DEPRESSION, COGNITIVE DISTORTION
AND SELF-EFFICACY IN CHRONIC-PAIN PATIENTS.

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DEPRESSION, COGNITIVE DISTORTION AND SELF-EFFICACY IN CHRONIC-PAIN PATIENTS

by

C. And M. Sprague

M.A. University of Windsor, 1979

A Dissertation Submitted to the Faculty of Graduate Studies through the Department of Psychology in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy at the University of Windsor Windsor, Ontario, Canada 1985
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ABSTRACT

The purpose of this study was to investigate cognitive distortion, mood change, treatment expectancies and treatment choice in depressed and nondepressed chronic-pain outpatients, and to see whether a persuasive message could influence expectancies about treatment. Thirty-six patients referred for psychological assessment participated in the study. The Beck-Depression Inventory (BDI), the Differential Personality Inventory (DPI), and the M&PI were used to assess depression. Mood change was measured by three administrations of the Profile of Mood States. Bandura's definitions of self-efficacy and outcome expectancy were used to design a measure of expectancies about pain-management treatment. All subjects were provided with assessment feedback having an equal number of positive and negative statements. Measures of cognitive distortion were derived from free recall and from estimation of positiveness of feedback. Half of the subjects were randomly assigned to hear a brief persuasive self-efficacy message prior to feedback. The persuasive message was not effective in changing expectancies. Depressed subjects had lower expectancies regarding treatment and were more negatively biased in their estimation (but not free recall) of feedback. The DPI was the best predictor of expectancies and bias, followed by the BDI. Subjects' moods became more positive over the course of the assessment. Those with more positive expectancies were more likely to accept the pain management program.
ACKNOWLEDGEMENTS

In a previous life (before graduate studies in psychology) I was a student of American history and culture. In those studies I learned that individualism is a powerful myth that guides most of our Western institutions. While completing this particular individual achievement I have come to a new appreciation of where reality and the myth diverge. From feminist studies I have learned that most achievements are collective efforts for which individual men take credit. Lest I, too, fall into that trap I would like to acknowledge here at least a few members of that "collective" who have contributed so much to this research.

First and foremost my chairpersons, Rickey Miller and Frank Auld, offered expert guidance, criticism and support. Rickey has consistently given me the benefit of her research skills and, perhaps even more important, her enthusiasm for research. She has been an excellent role model as a scientist-practitioner. In addition to her assistance with this study she, more than anyone, has helped me to develop a strong, positive professional identity. Frank Auld has taught me a great deal about research and writing in the past months. Although he will probably disagree, I believe that he has been remarkably generous with his time and knowledge—much beyond the requirements of duty. I have great respect for his scholarship and, through his influence, have developed greater respect for the scientific method.

Jerry Cohen provided criticism and suggestions that strengthened the design of this study. Mary Louise Monaghan shared her interest and enthusiasm as well as her helpful comments. Barry Taub not only offered support and advice regarding this research but he has also
played an important role in my professional development throughout graduate school. His supervision of my clinical and academic work has been invaluable, and his unfailing concern has kept me going through trying times. Brian Shaw gave of his time and expertise. Knowing that his professional commitments are heavy, I was especially appreciative of his presence on my committee and of his helpful comments.

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CHAPTER I

INTRODUCTION

There has been recent interest in cognitive approaches to the understanding and treatment of depression (Beck, 1967, 1976; Beck, Rush, Shaw & Emery, 1979) and of chronic pain (Turk, Meichenbaum & Genest, 1983). Investigators (e.g., Craig, 1978; Lefebvre, 1981) have described the cognitive processes of some chronic pain patients in terms very similar to those used to describe the depression-prone style of cognition. It has been noted that both types of patients distort information negatively.

Beck and his colleagues propose that cognitive distortion plays a central role in the development of depression. Several researchers (e.g., Coyne & Gotlib, 1983; DeMonbreun & Craighead, 1977; Wener & Rehm, 1975) have developed techniques for investigating this process in depressed individuals. One of these techniques is assessment of negative bias in the perception and recall of environmental stimuli. This style of distorted information processing which is typical of some chronic pain patients may reflect a co-existing depressive process. A large body of research (Romano & Turner, 1985; Roy, 1982) has directly addressed the relationship between depression and chronic pain. Very few studies, however, have utilized the cognitive model of depression to predict which chronic-pain patients become depressed.

It has been widely recognized in clinical practice and research that individuals' attitudes and beliefs about themselves and about treatment can either impede or facilitate treatment effects. Many therapeutic interventions are designed to foster hope and to effect changes in
expectations. Bandura (1977, 1982) has proposed that self-efficacy (defined as a person's belief in his or her ability to produce intended results) mediates all changes in coping behavior. Increasing or improving these expectancies is, therefore, a primary goal of treatment, and Bandura discusses a number of techniques (including social persuasion) for enhancing expectancies. Many chronic-pain patients have experienced diminished effectiveness in a number of areas of functioning (e.g., vocational, interpersonal, athletic) and have had little, if any, success with various treatment modalities (e.g., Melzack, 1973; Turk et al., 1983). Addressing the beliefs and expectancies of these patients should be particularly important for treatment success.

