25	.32**
Confusion	-.43***	-.12	.05	-.46***	.48***
Total POMS	-.50***	-.11	.12	-.46***	.53***
Poor					
Self-esteem	-.32**	-.21*	.08	-.45***	.43***
<u>McGill-Melzack Pain Questionnaire</u>					
Sensory	-.39***	-.19	.01	.07	.31**
Affective	-.19	.13	.18	.11	.12
Evaluative	.01	.10	.01	.06	-.12
Miscellan.	-.26*	-.01	.16	.13	.15
Present pain intensity	-.14	-.09	.23*	.03	-.02
Number of pain words	-.37**	-.07	.07	.03	.27*
<u>CPHQ activity measures</u>					
Physical tolerance	.37***	.03	-.27*	.22*	-.12
Weekly activities	.31**	.22*	.14	.00	-.07
Activities of daily living	.31**	.15	.11	.02	.14
Hobbies	.36**	.18	.00	.18	-.24*
Housework	.25*	.21	.22	.12	.14
Downtime	-.56***	-.17	.05	-.16	.28*
TV watching	-.41**	-.13	.08	-.11	.17

(Table continues)

Table 8 (continued)

Correlations of the Self Perception Scales, Optimism
and Negative Affectivity with Measures at Intake
(N=65)+

	<u>Now Self</u>	<u>Probable Self</u>	<u>Ideal Self</u>	<u>Opt</u>	<u>NA</u>
<u>MMPI</u>					
Lie	.09	.04	-.18	.16	-.27*
Infrequency	-.35**	-.22*	-.12	-.41***	.61***
K-scale	.28*	.23*	.08	.41***	-.60***
Hs	-.29**	-.14	-.13	.03	.24*
D	-.45***	-.36**	.00	-.44***	.57***
Hy	-.30**	-.12	-.09	.07	.25*
Pd	-.30**	-.36**	-.05	-.32**	.46***
Mf	-.02	-.03	-.13	.10	.04
Pa	-.32**	-.24*	-.08	-.23	.48***
Pt	-.37**	-.26*	.01	-.41***	.68***
Sc	-.41***	-.24*	-.11	-.34**	.62***
Ma	-.08	.04	-.05	.14	.07
Si	-.33**	-.26*	-.02	-.49***	.54***

+ All significant correlations are in the expected direction except for Ideal Self.

* $p \leq 0.05$

** $p \leq 0.01$

*** $p \leq 0.001$

Now Self and the McGill-Melzack Pain Questionnaire (MMPQ) is not as robust; only three of the six pain scales are significantly correlated with Now Self.

The relationship between the Probable Self variable and the intake measures of distress and pain is much weaker than the relationship between Now Self and the intake variables. No significant correlations occur with the POMS or with the MMPQ scales. Correlations between Probable Self and the MMPI scales and Poor Self-esteem, though significant, are not as high as the Now Self correlations.

There were no significant correlations between Ideal Self and the intake measures of distress. Only one significant correlation occurs between Ideal-self and one of the pain scales. Correlations between optimism and other intake measures of distress show significance for Poor Self-esteem, and several POMS and MMPI scales. No relationship appears between optimism and pain.

Physical activities. When the relationship between the three self-concepts and disability is examined, Now Self is shown to be strongly related to physical activity at intake. In this analysis the three Self Perception scales were correlated with seven activity measures from the CPHQ. These CPHQ variables

were: a composite score of walking, standing and sitting tolerance (physical tolerance); the total number of weekly physical activities; activities of daily living (ADL) (Pincus, et al., 1983); hobbies; housework; time in bed during the day (downtime); and hours spent watching TV. during the day. The items from the ADL scale represented difficulty with common daily activities such as dressing, sitting in a chair, walking and washing, etc. (In the tables presented in the results section the sign of the ADL coefficients has been changed so that positive correlations represent increased, rather than decreased, activities of daily living). Housework, hobbies, downtime and TV were one item measures. The reliabilities of the multi-item measures ranged from .54 to .90. The pattern of correlations (Table 8) shows that all seven of the activity variables correlate with Now Self; only one activity measure, weekly activities, correlates with Probable Self ($r = .22$); Ideal-self is negatively correlated with physical tolerance ($r = -.27$); and optimism is positively correlated with physical tolerance.

What the data appear to show is that pain patients' perceptions of their current levels of control, dependency on medical care and physical

vulnerability are strongly related to mood disturbance and physical activity, and are moderately related to pain. Probable Self does not appear to be related to pain or to state measures of distress (POMS) at intake but does appear to be weakly related to self-esteem, trait measures of distress (the MMPI clinical scales) and physical activity. The relationship between Ideal-self with the intake measures is weak and inconsistent. Optimism is related to measures of psychological distress but not to pain or physical activity.

Self-perceptions, Optimism and the Follow-up Measures

Probable self. When the correlations between Probable Self and the measures taken at follow-up are examined (see Table 9) a stronger association between Probable Self and mood, pain and activity emerges than had been found when Probable Self had been correlated with the intake measures. Five of the six POMS scales taken at follow-up are significantly correlated with Probable Self. And, whereas the correlation between Probable Self and the Total Mood Disturbance Scale at intake was $-.11$ ($p = n.s.$), the correlation between the Total Mood Disturbance at follow-up and Probable Self is $-.45$ ($p < .01$). Probable Self ratings of control, dependency and vulnerability also show significant

correlations with Poor Self-esteem, the Sensory, Affective and Evaluative pain scales, and weekly activities, activities of daily living (ADL), hobbies and housework.

Partialing out Now Self from Probable Self. One criticism of the utility of the Probable Self measure is that the relationship between this measure and outcome could be attributed to shared variance between Now Self and Probable Self. This question was addressed by partialing out Now Self from the correlations between Probable Self and the outcome measures (Table 9). The pattern that emerges shows that Probable Self is no longer related to pain, moderately related to mood and self-esteem and continues to remain strongly related to physical activity.

Now self. The pattern of correlations between Now Self and the follow-up measures of distress and pain is similar to the pattern with the intake measures: Now Self correlates with Poor Self-esteem, all of the POMS scales and with three pain scales from the MMPQ. The pattern of correlations between Now Self and activity is less robust; Now Self correlates with three of the activity follow-up measures rather than with all seven.

Optimism and ideal-self. Optimism shows a similar pattern with the follow-up measures as it had with the intake measures: significant correlations with the POMS and Poor Self-esteem; and insignificant correlations with the MMPQ scales and the activity measures. Ideal Self correlates in the expected direction with evaluative pain, weekly activities, and ADL.

The pattern of correlations suggests that measures of self, probable self and optimism taken before admission are associated with the post treatment measures of mood and, in the case of Now Self and Probable Self with activity and to a lesser extent with pain. The relationship between Probable Self and the physical activity variables seems especially strong since these were the highest correlations that remained after the variance contributed by Now Self had been removed.

Negative affectivity

The significant correlations between Probable Self and the MMPI clinical scales (trait measures of distress) and the failure for Probable Self to

Table 8

Correlations of the Self Perception Scales, Optimism and Negative Affectivity with Measures of Distress, Pain and Activity at Followup (N=42)+#

	Probable Self W/Now Self Partialed					
	Now Self	Probable Self	out	Ideal Self	Opt	NA
<u>POMS</u>						
Anxiety	-38**	-30*	-18	-15	-34*	66***
Depression	-40**	-43**	-35*	-20	-37**	52***
Hostility	-32*	-38**	-30*	-13	-33*	56***
Activity	50***	44**	32*	19	18	-37**
Fatigue	-31*	-32*	-24	02	-25*	12
Confusion	-19*	-18	12	-04	-45***	26*
Total POMS	-46**	-45**	-34*	-15	-41**	52***
Poor						
Self-esteem	-36**	-36**	-26*	-18	-54**	46***
<u>MMPQ</u>						
Sensory	-33*	-27*	-17	-26	-06	33*
Affective	-36*	-31*	-20	-16	-10	18
Evaluative	-22	-33*	-30	-17	-06	31*
Miscellan.	-09	-26	-24	-28*	-10	-09
PPI	-16	-04	-02	06	-10	22
NWC	-30*	-23	-14	-23	00	37**
<u>CPHQ</u>						
Physical Tolerance	40**	19	05	-01	06	-11
Weekly activities						
	32*	64***	60***	35*	12	-39**
ADL	45**	48***	38**	39**	-10	-15
Hobbies	26	47**	41**	23	-18	14
Housework	16	27*	23	24	-02	09
Downtime	-19	-05	02	-10	-04	14
TV	-17	00	06	10	-02	-01

+ All significant correlations are in the expected direction.

Decimal points have been deleted.

* $p \leq 0.05$

** $p \leq 0.01$

*** $p \leq 0.001$

correlate with the intake measures of the POMS (a state measure of distress) suggests that Probable Self may be more closely related to trait measures of affect than to state measures of affect. In order to explore this issue further the role of negative affectivity was investigated. Watson and Clark (1984), in their comprehensive review of this construct, describe negative affectivity (NA) as a mood dispositional dimension of negative emotionality and self-concept. Negative affectivity is somewhat more general than the traditional theory of trait anxiety. Not only are people who are high in NA reactive to stress but they also show a predisposition to experience distress and dissatisfaction at all times. Watson and Clark (1984) list a number of scales which have been frequently used to measure neuroticism and trait anxiety. These authors argue that the high intercorrelations among these scales represent one unifying construct, namely, NA. The most highly correlated scale in this matrix is the Taylor Manifest Anxiety Scale (TMAS) (Taylor, 1953). This scale is available to me since it is one of the many research scales (Appendix E) scored from the MMPI that pain patients had taken at intake.

Pain patients, at intake, display a relatively high level of NA with a mean on the Taylor Manifest Anxiety Scale (TMAS) of 63.3 (SD = 11.8). Table 7

shows that TMAS significantly correlates with Now Self ($r = -.53$), Probable Self ($r = -.37$) and with optimism ($r = -.60$). No relationship is found between TMAS and Ideal-self.

The relationship between negative affectivity and the other intake measures shows a robust pattern of correlations between TMAS and the POMS, self esteem and the MMPI clinical scales. A weaker relationship is found between TMAS and the intake measures of pain and physical activity. TMAS correlates with only two of the six MMPQ scales and with only two of the seven CPHQ activity scales.

A similar pattern of correlations is found between TMAS and measures taken at follow-up. Table 9 shows that TMAS correlates with all of the POMS scales except with fatigue (a measure of low positive affect). Four (anxiety, depression, hostility and total mood disturbance) of these correlations are impressive ($.52 \leq r \leq .66$). TMAS also correlates with self-esteem, three of the MMPQ scales and one of the physical activity measures.