It follows that changes in other cognitive and affective variables should accompany changes in self-efficacy expectancies. It is reasonable to expect that patients—who feel they can achieve an improvement in their situations should display less cognitive distortion and an improvement in mood. The purpose of this study is to explore the relationships among depression, recall bias, mood, and self-efficacy expectancy in a sample of chronic-pain patients in the period when they are being assessed for a pain-management therapy.

Depression and Cognitive Style

Recent theory and research in depression have focused on the role of cognitive processes in the development and maintenance of this disorder. The work of Aaron Beck (1967, 1976) has been particularly influential. Beck postulates that depressives have dysfunctional patterns of thinking which lead them to construe themselves, their life circumstances, and their future possibilities in negative terms. Beck explains these patterns by employing the concept of a cognitive schema. According to
Beck, schemata are relatively stable representations of past experiences which form the basis for organizing, filtering, and coding new information. Beck reasons that the operation of dysfunctional or idiosyncratic schemata causes depressed people to make systematic errors in processing information. Seven specific cognitive errors were identified by Beck, Rush, Shaw and Emery (1979). Three of these are: the tendency to catastrophize; the tendency to overgeneralize from negative experiences; and the tendency to attend selectively to negative aspects of situations while ignoring positive information.

Empirical support for this model of depression has come from a number of studies investigating the perception and recall of environmental feedback. Researchers have frequently engaged subjects in laboratory tasks, then have provided feedback on the subjects' performance and, still later, assessed their recall of the feedback. Wener and Rehm (1975), for example, provided predetermined success-feedback at a rate of 20% or 80% to depressed and nondepressed students who completed a word-association task. These authors reported that although both groups were inaccurate in their judgments, the depressed students more often underestimated the positive feedback. DeMonbroun and Craighead (1977), using a task that required judgments of ambiguous achromatic slides, found that in a high-positive-feedback condition, depressed subjects recalled lower rates of positive feedback than did control subjects. Derry and Kuiper (1981), using a depth of processing paradigm derived from the experimental information-processing work of Craik and Tulving (1975), reported that in self-referent processing (as opposed to structural, phonemic, or semantic levels of processing), clinically depressed subjects had superior recall of depressive adjectives, whereas control subjects had better recall for nondepressed adjectives.
Many studies have used the perception and recall of environmental feedback to investigate cognitive bias. These studies have produced equivocal results. Although DeMonbreun and Craighead (1977) reported differential recall by depressed and nondepressed subjects in the high-positive-feedback condition, they did not find group differences in the 50%-correct or the low-positive-feedback conditions. Roth and Rehm (1980) found no differences between the depressed and the nondepressed subjects in recall of personally relevant positive and negative adjectives. Craighead, Hickey and DeMonbreun (1979) also found no differences between depressed and nondepressed students in the perception and recall of neutral feedback.

Some research has suggested that cognitive bias is relevant to the study of depression but not relevant in the manner predicted by theory. Nelson and Craighead (1977) found that depressed subjects were accurate in their recall, whereas nondepressed subjects actually underestimated the amount of punishment they had received. Similarly, a study by Lewinsohn, Mischel, Chaplin and Barton (1980) indicated that depressed subjects were more accurate in self-ratings of social skill than controls. Related research (e.g., Alloy & Abramson, 1979; Golin, Terrell & Johnson, 1977) investigating aspects of the learned helplessness model of depression has also suggested that nondepressed individuals demonstrate an "illusion of control" whereas depressed subjects are more accurate in their assessment of contingencies.

The inconsistent findings that emerge in this literature may be attributable to a number of factors including differences among the subjects in various studies in the type and level of depression they experienced. Researchers have utilized either severely depressed inpatients (at one extreme) or well functioning, mildly depressed college
students (at the other). Many investigations have, for example, utilized the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961), often in addition to clinical ratings. Although all these researchers used the same test, the Beck, they used quite different scores to differentiate depressed and nondepressed subjects. Often a BDI score that would define a subject as depressed in one study would place that same person in the control group in another.

Coyne and Gotlib (1983) have suggested that inconsistent findings are also related to the type of task used in research on depression. Most of the studies discussed thus far have employed impersonal, laboratory tasks. Others discussing research on depression (Gotlib & Asarnow, 1979; Ritley, 1978) have suggested that the subjects in these studies process information differently depending on whether the information is personal or impersonal. Because depression presumably develops in response to personal events, it can be argued that personal and interpersonal stimuli situations are those most pertinent to the depressive process and most suitable for assessing it. Two recent studies have used this type of stimulus in a laboratory context.