Predicting Change

Table 10 shows the results of a series of hierarchical and stepwise multiple regression analyses which were carried out in order to determine the degree to which self perception, optimism and negative

affectivity predicted pain, distress and physical activity at follow-up, as well as to see if a combination of these variables would prove more predictive than simply using one variable. In these regression analyses the dependent variables (all given at follow-up) were the six POMS scales, POMS Total Mood Disturbance, Poor Self-esteem, the six MMPQ scales, and the seven CPHQ activity measures. Initial levels of these variables were controlled for by first entering the corresponding pre-treatment measure of the POMS, Self-esteem, MMPQ, or CPHQ as an independent variable and then entering, in a stepwise fashion, the three Self Perception Scales, optimism and NA. Because of the small sample size significance level was set at 0.10. Regression analysis of the POMS shows that Probable Self contributed a significant proportion of the variance to depression and Total Mood Disturbance, NA predicted changes in anxiety and hostility, Now Self predicted activity, and that none of the predictors contributed to changes in either fatigue or confusion. The effects of NA on anxiety and hostility are impressive since the change in R-Square is greater than the R-Square for the intake measures of anxiety and hostility. Probable Self contributed significant variance to the MMPQ miscellaneous pain scale. Negative affectivity contributed to five of the MMPQ

Table 10

Regression Analysis of Mood, Self-esteem, Pain and Activity at Follow-up

Profile of Mood States (N=38)

<u>Measures</u>					
<u>Dependent</u>	<u>Independent</u>	<u>Beta#</u>	<u>R-Square Change</u>	<u>Fch</u>	<u>p</u>
Anxiety	Anxiety		.13	5.42	.025
	NA**	.71	.33	21.85	<.001
	TOTAL		.46	15.2	<.001
Depression	Depression		.24	11.81	.001
	Probable Self	-.36	.13	7.16	.011
	TOTAL		.37	10.5	<.001
Hostility	Hostility		.08	3.32	.076
	NA*	.57	.20	9.98	.003
	TOTAL		.28	7.05	.003
Activity	Activity		.01	0.34	n.s.
	Now Self*	.47	.22	10.05	.003
	TOTAL		.22	5.24	.01
Fatigue	Fatigue		.10	4.07	.051
Confusion	Confusion		.24	11.58	.002
Total POMS	Total POMS		.25	12.18	.001
	Probable Self	-.35	.12	6.66	.014
	TOTAL		.36	10.3	<.001
Poor Self-Esteem	Poor S.E.		.32	17.03	<.001
	Optimism	-.38	.12	7.59	.00
	TOTAL		.44	10.3	<.001

(Table Continues)

Table 10 (continued)

Regression Analysis of Mood, Self-esteem, Pain and
Activity at Follow-up

McGill-Melzack Pain Questionnaire (N=30)

<u>Dependent</u>	<u>Independent</u>	<u>Beta#</u>	<u>R-Square</u>	<u>Fch</u>	<u>p</u>
Sensory	Sensory		.30	14.5	<.001
Affective	Affective		.0005	0.14	n.s.
	NA	.38	.15	4.11	.054
	TOTAL		.15	2.06	.15
Evaluative	Evaluative		.01	0.35	n.s.
	NA	.43	.18	6.18	.019
	TOTAL		.20	3.30	.052
Miscellaneous	Misc.		.09	3.22	.082
	Prob. Self	-.42	.081	2.95	.096
	NA	-.31	.079	3.08	.090
	TOTAL		.25	3.30	.034
Present pain intensity	PPI		.16	5.97	.020
	NA	.41	.07	2.88	.100
	TOTAL		.23	4.61	.07
Number of words counted	NWC		.31	14.7	<.001
	NA*	.40	.16	9.47	.004
	TOTAL		.47	14.0	<.001

(Table continues)

Table 10 (continued)

Regression Analysis of Mood, Self-esteem, Pain and Activity at Follow-up

CPHQ activity variables (N=35)

<u>Dependent</u>	<u>Independent</u>	<u>Beta#</u>	<u>R-Square Change</u>	<u>Fch</u>	<u>p</u>
Physical tolerance	Phys. tol.		.23	9.49	.004
	Now Self	.28	.07	3.28	.08
	TOTAL		.30	6.72	.004
Weekly acts.	Weekly acts.		.25	9.43	.005
	Prob. Self**	.57	.30	18.31	<.001
	TOTAL		.55	16.8	<.005
Acts. of Daily Living	ADL		.40	23.11	<.001
	Prob. Self	.36	.12	8.50	.006
	TOTAL		.53	18.4	<.001
Hobbies	Hobbies		.16	5.45	.027
	Prob. Self	.34	.10	3.56	.070
	TOTAL		.26	4.75	.017
Housework	Housework		.09	3.42	.073
Downtime	Downtime		.25	12.2	.001
TV	TV		.29	16.4	<.001

Note: The dependent variables represent measures given at follow-up. The independent variables represent measures given at intake. The intake variables of mood, pain or activity were entered first and then the three self perception scores, optimism and NA were entered in a stepwise fashion. Criteria for admission of the predictors into the stepwise regression analysis was set at $p \leq 0.10$.

All Beta weights are in the expected direction except for Miscellaneous pain regressed on NA.

* Meets criteria for the Bonferroni correction for joint effects at the .10 level of significance (.10/21=.005).

** Meets criteria for the Bonferroni correction for joint effects at the .05 level of significance (.05/21=.002).

scales. (However, the beta weight for one of these scales, Miscellaneous pain, was in the opposite direction). Negative Affectivity failed to make any significant contributions to the CPHQ activity measures. Probable Self contributed to three of these measures (weekly activities, Activities of daily living, and hobbies) and Now Self contributed to physical tolerance. The only pre-post treatment change which optimism contributed to was self-esteem. Ideal-self made no significant contributions to any of the dependent measures.

Among the five predictors it appears that improvement in mood and reduction in pain is best predicted by negative affectivity. However Probable Self appears to be the best overall predictor in that it predicted improvement within each of the three categories: mood, pain and physical activities. In only one of the regression equations does entering an additional predictor significantly increase the variance contributed. Failure to find more regression equations with multiple predictors may be due to the small sample size or to the redundancy between Probable Self, Now Self, optimism and NA. That is, once the variance of one the predictors had been removed there is no remaining variance that can be explained by additional variables.

Bonferroni correction. The use of the .10 level of significance was selected because of the small number of subjects. However, as a result of this significance level and the 21 regression equations calculated, the positive findings are subject to a Type II error. In order to control for this a Bonferroni correction procedure was utilized. This procedure divides the initial selected level of significance by the number of tests performed. Table 11, which is drawn from the results in table 10, shows the predictors at their different levels of significance. When the .10 level was adjusted NA predicted Anxiety, Hostility and the number of pain words, Now Self predicted Activity, and Probable Self predicted Weekly activities. When a more stringent criteria for significance was applied (Bonferroni correction for a .05 level of significance) NA predicted increased Anxiety and Probable Self predicted increased number of weekly activities.

On the follow-up questionnaire patients were asked 21 questions regarding improvement on various domains such as pain, activity, mood, social relationships and work. Patients were also asked to rate their satisfaction with the program as well as the degree to which they believed the program had helped. An

Table 11

Change Predicted at the .10 Level among the 21 Regression Analyses

<u>Predictors</u>	<u>Change</u>		
	<u>Mood</u>	<u>Pain</u>	<u>Physical activity</u>
NA	Anxiety*** Hostility **	Affective Evaluative* - Miscellaneous PPI NWC**	
Now Self	Activity**		Physical tolerance
Probable Self	Depression* Total POMS	Miscellaneous	Weekly activities*** ADL* Hobbies
Optimism	Self-esteem*		

- Opposite to the predicted direction.

* $p \leq .05$

** $p \leq .005$ (Bonferroni correction for .10 level of significance).

*** $p \leq .002$ (Bonferroni correction for .05 level of significance).

examination of Table 12 shows that Now Self significantly correlates with reduced pain, coping with pain, increased sitting, standing and walking tolerance, more time working or volunteering, increased social activities, fewer health worries and greater satisfaction with the program. Probable Self shows a significant relationship with less pain, coping with pain, improved sleep, increased standing and walking tolerance, reduced loneliness, less time watching TV ., increased time working or volunteering, fewer health worries, satisfaction with the program, and a belief that the program had helped. Ideal-self correlates with self-reports of increased sexual activity, better relationship with spouse, increased social activities, less time watching TV, increased time working or volunteering, and a belief that the program had helped. Negative affectivity correlates with only one of the improvement variables; reduction in pain medications ($r = -.30$). Optimism correlates with increased physical activities and (unexpectedly) increased TV watching. It appears that all three of the self perception variables are associated with self-reports of improvement, and that NA and optimism show a very weak relationship with these domain specific outcome measures.

Table 12

Correlations of Self Perception, Optimism, and Negative Affectivity with Follow-up Estimates of Improvement (N=50)#@

	Now <u>Self</u>	Probable <u>Self</u>	Ideal <u>Self</u>	<u>Opt</u>	<u>NA</u>
Less pain	24*	24*	06	-13	-11
Coping w/pain	24*	35**	15	05	-18
Better sleep	17	25*	10	14	-13
Sitting	26*	19	10	08	-19
Standing	33*	24*	08	08	-12
Walking	32*	31*	18	05	-22
Physical activity	19	19	19	27*	02
Sexual functioning	14	22	37**	09	-17
Relationship w/spouse	04	26	38*	-11	-22
Relate w/family	-17	19	-05	01	05
Relate w/best friend	01	05	-05	-05	08
Social activities	25*	08	30*	16	-18
Less loneliness	02	30*	23	17	-18
Less stress	17	16	08	-12	-12
Fewer health worries	36**	33*	05	-15	00
Less pain medication	18	10	07	20	-30*
Less contact w/health care workers	01	24	06	00	-02
Less T V watching	-09	39**	32*	-24*	14
Less downtime	01	21	18	-15	21
Housework	-19	05	16	09	00
Work/volunteer	29*	29*	45***	08	-10
Satisfaction					
with program	23*	28*	20	-03	-06
<u>Degree program helped</u>	<u>17</u>	<u>28*</u>	<u>28*</u>	<u>-21</u>	<u>02</u>

For the Self Perception scales and Optimism positive correlations are in the direction of adjustment (expected direction). For NA negative correlations are in the expected direction.

@ Decimal points have been deleted.

* $p \leq 0.05$

** $p \leq 0.01$

*** $p \leq 0.001$

Status at Outcome

Probable self should also predict patients who will either be active or inactive at follow-up. At follow-up patients were placed in either an active or inactive group. The active group consisted of patients who reported that they were either working, doing volunteer work, engaged in housework or in a hobby more than 50% of the time, looking for work, or in school. The results provide support for the hypothesis. Table 13 presents comparisons of the active (n=23) and the inactive (n=33) patients' scores for Now Self, Probable Self, Ideal-self, NA, optimism, Poor Self-esteem, and for Total Mood Disturbance. Patients who reported an active status at follow-up scored significantly higher on the Probable Self scale and Ideal-self scale and marginally higher on the Now Self scale than patients who reported an inactive status at follow-up. No significant differences between the active and inactive groups were found for NA, optimism, Poor Self-esteem, or for Total Mood Disturbance. In addition no significant differences were found between the active and inactive patients on the six POMS scales or on the six pain scales from the MMPQ.

Table 13

Comparisons of Pre-treatment Scores of Patients
Reporting an Active or Inactive Status at Follow-up

<u>Pre-treatment</u>	<u>Follow-up Status</u>					<u>t</u>	<u>Prob</u>
	<u>Active (n=23)</u>		<u>Inactive (n=33)</u>				
<u>Scale</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>			
Now Self	42.4	(15.6)	35.6	(12.1)	1.73	.052	
Probable Self	66.0	(9.01)	59.6	(9.45)	2.60	.012	
Ideal Self	77.0	(4.15)	71.5	(9.02)	2.73#	.010	
Optimism	19.0	(4.48)	18.9	(4.66)	0.06	ns	
Negative Affectivity	61.6	(12.4)	63.7	(12.2)	-0.62	ns	
Poor Self-esteem	16.3	(5.47)	15.0	(6.53)	0.82	ns	
<u>POMS Total Mood Disturbance</u>							
	200	(43.6)	196	(44.0)	0.31	ns	

#The variances of the Ideal-self control-depression-vulnerability score for the active and inactive groups are unequal; an approximation of t (as used by SPSSX) is reported.

Discrepancy scores

Now Self was subtracted from Ideal-self in order to obtain a Self/Ideal-self discrepancy score, and Now Self was subtracted from Probable Self in order to obtain a Self/Probable-self discrepancy score. These scores were then correlated with measures of pain and distress at intake and with measures of pain and distress at follow-up. A significant association is found between an increased level of Self/Ideal-self discrepancy and Self/Probable-self discrepancy with the intake measures of distress, pain and inactivity (see Table 12). Results at follow-up show a sharp drop in these correlations. When intake scores were controlled for with regression analysis only one variable (Activity) predicted Self/Ideal-self discrepancy. When the correlations between Self/Probable-self discrepancy and the follow-up measures were examined only one of the 21 variables reached significance.

The discrepancy scores for the active and inactive subjects were compared. No differences between the discrepancy scores and the two outcome groups were found. The active group's Self/Ideal-self discrepancy mean was 36.1 (SD=15.6) and the mean for the inactive

group was 36.2, (SD=16.7), t= -.02 (51). For the discrepancy score of Self/Probable-self the mean for the active group was 23.2 (SD=12.8) and the inactive group mean was 24.0 (SD=13.2), t= -.22 (51).

Table 14

Correlations of the Self Perception Discrepancy Scores with Measures of Pain, Distress, and Activity at Intake (N=65) and at Follow-up (N=42)

	Discrepancy Scores+			
	<u>Self/Ideal-self</u>		<u>Self/Probable-self</u>	
POMS	Intake	Follow-up	Intake	Follow-up
Anxiety	.30**	.24	.31**	.20
Depression	.40***	.23	.37***	.12
Hostility	.39***	.20	.36***	.07
Activity	-.30**	-.34*	-.22*	-.24
Fatigue	.39***	.28*	.39***	.08
Confusion	.36**	.15	.34**	.06
Total POMS	.46***	.32*	.42***	.18
<u>McGill-Melzack Pain Questionnaire</u>				
Sensory	.31**	.15	.23*	.15
Affective	.26*	.16	.25*	.18
Evaluative	-.01	.07	.05	.10
Miscellan.	.27*	-.09	.27*	-.06
PPI	.26*	.16	.10	.15
NWC	.32**	.14	.29**	.13
<u>PERI</u>				
Poor Self-esteem	.28*	.22	.15	.13
<u>CPHQ</u>				
Phys. Tol.	-.48***	-.37**	-.33**	-.30*
Weekly Acts.	-.16	-.12	-.14	.09
ADL	-.20	-.20	-.21*	-.15
Hobbies	-.26*	-.14	-.22*	.04
Housework	-.10	-.06	-.10	.02
Downtime	.48***	.10	.42***	.18
TV	.40***	.16	.48***	.21

+Now Self was subtracted from Ideal-self and Probable-self in order to obtain the Self/Ideal-self discrepancy score and the Self/Probable-self discrepancy score.

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Discussion

The findings of this study indicate that perceptions about the self in the future, and to a lesser extent, negative affectivity, optimism, and perceptions about one's current self and ideal-self are predictive of response to treatment. When intake levels of distress and inactivity were statistically controlled and when patients' reports of improvement were examined the probable self measure of control, dependency on medical care and physical vulnerability was the variable most consistently related to pre-post treatment change. Also, probable and ideal self significantly discriminated patients who reported, at follow-up, that they were engaged in some activity from patients who reported that they were inactive; now self was only marginally related to active status at outcome.

The modest correlations between now self and probable self suggest that there is some overlap between these two constructs but that they are not identical. Furthermore, the separate factors that resulted when all of the self-perception scales were factor analyzed (Table 6) provides additional evidence

that patients are able to cognitively differentiate between now self, probable self and ideal self.

The fact that now self consistently correlated with the intake measures and that probable self correlated more robustly with the follow-up measures than with the intake scales suggests that the now self construct is related to current status and that the probable self construct is related to future status. Introducing the concepts of state and trait provides some understanding for the different pattern of correlations between the self-perception scales and the intake measures and the self-perception scales and the follow-up measures. There is evidence that probable self is more closely linked to trait measures of affect than to state measures of affect since it correlated with the MMPI (which is generally regarded as a trait measure of affect) and did not correlate with the POMS given at intake.

The weak relationship between probable self and current status was an unexpected finding and contrary to Markus's (Markus & Nurius, 1986) theory of possible selves and one of the minor hypotheses in this study. One of the possible reasons for this is that the probable self in this study was defined as the self after treatment. Patients were provided a context and

an expectation that their probable self would differ from their current self. Therapeutic intervention is not implied in the administration of the Possible Selves Questionnaire that Markus & Nurius (1986) have constructed.

Only partial support was produced for a relationship between the ideal-self construct and outcome. The number of significant correlations were too few to suggest a relationship between ideal-self and the intake and outcome measures of distress, pain and activity (Tables 8 and 9). However, ideal-self did discriminate between active and inactive patients and correlated with pain patients' subjective estimates of improvement (Table 12).

Negative affectivity and outcome

The results from the regression and correlation analyses appear consistent with the recent research findings reported for the NA construct (see, Watson & Clark, 1984; Watson & Pennebaker, In Press). NA, measured by the Taylor Manifest Anxiety Scale (TMAS), appears to be more closely linked to measures of negative affect than to positive affect. (A description of the two-dimensional model of negative and positive affect can be found in Watson and Tellegen, 1985). The correlation between NA and

the intake and follow-up measures of anxiety, depression and hostility (state measures of negative affect) are higher than the correlations between NA and fatigue and activity (state measures of low and high positive affect). Furthermore, NA predicted changes in anxiety and hostility. In fact, NA made a stronger contribution to state measures of anxiety and hostility at follow-up than did the pre-treatment scores of these two affects. This provides evidence for the stability of NA, since the NA measure taken at intake (TMAS) was related to state measures of negative affect at follow-up.

The fact that negative affectivity was also related to changes in reported pain but that it was not predictive of physical activity or able to discriminate between active and inactive patients at follow-up is consistent with the recent literature that has emerged on negative affectivity (Watson & Clark, 1988; Watson & Pennebaker, In Press). According to these authors NA is associated with self-reports of psychosomatic distress but it is not anchored to overt illness behavior. The findings reviewed by Watson and Pennebaker show that NA is correlated with reports of physical symptoms such as headaches and back pain but that it is not related to long term health status such

as extent of current disability, general fitness and lifestyle variables. Watson and Clark (1988) found that daily mood ratings of negative affect were related to health complaints and irritability but that negative affect was not related to physical activities such as skiing, traveling/sightseeing and "doing nothing at home".

It appears that NA is a more limited predictor of outcome than probable self perceptions; NA does predict patients' reports of negative mood and, to a lesser extent, pain but it is not predictive of pain patients' reports of overt behavior such as the number of weekly activities and interference with activities of daily living.

Contextualism and the dynamic self-concept

Though unanticipated, the dearth of correlations between probable self and the pre-treatment measures contributes to the discriminant validity of the probable self construct. It appears that pain patients do hold multiple conceptions about themselves and that these self-concepts are differentially related to functioning across time.

This distinction between self and probable self is linked with the renewed interest in and reformulation of the self-concept. Wylie (1974), after reviewing hundreds of studies, had concluded that there was little evidence to show that the self-concept directed behavior. However, Markus and Wurf (1987) have noted that there have recently been three major advances in self-concept research. First, self-concept is no longer explored as a unitary, monolithic entity. It is now viewed as dynamic and multifaceted. Second, the functioning of the self concept, "depends on both the self-motives being served [...] and on the configuration of the immediate social situation" (Markus & Wurf, 1987, p. 300). The third advance is that fine-grained behaviors have been introduced as dependent variables. In addition to overt actions these dependent variables include mood changes, shifts in self-esteem, choice of social setting, self-presentation and the construction of meaning.

Some of the features of these advances have been incorporated in this study. Self-concept was defined as dynamic and multifaceted in that current, probable, and ideal self-concepts were measured. Self-concept was not conceptualized as a global assessment of the self. Rather, it was thought to relate to issues that

were believed to be relevant to chronic pain patients such as control, physical vulnerability and dependence on medical care. And there was some approach made in this study towards a fine-grained analysis. Dependent measures included several subjective (e.g., mood, pain and self-esteem) and objective (e.g., employment and weekly activities) outcomes.