Ingram, Smith, and Brehm (1983) provided mildly depressed and nondepressed undergraduate subjects with personality descriptions of two males and then asked them questions which required making predictions about the life-styles, interests, and occupations of the two males. Subjects were then provided with predetermined success or failure feedback about their predictions. These investigators reasoned from the assumptions that individuals possess a variety of self-schemata, positive and negative, and that the type of information processed depends on the type of schemata that are activated at a given time. Mood is one
variable that determines the type of schema that is activated (see Bower, 1981 for a theoretical discussion of this process). The provision of success or failure feedback in Ingram's study was intended to influence mood and, thereby, affect the activation of positive or negative schemata. Ingram and his colleagues then assessed the favorability of adjectives recalled subsequently in a depth-of-processing task. They concluded from the results of their study that even mildly depressed subjects were unresponsive to the type of success information that had been provided. Nondepressed subjects were more often able to utilize the success feedback to activate a positive self-schema than the depressed subjects were. Although these investigators concluded that mood change was implicated in cognitive change, they did not measure mood directly.

Gotlib (1983) compared depressed and nondepressed psychiatric inpatients and nondepressed hospital employees. Each subject engaged in a structured discussion with an opposite-sex stranger regarding certain attitudes and opinions of the two participants. The subject then was given a completed rating scale evaluating his or her performance in the interaction, ostensibly filled out by an assistant behind a one-way mirror. Subjects were asked to indicate their reactions to the evaluation and subsequently to reproduce the ratings from memory. Results indicated a negative distortion, specific to depression, in the recall of interpersonal feedback. That is, most depressed subjects recalled the feedback to be significantly more negative than was actually the case.

Most studies of perception and recall distortions, such as the two described, have utilized feedback that was predetermined by the experimenter and not actually related to the subject's performance. Although this type of procedure standardizes the amount of positive and
negative feedback provided, it also introduces significant problems. For example, the feedback may be inconsistent with the subjects' own evaluations of their performances, and this may influence their assessment of feedback credibility and its later recall. Buchwald (1977) rewarded depressed and nondepressed students for actual correct responses on a learning task and found that all subjects underestimated the number of rewards they had received. A comparison between level of depression and recall of rewards indicated, however, that subjects with a lower level of depression did not underestimate the number of rewards as much as did subjects with a higher level of depression.

A number of studies have provided support for the proposition that depressives have negative schemata that produce a bias toward recalling negative communications and toward neglecting to recall positive ones. Some studies have not, however, supported this proposition. One problem in these studies is the use of impersonal tasks. Research about the depressive cognitive process should employ interpersonal tasks as the basis for providing feedback. Recent studies that have done so provide promising results. Few studies to date, however, have related feedback to the subjects' actual task performance. It should also be noted that in all of these studies subjects were given feedback about performance on laboratory tasks that may have had little importance for the subjects who were depressed persons even if the tasks were interpersonal in nature. The use of personal, meaningful, and salient feedback would also provide a more appropriate task situation.

Chronic Pain and Depression

A relationship between depression and chronic pain has been observed by a number of clinicians and researchers. The relationship has been investigated from a variety of perspectives, and findings have been
inconsistent. There is much controversy, both about the strength of the relationship between depression and chronic pain and about the mechanisms of their coexistence. The majority of studies, however, provide evidence that depressive symptoms are more prevalent in chronic pain patients than in the general population or in many medical populations (Romano & Turner, 1985; Roy, 1982; Tarbell, 1983).

In a recent review of the literature on depression and chronic pain, Romano and Turner (1985) suggest that the relationship between depression and pain has practical as well as theoretical importance. Chronic pain is very costly, both to the person and to society. Traditional medical approaches to treatment of chronic pain are seldom effective. Because of this, Romano and Turner point out, there has been increasing interest in the psychological variables that are implicated in the development and maintenance of these syndromes. Depression is clearly one of these influential factors. Increased knowledge about its role could lead to improved assessment and treatment of chronic pain patients.

Most research has focused on the coexistence of chronic pain and depression; however, some theorists have suggested that depression causes pain, and other theorists that pain causes depression. Still other theorists propose that pain produces a state that is like depression but lacks the overt depressive symptoms. Researchers have also utilized various models when studying these hypotheses, including psychodynamic, behavioral, cognitive, and neurobiological models. Some representative studies will be discussed briefly.