One of the problem areas in studying chronic pain patients, noted earlier in this paper, is that it has been difficult to predict response to treatment using standardized personality tests. The findings in this study provide some insight into why this has occurred. In this study, while the self-perception scales were related to activity status at outcome, all of the POMS scales, NA, Poor Self-esteem, and optimism failed to discriminate between active and inactive patients at follow-up. A possible reason for this is that the SPS scales differ from the other measures in two important ways: 1) items from the SPS were generated in order to be contextually anchored to the chronic pain experience. That is, the items used such as seeing doctors, taking public transportation and feeling unproductive represented specific cognitions, affects and behaviors important to the chronic pain patient. Items used in the other scales are not domain

specific. Bandura (1977) and Mischel (Mischel & Peake, 1982) have argued that a primary reason for the zero or low non-zero correlations between psychological tests and behavior is that the tests are not contextually linked with the situation in which the behavior takes place. Bandura (1980) notes that one of the reasons for strong findings found in self-efficacy research is that microanalytic methods are used, that is, verbal ratings of self-efficacy parallel subsequent task performances. Mischel and Peake (1982) argue that behavioral consistency is much more likely to occur in situations that are similar than in dissimilar situations. 2) A second difference between the SPS and the other scales (with the exception of the optimism measure) is that the SPS measures how one will expect to be in the future. Since one of the hypotheses in this study is that a probable self schema will prove more predictive of one's future self than a now self schema it is not surprising that measures representing the current self tended not to be as predictive as the probable self measure. (However, the fact that NA also predicted pain and mood attenuates the importance of a probable self schema as a predictor of psychosomatic distress.)

Discrepancy scores

There was no support for the motivational hypothesis (e.g., Large, 1985) for a positive relationship between increased self/ideal-self discrepancy and improvement. None of the correlations between self discrepancy and outcome were in this direction. The few correlations which were in the opposite direction (high discrepancy, poor outcome) do not present a sufficiently robust pattern to conclude that elevated discrepancy predicts a poor outcome. There was support however for the more conventional hypothesis of a relationship between increased discrepancy and increased levels of current distress. Wylie (1974) has described self/ideal-self discrepancy as a measure of self-acceptance and adjustment and Higgins (Higgins, Klein, & Strauman, 1985) has found self/ideal-self discrepancy (what he calls actual-ideal discrepancy) to be associated with dejection related emotions and symptoms. It appears that while pain patients' discrepancy scores may tell us how depressed, pained, or inactive they are these discrepancy measures will not predict response to treatment.

Implications & Recommendations for Research and Treatment

Markus & Nurius (1986) have written that, "[...] negative possible selves can be powerfully imprisoning

because their associated affect and expectations may stifle attempts to change or develop." (p. 963). The evidence reviewed above suggests that this is true for chronic pain patients. It may prove helpful to provide a special treatment regimen for patients who hold low expectations of their future selves. This could be accomplished by first identifying treatment goals that patients feel that they are unlikely to achieve such as exercising regularly and coping with stress and pain. Various cognitive-behavioral treatment techniques could then be used to promote the realization of these goals. Patients could imagine themselves accomplishing these goals (cognitive modeling), watch other pain patients engage in them (modeling), and actually engage in them (e. g., participant modeling). However, unless these cognitions and performances change the probable self schema treatment gains may be short lived. According to the theory of possible selves people who hold negative views of themselves in the future will often remain attached to a negative view of themselves despite contradictory positive evidence (Markus & Nurius, 1986). As far as I am aware there is no treatment that is specifically tailored towards modifying the probable self schema although it is likely that several types of treatments such as the

ones noted above could generate positive probable self perceptions.

I have argued that patients who at intake envision themselves after treatment as in control of their pain, capable, not dependent on medical care and physically resilient will be less distressed, less in pain, more physically active and more likely to be working after cognitive-behavioral treatment than patients with probable self schemas dominated by images of disability and dysfunction. Unfortunately it is not known by what mechanism the probable self-schema functioned to affect outcome. Since these processes have not been identified it is not known whether the measures reflect probable self or some other construct such as perceived self-efficacy or response expectancy. Kirsch (1985) has argued that expectancy is a good predictor of fear and avoidant behavior and that it explains the "placebo effect" which has been observed in psychotherapy. Another view of the impact of cognition on behavior is self-efficacy theory. Perceived self-efficacy is the belief that one can behave in such a way as to produce positive outcomes (Bandura, 1977). Although each of these predictive theories may be appealing because of their parsimony, neither of them appears sufficient to explain the probable self schema. The probable self,

like other possible selves, represents enduring goals, motives and fears that are personally relevant (Markus & Nurius, 1986). The attention to personal relevance and multiple identities appears to distinguish the theory of possible selves from the more circumscribed theories of behavioral change. While low expectations and perceptions of inefficacious coping may influence subsequent behavior the strength, generality and durability of these cognitions will likely be determined by the self-concept. In other words, the self-concept may be a superordinate category to self-efficacy and response expectancy. This may be especially likely to occur under circumstances in which self-schemas are activated. It should be remembered that unlike the experimental paradigms for expectancy or self-efficacy, patients' perceptions were assessed prior to treatment, that is, before expectancy or self-efficacy percepts had been manipulated. Future research could address itself to this question by assessing patients' probable self prior to treatment and then measuring the self-efficacy and/or expectancies after treatment. I would argue that the pretreatment measures of probable self would predict post treatment measures of efficacy or expectancy. I would also predict that although post treatment

measures of efficacy or expectancy may correlate with subsequent behavior, these correlations would be reduced when pre-treatment probable self measures had been partialled out.

Two recent unpublished studies have identified two motivational components of possible selves (Inglehart, Markus, Brown, & Moore, 1987; Inglehart, Wurf, Brown, & Moore, 1987). In these studies it was found that physicians, who at the start of their medical school, were either more focused or more affectively involved in becoming a doctor, were more likely to achieve higher grades. It was also found that career focus predicted career satisfaction. In addition, LISREL analysis produced a two factor model which showed that the cognitive (career focus) and affective (expectations of career satisfaction) components functioned independently. The cognitive motivational component of possible selves was thought to consist of clear goals, specific conceptions of the self and images of the desired end state. The affective motivational component was associated with the positive affect that an individual would experience in pursuing or realizing a goal. These findings suggest that by structuring and infusing with excitement the achievement of goals possible selves should motivate

pain patients to increase well behaviors and decrease pain behaviors.

The fact that negative affectivity was also related to outcome may suggest that pain patients are not amenable to treatment. After all, NA is thought to represent "[...] pervasive individual differences in negative mood and self-concept" (Watson & Clark, 1984, p. 477). If NA is hardwired to the personality it will not be likely to change even after treatment. However NA appears to be unrelated to overt pain behaviors. After treatment, subjects high in NA may be more likely to be anxious and hostile and even report higher levels of pain than patients low in NA. However, high NA subjects may be just as likely, after treatment, to be working, walking and vacuuming than their low NA cohorts. Further exploration of the impact and stability of NA among chronic pain patients, especially research to see if high NA individuals are more susceptible to the chronic pain syndrome, should prove a promising area of research.

Methodological issues

Although a factorial model consisting of the scales of the Self Perception Survey was produced a factorial model consisting of the 45 items of each of the three SPS scales was not constructed. A sample

size of at least 100 would probably be required in order to meet the minimum standards for an adequate factor analysis (Tabachnick & Fidell, 1983). Also there were no tests for convergent or discriminant validity for the five SPS sub scales. Therefore, it is difficult to know whether these rationally constructed scales (control, dependence, vulnerability, affiliation, and conflict with physicians) scales actually represent the constructs that their name implies.

Despite the limitations in establishing the validity of the control, dependency and vulnerability measures one implication of this research is that the probable self, because it is strongly linked to issues that are important to the chronic pain patient, represents more than expectancy or coping beliefs in particular situations. In this study the dimensions of self-schema were primarily derived from interviews with chronic pain patients and observations of a self-help group for people with chronic pain. It therefore is important that in order to identify the components of the self-schema one must have some grounding in the studied population's experience. For example, while the construct of control is prevalent in health psychology (e.g., Kobasa, 1982) and in cognitive models

of chronic pain (Rosenstiel & Keefe, 1983; Rudy et al., 1985) issues such as dependency on medical care and physical vulnerability are not as clearly evident. If I had not had the opportunity to listen to my subjects' descriptions of themselves, I would likely have had a more limited understanding of chronic pain. While I cannot be confident that I have measured dependency and vulnerability the fact that these dimensions were brought up by pain patients suggests that they will be a fruitful area of inquiry.

Dismissal of the affiliation and conflict with physicians scales was a post-hoc decision. However the selection of the dimensions of control, dependence and vulnerability was consistent with one of the initial hypotheses in this study, i.e., that dimensions on which patients rate current self low on are dimensions modulated by the chronic pain experience. And that it is to the extent that patients view their probable selves high on these central dimensions that predicts response to treatment. Interviews with the hospitalized pain patients provide additional evidence to buttress the validity of the saliency of the three selected dimensions. Patients' hopes and fears were much more likely to be associated with control, dependency on medical care and physical

vulnerability than with affiliation or conflict with physicians (Table I-7).

Failure to show a relationship between the two discrepancy scores (self ideal-self and self probable-self) and outcome deserves comment. The use of difference scores, e.g., subtracting now-self from ideal-self, has been criticized for lowering reliability which, in turn, sharply attenuates correlation with other variables (Cohen & Cohen, 1975). This loss in true score variance in the discrepancy measure may have prevented significant correlations with the outcome measures.

Another problem area in the methodology was that sample size varied. In the follow-up phase of the project there was a problem with missing data. Fewer patients completed the Profile of Mood States (POMS) or the McGill-Melzack Pain Questionnaire (MMPQ) than had completed certain items on the follow-up Computerized Pain History Questionnaire (CPHQ). Although for each separate analysis missing data was not included sample size did vary from analysis to analysis. (For example in the regression analyses for the MMPQ N was 30 and for the t-test comparisons of the active and inactive groups N was 56).

Conclusion

The major finding of this study is that probable self and to a lesser extent negative affectivity, now self, ideal self and optimism predict treatment outcome among chronic pain patients. Probable self was related to a number of different outcome measures such as mood, pain, physical activity, subjective estimates of improvement and occupational activity. This self-schema for functioning after treatment appears to be uniquely related to outcome since it was only marginally related to current levels of distress. This provides both a caveat for assessment and some promise for future treatment. Reliance upon state measures at intake may overlook important strengths and weaknesses of the chronic pain patient. Assessment of probable self perceptions may provide a more comprehensive picture of the patient.

The Self Perception Survey

This questionnaire contains a group of items which may or may not describe you and your feelings towards physicians. It is in three parts. Part I refers to your self as you are now, Part II refers to your probable self, that is, the way you believe you will be one year from now, and Part III refers to your ideal self, that is, the way you would like to be one year from now.