Pain instead of Depression

Chronic pain has been seen as an alternate expression of the
depressive process. Pain is conceptualized from this perspective as a substitute for full expression of the primary, underlying depression. Terms employed to describe this pattern include: depressive equivalent (Smith & Duerksen, 1980); masked depression (Lesse, 1968); and the pain-prone disorder (Blumer & Heilbronn, 1981, 1982). Some theorists (for example, Smith & Duerksen, 1980) have argued that in this situation an individual experiences pain in the absence of any conscious psychological or mood disturbance. Instead, intrapsychic distress is converted into physical pain. Other investigators take the position that the chronic pain patient may report depressed mood and other physiological signs of an affective disorder but simply not as the primary complaint (Blumer & Heilbronn, 1981, 1982).

Most of this work has been rooted in clinical observations and psychodynamic theory. Factors such as developmental history, family dynamics, and unresolved grief are seen as important determinants of the chronic pain syndrome. While these hypotheses are often reasonable and compelling, there has been a relative lack of empirical validation of these concepts.

Coexisting Pain and Depression*

It has been observed by many investigators that depression frequently accompanies the chronic pain syndrome (e.g., Fordyce, 1976; Pelz & Merskey, 1982; Sternbach, 1974) and, conversely, that complaints of pain are common in depressed individuals (Spear, 1967; Von Knorring, 1975). Most researchers exploring the occurrence of depression in chronic pain patients have postulated that one factor pre-exists or causes the other and have then focused on the proposed psychological or neurochemical mechanisms of this relationship.

Clinical neurophysiological researchers have recently generated a
great deal of interest with their approach to this area. Their findings have suggested that these two disorders share a common biological substrate (e.g., Hameroff et al., 1982; Hendler, 1982; Ward, Bloom, Dwarkin, et al., 1982). Specifically, two of the central nervous system biogenic amines, serotonin and norepinephrine, and the endorphins have been shown to be involved in the occurrence of both pain and depression. A primary strategy for assessing similarities between pain and depression has been to conduct clinical trials using psychoactive medications that affect the biogenic amines. The tricyclic antidepressants have been utilized most frequently. A number of studies have reported positive effects for these medications when they are used in the treatment of chronic pain (Aronoff & Evans, 1982; Blumer & Heilbronn, 1984; Hameroff, et al., 1982). Presumably the availability of serotonin and norepinephrine at the synaptic junction is a critical element in the pathogenesis of both chronic pain and depression. Different mechanisms for their specific action have been described (Ward, Bloom, & Friedel, 1979). After reviewing much of this research, Romano and Turner (1985) conclude that exploration of a common physiological base is a promising direction but findings are, at this point, preliminary. Many questions, including the extent of interaction among physiological, behavioral, and cognitive factors, remain to be answered. Moreover, Rosenbaum (1982) pointed out that neurochemical similarities between these disorders are not proof of the equivalency of depression and pain. He cites the example of schizophrenia and Huntington's chorea—two very different diseases with the same underlying neurochemical disorder: excessive dopamine activity.

Psychological explanations for the association between depression and chronic pain have also been explored. Reasoning within a behavioral model, Fordyce (1976), for example, has observed that chronic pain
usually results in a reduction of normal functioning, and he has proposed
that this circumstance has a primary role in the etiology of depression.
Fordyce conceptualizes depression as the result of individuals who suffer
chronic pain getting less positive reinforcement from normal activities
and interactions than they did formerly. Instead, those behaviors of
daily life frequently result in pain rather than in rewards, and the
pain patient restricts his or her activities more and more to avoid
unpleasant consequences. As a result opportunities for reinforcement are
also increasingly restricted.

According to Fordyce the chronic pain syndrome (i.e., pain
complaints, decreased activity, depressive affect) results from this
deprivation of reinforcement. In this theory reduced access to rewards
is of central importance in the etiology of the pain syndrome, but the
maintenance of the syndrome depends on social consequences that reinforce
maladaptive pain and depression behaviors. For example, family members
may give these patients intermittent sympathy and attention, and at the
same time the patients may avoid disliked situations and activities
because of the pain problem. In this way both pain and depression become
further reinforced.

From the cognitive perspective of the learned helplessness model,
investigators such as Chapman and Brena (1982) and Skevington (1979) have
hypothesized that chronic pain patients have a decreased sense of control
over their lives and experiences. These patients become more dependent
on others (e.g., for personal and financial needs) and often believe that
they are unable to affect their suffering. The patients' acquired
beliefs regarding their own helplessness, these authors argue, result in
a number of maladaptive outcomes, including depression (Seligman, 1975).
Problems and Evaluations of Previous Research

Overall, research in this area supports the hypothesis of a relatively strong association between chronic pain and depression. One major problem in determining the prevalence of depression in the chronic-pain population and the strength of association between pain and depression has been a lack of consistency in the definition and assessment of depression. Some investigators have defined depression in a manner consistent with the DSM-III criteria (American Psychiatric Association, 1980) for major affective disorder, while others use the term to refer to a condition equivalent or similar to the DSM-III dysthymic disorder. Researchers have variously assessed depression using standardized diagnostic systems, "clinical judgment" with criteria unspecified, or self-report inventories. Even within a particular class of assessment instruments such as self-report inventories, there is considerable variability because of differences in the content of items. The MMPI depression scale has been one of the most widely used self-report measures. Recently many researchers have severely criticized this measure. Watson (1982) has argued that the MMPI is not appropriate for use with pain patients because of the large number of items relating to health problems. This is, of course, also true of many other assessment instruments; they include somatic symptoms characteristic of depression. These symptoms (e.g., sleep disturbance, decreased energy) may also be caused by chronic pain; accordingly, nondepressed pain patients may get spuriously high scores on such inventories. This leads to problems of interpretation, because the available self-report inventories have not been standardized with chronic-pain or other medically ill populations. Questionnaires that measure the trait of depression and omit somatic-
symptom items may be more appropriate for this population.

Romano and Turner (1985) after reviewing this research conclude that the coexistence of chronic pain and depression may be "a final common presentation reached by a number of pathways" (p. 30). These pathways include: depression in response to the stress of medical disease, pain as one symptom of depression, and pain as a selective focus of depression with psychological aspects of the depressive process denied.

Beck's Cognitive Approach to Chronic Pain and Depression

Although few studies have used Beck's cognitive model of depression to investigate the relationship between chronic pain and depression, investigators in the field of chronic pain have sometimes described the cognitive processes in those patients in terms similar to those used to describe the distortions of depressives. References to cognitive errors or a negative cognitive bias appear elsewhere in the pain literature. For example, Turk et al. (1983) describe a number of laboratory and clinical studies in which subjects used various coping strategies to deal with pain experiences. They concluded that "what appears to distinguish low- from high-pain tolerant individuals is their cognitive processes--the 'catastrophizing' thoughts and feelings that precede, accompany, and follow the aversive situation--rather than specific elements of the coping strategies, per se" (p. 107). Although it is possible that this type of cognition is typical of some individuals when they experience pain, it seems more reasonable to suppose that those persons who engage in this type of thinking distortion have a co-existing depression. The cognitive model also offers another hypothesis. Beck et al. (1979) have proposed that the cognitive distortions observed in depression may pre-
exist the onset of overt psychopathology. They label persons in this situation "depression prone." Their systematic cognitive errors place these people at risk for developing depression in response to life stressors.

Chronic pain is clearly a significant, ongoing stressor. From one point of view, all patients experiencing chronic pain should develop depressive symptoms. But this is not the case. Indeed Pilowsky, Chapman, and Bonica (1977) reported that only 10% of their chronic pain sample were depressed. Although this percentage is exceptionally low and likely reflects inadequacies in their measuring instrument (the Levine-Pilowsky Depression Questionnaire), few studies report depression in all, or nearly all, of the chronic-pain patients investigated. The cognitive model of depression offers an explanation as to why only some chronic-pain patients develop depression and of the mechanisms of the development of depression.

Lefebvre (1981) conducted one study that explored cognitive distortion in patients who at the same time have depression—as assessed by the Beck Depression Inventory—and chronic pain. He developed a questionnaire which presented brief, personal vignettes. These vignettes involved both general life experiences and experiences specific to a person with low back pain (LBP). The interpretive choices presented to subjects incorporated four of the cognitive errors common to depression: catastrophizing, overgeneralization, personalization, and selective abstraction. Lefebvre administered this questionnaire to four groups: depressed and nondepressed LBP patients, depressed psychiatric patients with no significant pain complaint, and nondepressed persons without chronic pain. Lefebvre found that all cognitive errors were endorsed
more often by all of the depressed patients (with or without LBP). Depressed LBP patients, however, more frequently endorsed errors that distorted the impact of the pain problem. This research provides evidence that although depressed patients with chronic pain may develop depression in reaction to the pain problem, they distort information in a manner very similar to that used by depressed individuals without pain. There was no evidence, however, of this type of cognitive distortion in the nondepressed LBP subjects. Impressed by these findings, Lefebvre speculated that depression in LBP patients may be a function of both the stressful lower back pain and of a persistent style of negative cognition typical of depression-prone individuals.

In view of Lefebvre's success in differentiating depressed and nondepressed chronic-pain patients, the cognitive model seems to hold promise. This model may be helpful in guiding research as well as providing a basis for treatment of chronic-pain patients. Future research should extend the model to a broader range of chronic-pain patients and should utilize alternative methods for assessing cognitive distortion.