This questionnaire is part of a research study being conducted on the impact of treatment for chronic pain. Participation in this study, and therefore completion of this questionnaire is voluntary. All responses are confidential and will be seen only by the OAPC staff. We will be contacting you one month after discharge from the inpatient program to ask you questions on your status.

Name: _____

Date: _____

For office use only:

ID: _____ Group: _____ SPSint _____

Sall _____	Pall _____	Iall _____
Scon _____	Pcon _____	Icon _____
Saff _____	Paff _____	Iaff _____
Svul _____	Pvul _____	Ivul _____
Sdep _____	Pdep _____	Idep _____
Sphy _____	Pphy _____	Iphy _____
Opt _____		

Part I: In the blank to the left of each item indicate the degree to which each of these statements describes you as you are now. Use the following 0 to 3 rating scale:

0 = Not at all like me
 1 = Only slightly like me
 2 = Somewhat like me
 3 = Very much like me

- | | |
|---|--|
| ___1. Able to do housework | ___19. Not able to fit in |
| ___2. Overcome by stress | ___20. Exercises regularly |
| ___3. Compatible | ___21. Unproductive |
| ___4. Sees many doctors | ___22. Does not need surgery |
| ___5. Easily walks up stairs | ___23. Visits friends |
| ___6. Incapable | ___24. Disabled |
| ___7. Close to friends | ___25. Vigorous |
| ___8. Accident prone | ___26. Needs to see specialists |
| ___9. Able to work | ___27. Unimportant |
| ___10. Receives many medical treatments | ___28. Bed-ridden |
| ___11. Isolated | ___29. Successful |
| ___12. Walks daily | ___30. Rarely hospitalized |
| ___13. Able to control pain | ___31. Loses friends |
| ___14. Visits doctors frequently | ___32. Has many medical tests |
| ___15. Has fun with others | ___33. Likes to be with friends |
| ___16. Easily injured | ___34. Dependent on others |
| ___17. Accomplished | ___35. Needs surgery |
| ___18. Does not need pain medication | ___36. Able to use public transportation |

To what degree do the following descriptions represent yourself during your encounters with doctors (use the same 0 to 3 rating scale as above):

- | | | |
|--------------------------|--------------------|-------------------|
| ___1. Trusting | ___4. Suspicious | ___7. At ease |
| ___2. Taken advantage of | ___5. Treated well | ___8. Resentful |
| ___3. Respected | ___6. Guarded | ___9. Cooperative |

Part II PROBABLE SELF: How likely is it that the following descriptions represent the type of person you will be in a year from now. Use the following 0 to 3 rating scale to indicate your agreement that you will be this way one year from now:

0 = Not at all likely
 1 = Only slightly likely
 2 = Somewhat likely
 3 = Very likely

- | | |
|---|--|
| <input type="checkbox"/> 1. Able to do housework | <input type="checkbox"/> 19. Not able to fit in |
| <input type="checkbox"/> 2. Overcome by stress | <input type="checkbox"/> 20. Exercises regularly |
| <input type="checkbox"/> 3. Compatible | <input type="checkbox"/> 21. Unproductive |
| <input type="checkbox"/> 4. Sees many doctors | <input type="checkbox"/> 22. Does not need surgery |
| <input type="checkbox"/> 5. Easily walks up stairs | <input type="checkbox"/> 23. Visits friends |
| <input type="checkbox"/> 6. Incapable | <input type="checkbox"/> 24. Disabled |
| <input type="checkbox"/> 7. Close to friends | <input type="checkbox"/> 25. Vigorous |
| <input type="checkbox"/> 8. Accident prone | <input type="checkbox"/> 26. Needs to see specialists |
| <input type="checkbox"/> 9. Able to work | <input type="checkbox"/> 27. Unimportant |
| <input type="checkbox"/> 10. Receives many medical treatments | <input type="checkbox"/> 28. Bed-ridden |
| <input type="checkbox"/> 11. Isolated | <input type="checkbox"/> 29. Successful |
| <input type="checkbox"/> 12. Walks daily | <input type="checkbox"/> 30. Rarely hospitalized |
| <input type="checkbox"/> 13. Able to control pain | <input type="checkbox"/> 31. Loses friends |
| <input type="checkbox"/> 14. Visits doctors frequently | <input type="checkbox"/> 32. Has many medical tests |
| <input type="checkbox"/> 15. Has fun with others | <input type="checkbox"/> 33. Likes to be with friends |
| <input type="checkbox"/> 16. Easily injured | <input type="checkbox"/> 34. Dependent on others |
| <input type="checkbox"/> 17. Accomplished | <input type="checkbox"/> 35. Needs surgery |
| <input type="checkbox"/> 18. Does not need pain medication | <input type="checkbox"/> 36. Able to use public transportation |

To what degree do the following descriptions represent the way you think you will feel, one year from now, during your encounters with doctors (use the same 0 to 3 rating scale as above):

- | | | |
|--|--|---|
| <input type="checkbox"/> 1. Trusting | <input type="checkbox"/> 4. Suspicious | <input type="checkbox"/> 7. At ease |
| <input type="checkbox"/> 2. Taken advantage of | <input type="checkbox"/> 5. Treated well | <input type="checkbox"/> 8. Resentful |
| <input type="checkbox"/> 3. Respected | <input type="checkbox"/> 6. Guarded | <input type="checkbox"/> 9. Cooperative |

Part III IDEAL SELF: How much do the following items represent the way you would like to be one year from today. Use the following 0 to 3 rating scale:

0 = Not at all as I would like to be
 1 = Only slightly as I would like to be
 2 = Somewhat as I would like to be.
 3 = Very much as I would like to be

- | | |
|---|--|
| <input type="checkbox"/> 1. Able to do housework | <input type="checkbox"/> 19. Not able to fit in |
| <input type="checkbox"/> 2. Overcome by stress | <input type="checkbox"/> 20. Exercises regularly |
| <input type="checkbox"/> 3. Compatible | <input type="checkbox"/> 21. Unproductive |
| <input type="checkbox"/> 4. Sees many doctors | <input type="checkbox"/> 22. Does not need surgery |
| <input type="checkbox"/> 5. Easily walks up stairs | <input type="checkbox"/> 23. Visits friends |
| <input type="checkbox"/> 6. Incapable | <input type="checkbox"/> 24. Disabled |
| <input type="checkbox"/> 7. Close to friends | <input type="checkbox"/> 25. Vigorous |
| <input type="checkbox"/> 8. Accident prone | <input type="checkbox"/> 26. Needs to see specialists |
| <input type="checkbox"/> 9. Able to work | <input type="checkbox"/> 27. Unimportant |
| <input type="checkbox"/> 10. Receives many medical treatments | <input type="checkbox"/> 28. Bed-ridden |
| <input type="checkbox"/> 11. Isolated | <input type="checkbox"/> 29. Successful |
| <input type="checkbox"/> 12. Walks daily | <input type="checkbox"/> 30. Rarely hospitalized |
| <input type="checkbox"/> 13. Able to control pain | <input type="checkbox"/> 31. Loses friends |
| <input type="checkbox"/> 14. Visits doctors frequently | <input type="checkbox"/> 32. Has many medical tests |
| <input type="checkbox"/> 15. Has fun with others | <input type="checkbox"/> 33. Likes to be with friends |
| <input type="checkbox"/> 16. Easily injured | <input type="checkbox"/> 34. Dependent on others |
| <input type="checkbox"/> 17. Accomplished | <input type="checkbox"/> 35. Needs surgery |
| <input type="checkbox"/> 18. Does not need pain medication | <input type="checkbox"/> 36. Able to use public transportation |

To what degree do the following descriptions represent the way you would like to feel, one year from now, during your encounters with doctors (use the same 0 to 3 rating scale as above):

- | | | |
|--|--|---|
| <input type="checkbox"/> 1. Trusting | <input type="checkbox"/> 4. Suspicious | <input type="checkbox"/> 7. At ease |
| <input type="checkbox"/> 2. Taken advantage of | <input type="checkbox"/> 5. Treated well | <input type="checkbox"/> 8. Resentful |
| <input type="checkbox"/> 3. Respected | <input type="checkbox"/> 6. Guarded | <input type="checkbox"/> 9. Cooperative |

(APPENDIX B)

DOMAINS AND ITEMS OF CURRENT AND POSSIBLE SELVES:

<u>Control/Helplessness</u>	<u>Physical vulnerability & resilience:</u>
Able to work	Easily walks up stairs
Able to control pain	Able to use public transportation
Accomplished	Walks daily
Vigorous	Exercises regularly
Successful	Able to do housework
Overcome by stress	Accident prone
Incapable	Easily injured
Unproductive	Disabled
Dependent on others	Bed-ridden
<u>Affiliation/Isolation</u>	<u>Dependence on medical care</u>
Close to friends	Does not need surgery
Compatible	Rarely hospitalized
Visits friends	Does not need pain medication
Has fun with others	Sees many doctors
Likes to be with friends	Receives many medical treatments
Isolated	Has many medical tests
Not able to fit in	Visits doctors frequently
Unimportant	Needs to see specialists
Loses friends	Needs surgery

Defence towards physicians:

Trusting	Taken advantage of
Respected	Suspicious
Cooperative	Guarded
At ease	Resentful
Treated well	

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:

110-169

**University
Microfilms
International**

300 N. ZEEB RD., ANN ARBOR, MI 48106 (313) 761-4700

(APPENDIX G)

ID#: _____ Name: _____ Date: _____ Coh: _____

SPS Interview

1) Discuss score distribution.

2) If you were still in pain one year from now would your probable self differ from how you rated it?

3) Many people have in mind one or more selves that are central to their view of themselves in the future. They value very highly becoming this sort of person, or having a particular role in life. What are three possible selves that you hope for most. What is the likelihood of becoming this hoped for self?

(Not at all likely 1 2 3 4 5 Very likely)

	Likelihood (1 - 5)
1. _____	_____
2. _____	_____
3. _____	_____

4) What are three possible selves that you fear or worry about most. What is the likelihood of becoming these feared selves.

	Likelihood (1 - 5)
1. _____	_____
2. _____	_____
3. _____	_____

List of Abbreviations

ADL	Activities of Daily Living (measures 7 common physical activities).
CDV	Control, Dependency on medical care, and Physical vulnerability scales from the SPS.
CPHQ	Computerized Pain History Questionnaire.
CWP	Conflict with Physicians (one of the five scales from the SPS)
LOT	Life Orientation Test (optimism).
MMPI	Minnesota Multiphasic Personality Inventory
MMPQ	McGill-Melzack Pain Questionnaire.
NA	Negative Affectivity.
NWC	Number of (pain) Words Counted (one of the scales from the MMPQ).
OAPC	Orthopaedic-Arthritis Pain Center.
OPT	Optimism (measured by the LOT).
PERI	Psychiatric Epidemiological Research Inventory (Poor self-esteem was the only scale used from this test).
POMS	Profile of Mood States.
PPI	Present Pain Intensity (from the MMPQ).
SPS	Self Perception Scale (or Survey).
TMAS	Taylor Manifest Anxiety Scale (used to measure negative affectivity)

MMPI clinical scales:

Hs	Hypochondrias	Pa	Paranoia
D	Depression	Pt	Psychasthenia
Hy	Hysteria	Sc	Schizophrenia
Pd	Psychopathic deviate	Ma	Mania
Mf	Masculinity-femininity	Si	Social Introversion

Appendix I

Properties of the Self Perception Scale

Reliability analysis using Cronbach's alpha revealed an acceptable level of internal consistency for the "Now" Self and Probable Self SPS scales (see Table I-1). Alpha coefficients for these 10 scales range from .71 to .83. Reliabilities for the Ideal Self scales, though acceptable, were not as consistently high, ranging from .55 to .87.

Intercorrelations between the three total SPS scales (Table I-2) showed moderately high correlations between Now and Probable self ($r=.48$) and between Probable and Ideal-self ($r=.42$). The correlation between Now and Ideal self was not significant. Intercorrelations between the five scales of the SPS for Now Self (Table I-3), Probable Self (Table I-4) and Ideal-self (Table I-5) showed that Control, Dependency, Vulnerability and Affiliation significantly correlated with each other. The Conflict with Physicians scale correlated with all other scales except for Physical Vulnerability on the Now Self scale and with Dependence on Medical Care on the Now Self, Probable Self and Ideal-self scales.

As predicted Now Self scores were lower than Probable Self scores and Probable Self scores were lower than Ideal-self scores. This was not surprising, since it was expected that the rating order of pain patients' pre-treatment self perceptions would be Now Self, Probable Self and Ideal Self. The distribution of the SPS means are Now Self (M 74.0; SD 20.1); Probable Self (M 106.3; SD 15.62); and Ideal Self (M 124.2; SD 11.3). An examination of the five Now Self scale scores (Table I-6) revealed that patients scored lowest on the dimensions of control (M 11.6; SD 5.96), dependency (M 11.93; SD 5.96), and physical vulnerability (M 12.87; SD 5.38) in contrast to affiliation (M 17.92; SD 5.65) and conflict with physicians (M 18.89; SD 5.30). Since it appeared that patients identified control, dependency and vulnerability as their most disturbed areas of functioning and that these three scales were strongly correlated with each other, subsequent analyses focused on a composite score of these three variables.

Additional evidence for the greater importance given to control, dependency on medical care and physical vulnerability as opposed to affiliation and conflict with physicians came from interviews conducted with the patients during their hospital stay. Patients were asked to list the three possible selves they hoped for most and the three possible selves they feared or

worried about most (Markus & Nurius, 1986). Among the 41 patients interviewed 78 fears and 110 hopes were reported (during the interviews patients had greater difficulty listing fears than hopes). In order to avoid the problem of missing data a frequency count was made of the hoped for self and feared self listed first. Among the hopes (41) and fears (37) listed (Table I-7) 33 (42.3%) were related to control, 17 (21.8%) were associated with dependence on medical care or being sick or in pain, 17 fell under the physical vulnerability construct and four (5.1%) were related to affiliation. Seven (8.9%) responses could not be classified within any of the SPS constructs. Although the classification of the hopes and fears is broad, it does appear that the large majority of possible selves reported are related to such issues as disability, employment and pain; only a few of the possible selves elicited are linked to social concerns such as loneliness or an improved marriage.

Control-dependency-vulnerability and optimism

The control, depression and physical vulnerability items were used to create a 27 item scale for Now Self, Probable Self and Ideal Self. Adequate reliability was obtained for each of these composite scales. Alpha for these three scales was .85 for Now Self, .85 for Probable Self .85, and .80 for Ideal-self. The mean

and standard deviation for each of these three scales was: Now Self $M = 36.7$, $SD = 13.5$; Probable Self $M = 62.6$, $SD = 10.3$; Ideal-self $M = 74.3$, $SD = 7.3$. Significant correlations (Table 7, in the Results chapter) were found between Now Self and Probable Self ($r = .36$, $p \leq .001$) and Probable Self and Ideal-self ($r = .29$, $p \leq .01$). Now Self and Ideal-self were not correlated with each other.

Table I-1

Reliabilities of the Self Perception Scales (SPS)* N=72

	<u>Now Self</u>	<u>Probable Self</u>	<u>Ideal Self</u>
<u>Dimension</u>	<u>Alpha</u>	<u>Alpha</u>	<u>Alpha</u>
Control	.82	.72	.63
Dependency	.74	.73	.55
Vulnerability	.72	.71	.62
Affiliation	.81	.76	.64
Conflict w/Physicians	.82	.83	.87
CDV	.85	.85	.80
<u>Total SPS</u>	<u>.90</u>	<u>.89</u>	<u>.87</u>

* The number of items on each of the subscales is nine. The CDV scale is composed of the Control, Physical vulnerability, and Dependence on medical care scales; the total SPS is composed of all five scales.

Table I-2

Intercorrelations of the Total SPS Scales

	<u>1</u>	<u>2</u>
<u>1. "Now" Self</u>	--	
<u>2. Probable Self</u>	.48***	--
<u>3. Ideal Self</u>	.06	.42***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table I-3

Intercorrelations of the Five Scales of the Now Self

	1	2	3	4
1. Control	--			
2. Dependency	.28**	--		
3. Vulnerability	.55***	.44***	--	
4. Affiliation	.70***	.34**	.52***	--
5. Conflict w/phys.	.40***	.01	.07	.44***

Table I-4

Intercorrelations of the Five Scales of the Probable Self

	1	2	3	4
1. Control	--			
2. Dependenc	.43***	--		
3. Vulnerability	.68***	.52***	--	
4. Affiliation	.54***	.36***	.52***	--
5. Conflict w/phys.	.45***	.15	.33*	.39***

Table I-5

Intercorrelations of the Five Scales of the Ideal-self

	1	2	3	4
1. Control	--			
2. Dependency	.60***	--		
3. Vulnerability	.59***	.48***	--	
4. Affiliation	.54***	.54***	.49***	--
5. Conflict w/phys.	.37***	.19	.23*	.45***

* $\leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table I-6

Means, Standard Deviations, and Ranges on the Self Perception Scales*

Dimension	Now Self		Probable Self		Ideal Self	
	M	SD	M	SD	M	SD
Control	11.60	5.96	20.40	4.27	24.85	3.00
Dependency	11.93	5.96	20.10	4.39	23.99	3.36
Vulnerabil.	12.87	5.38	22.21	3.65	25.51	2.22
Affiliation	17.92	5.65	23.16	3.70	25.67	2.47
Conflict with physicians	18.89	5.30	20.68	5.32	24.33	4.31
Control-Dependency-Vulnerability						
	36.74	13.48	62.62	10.28	74.28	7.25
Total scale	74.04	20.07	106.3	15.62	124.2	11.33

Dimension	Range**	Range	Range
Control	0-24	10-27	13-27
Dependency	1-26	10-27	15-27
Vulnerability	2-24	10-27	18-27
Affiliation	5-27	13-27	16-27
Conflict w/Physicians	4-27	6-27	6-27

Control-Dependency-Vulnerability

	9-67	35-81	48-81
Total scale	31-120	54-133	92-135

* Higher scores represent more favorable view of the self.

** Possible range on each of the five subscales is 0-27; on the Control-Dependency-Vulnerability scale 0-81; and on the total SPS possible range is 0-135.

Table I-7

Hopes and Fears Reported by Pain Patients (N=41)

<u>HOPES (N=41)</u>	<u>FEARS (N=37)</u>
<u>Control (N=33)</u>	
Back to school	Unaccomplished
Not dependent on others	Helpless
Able to do more	Dependent (2)
Able to control pain	Not carrying on
Cope with pain (2)	Useless
Employed (6)	
Become an attorney	
Independent (3)	
Assertive (2)	
Work on Masters degree	
Accomplished	
Better concentration	
Productive (2)	
Functioning	
More active	
Active as a volunteer	
Successful	
<u>Dependence on Medical Care (N=17)</u>	
Pain free (3)	In wheelchair (2)
Healthy	Surgery
Get proper medication	Addiction
Healthy and strong	Hurt by an operation
	Interminable pain (4)
	Disabling pain
	Extremely ill
<u>Physical Vulnerability (N=17)</u>	
Physically active	Disabled/invalid/
Athletic	dysfunctional/crippled (10)
	Not able to walk
	Worse & older
	Injuring myself (2)
	Too Sedentary
<u>Affiliation (N=4)</u>	
Better marriage	Isolated (2)
Socially active	

(Table continues)

Table I-7 (continued)

Hopes and Fears Reported by Pain Patients (N=41)

<u>HOPES (N=41)</u>	<u>FEARS (N=37)</u>
	<u>Other (N=7)</u>
Loose weight	Kids dependent on me
Look good	Frightened
<u>Serene & calm, less anxious (2)</u>	<u>Financial difficulties</u>

*Numbers in parentheses refer to number of patients, when greater than one, reporting a hope or fear.

References

- Abramson, L. Y., Seligman, M. E. P., Teasdale, J. D. (1978). Learned helplessness in Humans: Critique and reformulation. Journal of Abnormal Psychology, 87, 49-74.
- Achenbach, T. & E. Zigler, E. (1963). Social competence and self-image disparity in psychiatric and nonpsychiatric patients. Journal of Abnormal and Social Psychology, 67, 197-205.
- Addison, R. G. (1981). Treatment of chronic pain: The center for pain studies, Rehabilitation Institute of Chicago. In L. Y. K. Ng (Ed.), New Approches to Treatment of Chronic Pain: A Review of Multidisciplinary Pain Clinics and Pain Centers. Rockville, MD: National Institute of Drug Abuse Research Monograph 36.
- Anderson, K. O. Bradley, L. A., Young, L. D., McDaniel, L. K., Wise, C. M. (1985). Rheumatoid Arthritis: Review of psychological factors related to etiology, effects and treatment. Psychological Bulletin, 98, 358-387.
- Antonovsky, A. (1981). Health, stress and coping. San Francisco: Jossey-Bass.
- Armentrout, D. P. (1979). The impact of chronic pain on the self-concept. Journal of Clinical Psychology, 35, (3), 517-521.
- Aronoff, G. M. (1985). (Ed.) Evaluation and treatment of chronic pain. Baltimore: Urban & Schwazenberg.
- Aronoff, G. M., Evans, W. C., & Enders, P. L. (1985). A review of follow-up studies of multidisciplinary pain units. In G. M. Aronoff (Ed.), Evaluation and treatment of chronic pain. Baltimore: Urban & Schwazenberg.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.
- Bandura, A. (1980). Gauging the relationship between self-efficacy judgement and action. Cognitive Therapy and Research, 4, 263-268.