The Role of Expectancy

Clinical investigators have long recognized the importance of individuals' expectations about the effectiveness of treatment and about their ability to participate in the treatment as important predictors of treatment success. Many therapeutic interventions are intended to foster hope and to affect patients' confidence in themselves and in their ability to utilize psychological treatment. Recently Bandura (1977) has addressed these issues in a systematic fashion. He has proposed self-efficacy theory "as integrative theoretical framework to explain and predict psychological changes achieved by different modes of treatment"
(p. 191). Self-efficacy refers to the person's beliefs about his or her ability to master skills and execute them in order to receive an anticipated reward. Bandura proposed that all successful psychological interventions serve as means of creating and strengthening expectations of personal efficacy and that changes achieved by different treatment methods derive from a common cognitive mechanism. He maintained that efficacy expectancy determines whether an individual will initiate coping efforts, how much effort will be expended, and how long the person will persist in the face of difficulties. This theory differentiates two types of expectancies: 1) **self-efficacy expectancy** representing the person's conviction that he/she can successfully execute the behavior required to perform a behavior; and 2) **outcome expectancy** involving the person's estimate that a given behavior will lead to a given outcome. Bandura has stressed the importance of assessing both types of expectancy.

Bandura has also discussed the means by which these expectancies can be influenced or altered. The most potent sources of efficacy information are one's own performance accomplishments. Verbal persuasion is another means of influencing these expectancies. Bandura states that social persuasion, although not as powerful as performance feedback, can contribute significantly to treatment success if individuals are also provided with aids for effective action.

Two types of studies have been conducted to attempt validation of self-efficacy theory: 1) studies employing a specific treatment strategy to enhance self-efficacy expectancy, and 2) studies examining the relationship between self-efficacy expectancy and mastery behavior. Most research has been of the second type. A number of these studies have demonstrated that self-efficacy expectancies of success are associated
with an increased likelihood of attempting mastery behaviors. Research has focused on problems such as phobias (Bandura, Adams, Hardy, & Howells, 1980; Bandura & Adams, 1977), low assertiveness (Kazdin, 1979), and overweight (Chambliss & Murray, 1979). Self-efficacy has also been studied in the context of skill-acquisition and academic performance (Brown & Inouye, 1978; Keyser & Barling, 1981).

Although this research and another recent study by Tipton and Worthington (1984) have provided support for the hypothesis that stronger self-efficacy leads to better mastery, the self-efficacy theory has also generated a great deal of critical discussion (Borkovec, 1978; Eastman & Martillier, 1984; Kirsch, 1985; Teasdale, 1978). One major criticism has been that Bandura failed to differentiate self-efficacy expectancies from outcome expectancies clearly. Teasdale (1978) asserted that Bandura included aspects of outcome expectancy in some of his own definitions of self-efficacy expectancy. Other critics (Eastman & Martillier, 1984; Kirsch, 1985) reasoned that in situations which involve feared behaviors or outcomes (the kind of phobic behaviors that Bandura first addressed), self-efficacy expectancy must necessarily include outcome expectancies as well. When a phobic individual, for example, provides a self-efficacy estimate it is supposed to reflect only the person's ability to perform the necessary behavior. These critics argue, however, that this estimate also reflects the person's willingness to approach a feared object or situation in addition to his or her capacity to perform the specific behavior(s). Differing expectancies about negative outcomes (e.g., "I might panic and be embarrassed" vs. "I might have a heart attack and die") will affect the person's willingness to perform feared behaviors and, therefore, will affect self-efficacy estimates as well.

In discussing this issue Kirsch (1985) pointed out, however, that
"With respect to nonaversive, skill-related tasks, the definition of self-efficacy is quite straightforward. In these situations, efficacy questionnaires appear to be adequate operational measures ..." (p. 328). Since in pain management one is dealing with acquisition of a skill and the task is nonaversive the major theoretical criticism of self-efficacy theory does not apply to pain management. Besides these theoretical faults in the theory, there is the empirical problem that no research to date has demonstrated an independence of subjects' self-efficacy expectancies from their outcome expectancies. If these two types of expectancy are theoretically distinct, research in skill-acquisition tasks should provide evidence that they are independent constructs.

One study has addressed the effect of self-efficacy expectancy and outcome expectancy in an acute (rather than chronic) pain-management situation. Manning and Wright (1985) studied these expectancies as predictors of persistence of pain control in a medication-free childbirth. Fifty-two women, pregnant for the first time, were recruited from childbirth education classes. They were required to make self-efficacy judgments both before labor and in the early phase of labor. Following delivery they reported the amount and timing of any medication used during labor and delivery. The authors reported that self-efficacy expectancy predicted persistence in pain control better than outcome expectancies or several other alternative predictors. Self-efficacy and outcome expectancies were, however, highly correlated. The lack of differentiation of these two expectancies was consistent with theoretical criticisms and with previous research. Manning and Wright tried to salvage the independence of the two measures by offering an explanation of their seeming cohesion. They observed that women in
childbirth education classes may be self-selected to be high on both types of expectancy. Women recruited from clinics or physicians' offices who had not elected childbirth classes might produce a different pattern of results. These authors concluded that their study strengthened the construct validity of self-efficacy expectancy and extended the application of the theory by assessing it in a field setting.

Outstanding Issues

From this overview of the research literature five outstanding issues emerge: 1) the existence of depression and cognitive distortion in chronic-pain patients; 2) the effect of performance feedback on subjects' mood states; 3) the relationship between depression and self-efficacy expectancies in chronic-pain patients; 4) the effectiveness for increasing subjects' perceived self-efficaciousness of a treatment intervention utilizing social persuasion; and 5) the effect of depression and self-efficacy expectancies on subjects' treatment choices. The remainder of this chapter will indicate how each of these issues was studied and the rationale for this approach.

1. Cognitive Distortion

One aim of the present study was to assess cognitive distortion in chronic-pain patients who have varying degrees of depression. Cognitive distortion was assessed through subjects' recall of feedback. Beck's cognitive theory of depression provides the basis for predicting that depressed people will exhibit a bias in their recall of feedback. From this viewpoint, negative cognitive schemata are activated in the depressive cognitive process and lead to errors in information processing that are reflected in biased recall. This study assessed the cognitive
bias of chronic-pain patients in their recall of feedback about their psychological assessment results.

Previous research (Lefebvre, 1981) indicates that depressed low-back-pain patients tend to make judgments that reflect the type of cognitive errors typical of depressed patients without a pain problem, whereas low-back-pain patients who are not depressed do not make these judgments as frequently or consistently. Several studies have used recall bias as a measure of cognitive distortion in depressed subjects, but recall bias has not been investigated in a chronic-pain sample. Previous research into recall bias has been conducted in laboratory settings and has used feedback that is of questionable import for depressed subjects. The present study investigates recall bias in a chronic-pain sample in relationship to depression. This extends the investigation of cognitive distortion to a broad range of chronic-pain patients in a clinical setting and uses highly, salient, personal feedback.

2. **Effect of Feedback of Mood State**

This research also has explored the effect of performance feedback on subjects' mood states and has correlated their change in mood with their degree of depression. Beck's cognitive theory of depression provides the basis for predicting that depressed subjects who are provided with balanced performance feedback will attend selectively to the information, and will perceive the feedback as more negative than will subjects who are less depressed. It is reasonable to assume that their perception of performance feedback will affect their mood states. Previous research (Ingram et al., 1983) has been based on the assumption that there is a relationship between cognitive processing and mood
change. Positive feedback, for example, is proposed to produce an improvement in mood which then activates more positive schemata and leads to maintenance of a positive mood state. In previous research mood change has not, however, been directly measured. In the present study, mood state has been assessed prior to the assessment, immediately preceding feedback, and immediately following feedback. The relationship has been explored between depression and proposed mood change as a result of feedback.

3. Relationship between Depression and Self-Efficacy Expectancy

Another aim of this study is to investigate whether depressed chronic-pain patients had more pessimistic expectancies about treatment than nondepressed patients. Bandura (1982) predicts that depression is associated with a pattern of low self-efficacy expectancies and high outcome expectancies. Bandura argues that in this situation people perceive themselves as ineffectual but believe that the techniques do produce desired results and, further, believe that others similar to themselves are able to experience success. He predicts that it is this pattern of expectancies that is associated with self-criticism and despondency. Cognitive theories of depression, however, describe depressed patients as characterized by feelings of helplessness and hopelessness. From this viewpoint, it is reasonable to assume that generalized feelings of helplessness are associated with low expectancies of self-efficacy in mastering treatment techniques and that generalized feelings of hopelessness are associated with low expectancies of outcome regarding the effectiveness of those techniques for providing relief. The investigator believed that depression would be related to this pattern of low self-efficacy and low outcome expectancies rather than to
Bandura's predicted pattern of low self-efficacy expectancies and high outcome expectancies.

In this study the author has assessed both self-efficacy expectancies regarding ability to use psychological treatment techniques and outcome expectancies regarding the perceived helpfulness of these techniques for pain management. Gathering these data permits an investigation of the relationships among self-efficacy expectancies, outcome expectancies, and depression in chronic-pain patients.

4. **Effectiveness of Verbal Persuasion**

In this study the author has explored the effectiveness of verbal persuasion in changing expectancies. The persuasion involved a brief statement designed to confront aspects of the depressive cognitive process and to increase self-efficacy expectancies. From the social learning view, verbal persuasion that a person possesses certain capabilities is one important means of influencing that person's judgments of self-efficacy. Moreover self-efficacy theory predicts that people's judgments of their capabilities influence their thought patterns and affective reactions. The present study explored the impact of a strong message of confidence and competency on chronic-pain patients' (a) self-efficacy expectancies and outcome expectancies, and (b) the depressive style of cognitive functioning (reflected in recall bias and mood change). In this study the verbal persuasion message was labeled the self-efficacy statement and subjects who heard it were considered to be in the self-efficacy statement condition.