- Bandura, A. (1986, March). Perceived self-efficacy and health functioning. Paper presented at the Society of Behavioral Medicine 7th Annual Scientific Sessions, San Francisco, CA.
- Beck, A. T., Weissman, H. W., Lester, D., & Trexler, L. (1974). The assessment of pessimism: The Hopelessness scale. Journal of Consulting and Clinical Psychology, 42, 861-865.
- Beecher, H. K. (1956). Relationship of significance of wound to the pain experiences. Journal of the American Medical Association, 161, 609-613.
- Beekman, C. E., Axtell, L. Noland, K. S., West, J. Y. (1985). Self-concept: An outcome of a program for spinal pain. Pain, 22, 59-66.
- Belkin, S. (1985). In G. M. Aronoff (Ed.), Evaluation and treatment of chronic pain. Baltimore: Urban & Schwazenberg.
- Ben-Sira, Z. (1984). Chronic illness, stress and coping. Social Science & Medicine, 18, 725-736.
- Blackwell, B., Galbraith, J. R., & Dahl, D. S. (1984). Chronic pain management. Hospital and Community Psychiatry, 35, 999-1008.
- Blumer, D. & Heilbronn, M. (1982). Chronic pain as a variant of depressive disease: The pain-prone disorder. Journal of Nervous and Mental Disease, 170, 381-416.
- Bonica, J. J. (1981). Preface. In L. K. Y. Ng (Ed.), New Approches to Treatment of Chronic Pain: A Review of Multidisciplinary Pain Clinics and Pain Centers. Rockville, MD: National Institute of Drug Abuse Research Monograph 36.
- Bouckoms, A. J. (1985). Recent developments in the classification of pain. Psychosomatics, 26 (8), 637-645.
- Brickman, P., Rabinowitz, V. C., Karuza, J., Jr., Coates, D., Cohn, E., & Kidder, L. (1982). Models of helping and coping. American Psychologist, 37, 368-384.
- Burton, C. V., Conservative management of low back pain. Postgraduate Medicine, 70. 168-183.

- Butler, J. M. & Haigh, G. (1954). Changes in the relation between self-concepts and ideal concepts consequent upon client-centered counseling. In C. R. Rogers & R. F. Dymond (Eds.), Psychotherapy and personality change. Chicago: University of Chicago Press, 55-75.
- Carver, C. S. & Gaines, J. G. (in press). Optimism, pessimism, and postpartum depression. Cognitive Therapy and Research.
- Charmaz, K. (1983). Loss of self: A fundamental form of suffering in the chronically ill. Sociology of Health and Illness, 5, 168-195.
- Chapman, S. L. & Brena, S. F. (1985). Pain and Society. Annals of Behavioral Medicine, 7, 21-24.
- Clark, L. A. & Watson, D. (1988). Mood and the mundane: Relations between daily life events and self-reported mood. Journal of Personality and Social Psychology, 54, 296-308
- Cohen, J. & Cohen, P. (1975). Applied multiple regression/Correlational analysis for the behavioral sciences. New York: Lawrence Erlbaum Associates.
- Condiotte, M. M. & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. Journal of Consulting and Clinical Psychology, 49, 648-658.
- Cott, A. (1985, August). Complex case management - An empirical approach. Paper presented at the 2nd International Conference on Illness Behavior, Toronto, Canada.
- Crue, B. L. & Pinsky, J. L. (1981). Chronic pain syndrome: Four aspects of the problem. In L. K. Y. Ng (Ed.), New approaches to treatment of chronic pain. Rockville, MD: NIDA Monograph 36.
- Derogatis, L. R. (1975). The affect balance scale. Baltimore: Clinical Psychometric Research.

- Dohrenwend, B. P., ShROUT, P. E., Egri, G. & Mendelsohn, F. S. (1980). Nonspecific psychological distress and other dimensions of psychopathology: Measures for use in the general population. Archives of General Psychiatry, 37, 1229-1236.
- Edwards, P. W., Zeichner, A., Kuczmierczyk, A. R., & Boczkowski, J. (1985). Familial pain models: The relationship between family history of pain and current pain experience. Pain, 21, 379-384.
- Engel, G. L. (1959). 'Psychogenic' pain and the pain prone patient. American Journal of Medicine, 26, 899-918.
- Fields, H. L. & Levine, J. D. (1984). Pain - mechanisms and management. Medical Progress, 141 (3), 347-357.
- Fine, P. G. & Hare, B. D. (1985). The pathways and mechanisms of pain and analgesia: A review and clinical perspective. Hospital Formulary, 20, 972-985.
- Finneson, B. (1979). A lumbar disc surgery predictive score card: A retrospective evaluation, Spine, 4, 141-144.
- Finneson, B. (1980). Low back pain. Lippincott: Philadelphia.
- Fitts, W. (1965). Manual for the Tennessee Self Concept Scale. Nashville, TN: Counselor Recordings and Tests.
- Flor, H. & Turk, D. C. (1984). Etiological theories and treatments for chronic back pain. I. Somatic models and interventions. Pain, 19, 105-121.
- Flor, Turk, & Birbaumer (1985). Assessment of stress-related psychophysiological reactions in chronic back pain patients. Journal of Clinical and Counseling Psychology, 53, 354-364.
- Ford, C. V. (1983). The Somatizing Disorders: Illness as a Way of Life. New York: Elsevier.
- Fordyce, W. E. (1976). Behavioral methods for chronic pain and illness. St. Louis: C. V. Mosby.
- Fordyce, W. E., Brockway, J. B., Bergman, J. A., Spengler, D. (in press). Acute back pain: A control group comparison of behavioral versus traditional management methods. Journal of Behavioral Medicine.

Gaston-Johansson, F., Johansson, G., Felldin, R., & Sanne, H. (1985). A comparative study of pain description, emotional discomfort and health perception in patients with chronic pain syndrome and rheumatoid arthritis. Scandinavian Journal of Rehabilitation Medicine, 17, 109-119.

Gough, H. G., Lazzari, R., & Fioravanti, M. (1978). Self versus ideal self: A comparison of five adjective check list indices. Journal of Consulting and Clinical Psychology, 46, 1085-1091.

Grummon, D. C. (1954a). Personality change as a function of time in persons motivated for therapy. In C. R. Rogers & R. F. Dymond (Eds.), Psychotherapy and personality change. Chicago: University of Chicago Press, 238-258.

Grummon, D. C. (1954b). Design, procedures, and subjects for the first block. In C. R. Rogers & R. F. Dymond (Eds.), Psychotherapy and personality change. Chicago: University of Chicago Press, 35-55.

Hamburgen, M E., Jennings, C. A., Maruta, T., & Swanson, D. W. (1985). Failure of a predictive scale in identifying patients who may benefit from a pain management program: Follow-up data. Pain 23, 253-258.

Heaton, R. K., Getto, C. J., Lehman, R. A. W., Fordyce, W. E., Brauer, E., & Groban, S. E. (1982). A standardized evaluation of psychosocial factors in chronic pain. Pain, 165-174.

Hendler, N. (1981). The diagnosis and nonsurgical management of chronic pain. New York: Raven Press.

Hendler, N. (1982). The anatomy and psychopharmacology of chronic pain. Journal of Clinical Psychiatry, 43, 15-21.

Hendler, N. (1984). Depression caused by chronic pain. Journal of Clinical Psychiatry, 45, 30-36.

Higgins, E. T., Klein, R., & Strauman, T. (1985). Self-concept discrepancy theory: A psychological model for distinguishing among different aspects of depression and anxiety. Social Cognition, 3, 51-76.

Inglehart, M. R., Markus, H., Brown, D. R., & Moore, W. (1987, May). The impact of possible selves on academic achievement: A longitudinal analysis. Paper presented at the Midwestern Psychological Association, Chicago.

Inglehart, M., Wurf, E., Brown, D. R., Moore, W. (1987, August). Possible selves and satisfaction with career choice: A longitudinal analysis. Paper presented at the American Psychological Association, New York.

James, W. (1890). The principles of psychology. New York: Henry Holt & Co.

Kames, L. D., Naliboff, B. D., Heinrich, R. L., Schag, C. C. (1984). The chronic illness problem inventory: Problem-oriented psychosocial assesement of patients with chronic illness. International Journal of Psychiatry in Medicine, 14 (1), 65-75.

Katz, P. & Zigler, E. (1967). Self-image disparity: A developmental approach. Journal of Personality and Social Psychology, 5, 186-195.

Kelly, G. (1955). The psychology of personal constructs. New York: Norton.

Kihlstrom, J. F. & Cantor, N. (1984). Mental representations of the self. Advances in Experimental Social Psychology, 17, 1-47.

Kirsch, I. (1985). Response expectancy as a determinant of experience and behavior. American Psychologist, 40, 1189-1202.

Kobasa, S. C. (1982). The hardy personality: Toward a social psychology of stress and health. In G. S. Sanders & J. Suls (Eds.), Social psychology of health and illness. Hillsdale, NJ: Erlbaum.

Kotarba, J. A. (1985). Chronic Pain: Its Social Dimensions. Beverly Hills: Sage Publications.

Large, R. G. (1985). Prediction of treatment response in pain patients: The illness self-concept repertory grid and EMG feedback. Pain, 21, 279-287.

Lazarus, R. S. (1981). The stress and coping paradigm. In C. Eisdorfer, D. Cohen, A. Kleinman, & P. Makim (Eds.), Theoretical bases for psychopathology. New York: Spectrum.

- Lefebvre, M. F. (1981). Cognitive distortion and cognitive errors in depressed psychiatric and low back pain patients. Journal of Clinical and Counseling Psychology, 49, 517-525.
- Lewinsohn, P. M., Sullivan, J. M., & Grosscup, S. J. (1982). Behavioral therapy: Clinical applications. In A. J. Rush (Ed.), Short-term psychotherapies for depression (pp. 50-80). New York: Guilford Press.
- McArthur, D. L., Cohen, M. J., Gottlieb, H. J., Naliboff, B. D., & Schandler, S. L. (1987). Treating chronic low back pain. I. Admissions to initial follow-up. Pain, 29 (1), 1-22.
- Malec, J. Cayner, J. J., Harvey, R. F., and Timming, R. C. (1981). Pain management: Long-term follow-up of an inpatient program. Archives of Physical Medicine and Rehabilitation, 62, 369-372.
- Markus, H. (1983) Self knowledge: An expanded view. Journal of Personality, 51, 543-565.
- Markus, H. & Nurius, P. (1986). Possible Selves. American Psychologist, 41, 954-969.
- Markus, H. & Sentis, K. (1982) The self in social information processing. In J. Suls (Ed.), Psychological perspectives on the self. Hillsdale, N.J: Erlbaum.
- Markus, H. & Wurf, E. (1987). The dynamic self-concept: a social psychological perspective. Annual Review of Psychology, 38, 299-337.
- Maruta, T., Swanson, D. W., & Swenson, W. M. (1979). Chronic pain: Which patients may a pain management program help?. Pain, 7, 321-329.
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). Profile of Mood States. San Diego, CA: Educational and Industrial Testing Service.
- Melzack, R. The puzzle of pain. New York: Basic/Harper Torchbooks.
- Melzack, R. (1975). The McGill Pain Questionnaire: Major properties and scoring methods. Pain, 1, 277-299.

- Mooney, (1983). Forward, The Orthopedic Clinics of North America, 14, 473-474.
- Merskey, H. (1968). Psychological aspects of pain. Postgraduate Medical Journal, 44, 297-306.
- Mischel, W. (1981). Objective and subjective rules for delay of gratification. In G. d'Ydewalle & W. Lens (Eds.), Cognition in human motivation and learning. Lawrence Erlbaum.
- Mischel, W. & Peake, P. K. (1982). Beyond deja vu in the search for cross-situational consistency. Psychological Review, 1982, 89, 730-755.
- Nachemson, A. L. (1983). Work for all: For those with low back pain as well. Clinical Orthopaedics, 179, 77-85.
- Nachemson, A. L. (1984). Prevention of chronic back pain: The orthopaedic challenge for the 80's. Bulletin of the Hospital for Joint Diseases Orthopaedic Institute, 44, 1-15.
- Nachemson, A. L. (1985, October). Current concepts in low back pain. Paper present at the symposium on Current Concepts in Lumbar Spine Disease, Hospital for Joint Diseases Orthopaedic Institute, New York.
- Nerenz, D. R. & Leventhal, H. (1983). Self-regulation theory in chronic illness. In Burish & Bradley (Eds.) Coping with chronic disease, New York: Academic Press.
- Newman, R. I., Seres, J. L, Yospe, L. P., & Garlington, B. (1978). Multidisciplinary treatment of chronic pain: Long-term follow-up of low-back pain patients, Pain, 4, 283-292.
- Ng, L. Y. K., (Ed.). (1981). New approaches to treatment of chronic pain: A review of multidisciplinary pain clinics and pain centers. Rockville, MD: NIDA Research Monograph 36.
- Nigl, A. J. (1984). Biofeedback and behavioral strategies in pain treatment. New York: Spectrum Publishing.

- Painter, J. R., Seres, J. L., & Newman, R. I. (1980). Assessing benefits of the pain center: Why some patients regress. Pain, 8, 101-113.
- Phillips, D. A. & Zigler, E. (1980). Children's self-image disparity: Effects of age, socioeconomic status, ethnicity, and gender. Journal of Personality and Social Psychology, 39, (4), 689-700
- Physicians Desk Reference. (1986). Oradell, NJ: Medical Economics.
- Pilowsky, I. (1978). Pain as abnormal illness behavior. Journal of Human Stress, 4, 22-27.
- Pilowsky, I. & Spence, N. D. (1976). Pain and illness behavior: A comparative study. Journal of Psychosomatic Research, 20, 131-134.
- Pincus, T., Summey, J. A., Soraci, S. A., Wallson, K. A., & Hummon, N. P. (1983). Assessment of patient satisfaction in activities of daily living using a modified Stanford Health Assessment Questionnaire. Arthritis and Rheumatism, 26 (11), 1346-1353.
- Preston, C. A. & Viney, L. L. (1984). Self and ideal-self-perceptions of drug addicts in therapeutic communities. The International Journal of the Addictions, 19, 805-818.
- Roberts, A. H. & Reinhardt, L. (1980). The behavioral management of chronic pain: Long-term follow-up with comparison groups. Pain, 8, 151-162.
- Robinson, J. P., & Shaver, P. R. (1969). Measures of social psychological attitudes (Appendix B to measures of political attitudes). Ann Arbor, MI: Publication Division, Institute for Social Research, University of Michigan.
- Rogers, C. R. & Dymond, R. F. (1954). (Eds.) Psychotherapy and personality change. Chicago: University of Chicago Press.
- Romano, J. M. & Turner, J. A. (1985) Chronic Pain and depression: Does the evidence support a relationship?, Psychological Bulletin, 97, 18-34.
- Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

- Rosenstiel, A. K. & Keefe, F. J. (1983). The use of coping strategies in chronic low back pain patients: Relationship to patient characteristics and current adjustment. Pain, 17, 33-44.
- Rosomoff, H. L., Green, C., Selbert, M. & Steele, R. (1981). Pain and low back rehabilitation program at the University of Miami School of Medicine. In L.K.Y. Ng (Ed.), New approaches to treatment of chronic pain, Rockville, MD: NIDA Research Monograph, 36.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80.
- Rudy, T. E., Kerns, R. D., Turk, D. C. (1985). Chronic pain and depression: Toward a cognitive-behavioral mediation model. Unpublished manuscript, University of Pittsburgh School of Medicine.
- Scheier, M. F. & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalized outcome expectancies. Health Psychology, 4, 219-247.
- Schmidt, A. J. M. (1985). Cognitive factors in the performance level of chronic low back pain patients. Journal of Psychosomatic Research, 29 (2), 183-189.
- Schneider, F. & Karoly, P. (1983). Conceptions of the pain experience: The emergence of multidimensional models and their implications for contemporary clinical practice. Clinical Psychological Review, 3, 61-86.
- Slater, P. (1972). Notes on Ingrid 72, Unpublished manuscript, Institute of Psychiatry, London, England.
- Snow, B. R., Pinter, I., Gusmorino, P., Jiminez, A., & Rosenblum, A. (1986). Incidence of physical and psychosocial disabilities in chronic pain patients: Initial report. Bulletin of the Hospital for Joint Diseases Orthopaedic Institute, 46, 22-30.
- Snow, B. R., Pinter, I., Gusmorino, P., Jiminez, A., & Weiser, S. (1985). Computerized Pain History Questionnaire. Hospital for Joint Diseases Orthopaedic Institute.
- Spear, F. G. (1967). Pain in psychiatric patients. Journal of Psychosomatic Research, 11, 187-193.

Sternbach, R. A. (1984). Acute versus chronic pain. In P. D. Wall & R. Melzack, (Eds.), Textbook of pain. New York: Churchill Livingstone.

Sternbach, R. A. (1974). Pain patients: Traits and treatment. New York: Academic Press.

Strack, S., Carver, C. S., & Blaney, P. H. (in press). Predicting successful completion of an aftercare program following treatment for alcoholism: the role of dispositional optimism. Journal of Personality and Social Psychology.

Strang, J. P. (1985). In G. M. Aronoff (Ed.), Evaluation and treatment of chronic pain. Baltimore: Urban & Schwazenberg.

Sweet, J. J., Breuer, S. R., Hazelwood, L. A., Towe, R., & Pawl, R. P. (1985). The Millon Behavioral Health Inventory: Concurrent and predictive validity in a pain treatment center. Journal of Behavioral Medicine, 8 (3), 215-226.

Swerdlow, M. (1978). The value of clinics for the relief of chronic pain. Journal of Medical Ethics, 4, 117-118.

Tabachnick, B. G. & Fidell, L. S. (1983). Using multivariate statistics. New York: Harper & Row.

Taylor, J. A. (1953). A personality scale of manifest anxiety. The Journal of Abnormal and Social Psychology, 48, 285-290.

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. American Psychologist, 38, 1161-1173.

Trief, P. M. & Yuan, H. A. (1983). The use of the MMPI in a chronic back pain rehabilitation program. Journal of Clinical Psychology, 39, 46-53.

Turk, D. C. & Flor, H. (1984). Etiological theories and treatments for chronic back pain. II. Psychological models and interventions. Pain, 19, 209-233.

Turk, D. C., Meichenbaum, D., & Genest, M. (1983) Pain and behavioral medicine: A cognitive-behavioral perspective. New York: Guilford Press.

- Turk, D. C. & Rudy, T. E. (1986a). Assessment of cognitive factors in chronic pain: A worthwhile enterprise?. Unpublished manuscript, University of Pittsburgh School of Medicine.
- Turk, D. C. & Rudy, T. E. (1986b, March). Assessment and treatment of chronic pain: A cognitive-behavioral perspective. Workshop at the Society of Behavioral Medicine 7th Annual Scientific Sessions, San Francisco, CA.
- Turner, J. A. & Chapman, C. R. (1982). Psychological interventions for chronic pain: A critical review: I. Relaxation training and biofeedback. Pain, 12, 1-21.
- Turner, J. A. & Chapman, C. R. (1982). Psychological interventions for chronic pain: A critical review. II. Operant conditioning, hypnosis, and cognitive-behavioral therapy. Pain, 12, 23-46.
- Vallfors, B. (1985). Acute, subacute, and chronic low back pain. Scandinavian Journal of Rehabilitation Medicine Supplement No. 11.
- Violon, A. & Giurgea, D. (1984). Familial models for chronic pain. Pain, 18, 99-203.
- Walters, A. (1961). Psychogenic regional pain alias hysterical pain. Brain, 84, 1-18.
- Wang, J. K., Ilstrup, D. M., Nauss, L. A., Nelson, D. O., & Wilson, P. R. (1980). Outpatient pain clinic: A longterm follow-up study. Minnesota Medicine, 663-666.
- Watson, D. & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. Psychological Bulletin, 96, 465-490.
- Watson, D. & Pennebaker, J. W. (in press). Health complaints, stress, and distress: Exploring the central role of negative affectivity. Psychological Review.
- Wilkinson, H. A (1983). The "failed back syndrome": Etiology & therapy. Philadelphia: Harper & Row.
- Wylie, R. C. (1974). The self-concept. Lincoln: University of Nebraska Press.
- Zborowski, M. (1969). People in pain. San Francisco: Jossey-Bass.