5. **Treatment Choice**

In the present research the author has monitored factors that may influence subjects' treatment choices at the conclusion of a psychological
assessment. Bandura proposes that self-efficacy percepts influence whether coping efforts will be initiated. Choosing to begin psychological treatment represents either the initiation or escalation of coping efforts for most chronic-pain patients. Reasoning from this, the author predicted that subjects with low self-efficacy expectancies and low outcome expectancies would be less likely to choose psychological treatment. Subjects who are more depressed and, therefore, experience a greater degree of helplessness and hopelessness would also be expected to choose psychological treatment less frequently, because this treatment requires them to participate more actively than most medical and surgical treatments would require. In this research the author has studied the relationship between self-efficacy expectancies and treatment choice and the relationship between depression and treatment choice.

**Statement of Hypotheses**

This research has been undertaken to test the following nine hypotheses:

1. Subjects with a high level of depression will demonstrate a greater negative bias in their recall and evaluation of the assessment feedback than subjects with a low level of depression.

2. Subjects with a high level of depression will experience less improvement in mood as a result of the feedback than will subjects with a low level of depression.

3. Subjects with a high level of depression will have lower expectations of their abilities to learn pain management techniques (self-efficacy expectancy) and lower expectations that these techniques will help achieve treatment goals related to pain (outcome expectancy) than will subjects with a low level of depression.
4. Subjects in the self-efficacy statement condition will have higher expectations of their abilities to learn pain management techniques and higher expectations that these techniques will be effective than will subjects in the comparison group.

5. Subjects in the self-efficacy statement condition will demonstrate less of a negative bias in their recall and evaluation of the assessment feedback than will subjects in the comparison group.

6. Subjects in the self-efficacy statement condition will experience more improvement in mood as a result of receiving the feedback than will subjects in the comparison group.

7. The effectiveness of the self-efficacy statement will be mediated by the level of subjects' depression. For subjects with a high level of depression the statement will be less effective than for subjects with a low level of depression.

8. Subjects with lower expectancies regarding treatment will be less likely to choose psychological treatment than will subjects with higher expectancies.

9. Subjects with higher levels of depression will be less likely to choose psychological treatment than will subjects with low levels of depression.
CHAPTER II

METHOD

Subjects

Thirty subjects participated in this study. Subjects ranged in age from 19 to 65 (mean age = 38.9 years). There were 14 men and 16 women. A complaint of chronic, benign pain of at least 6 months duration and the ability to speak and understand English were the criteria for selection. These patients had been referred to the Pain Management Service at Toronto General Hospital for psychological assessment. The investigator telephoned a total of 62 patients to ask them to participate in the research. Of those telephoned, 12 chose not to accept the assessment at the time they were called, 13 did not meet the inclusion criteria, and 7 withdrew from the assessment before their research involvement was completed.

Materials

Pre-Assessment Measures

Profile of Mood States. The Profile of Mood States (POMS; McNair, Lorr & Doppleman, 1971) is a set of factor-analytically derived scales, measuring fluctuating emotional states. This test has sixty-five 5-point rating scales for indicating whether adjectives apply to the subject. The POMS yields scores for six factors: Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. A Total Mood Disturbance (TMD) score can also be calculated by summing the six factor scores (Vigor being
weighted negatively).

Instructions printed on the POMS form direct the subject to choose the answer that describes how he or she has been feeling during the past week. In this study subjects were instructed to complete the measure according to how they were feeling "right now." Previous studies (McNair et al., 1971) indicate that the factor structure of the instrument is not substantially altered by using this shorter reference period. Most subjects completed the POMS within 5 minutes.

The POMS was selected because it is a brief, undemanding task that is independent of social desirability effects (McNair et al., 1971) and there is substantial evidence supporting its reliability and validity (Globus et al., 1977; Haskell, Pugatch & McNair, 1969; Lorr, McNair & Weinstein, 1964; McNair & Lorr, 1964; Mirin, Shapiro, Meyer, Pillard & Fisher, 1971). In his review of the POMS, Eichman (1978) judges the reliability of the instrument to be acceptably high. According to Eichman, K-R 20 values range from .84 to .95 in two large samples and test-retest correlations range from .65 to .74. Although the test-retest correlations are only moderate, they are in accord with its purpose of measuring transient states. Validity of the POMS has been established in a number of ways. The factor structure of the instrument has been shown to be stable over different populations with samples ranging from 150 to 650 subjects. Construct validity has been established by correlating POMS scale scores with other measures of affective state. Predictive validity has been established in studies of brief psychotherapy, of psychotropic drug trials, and of response to emotion-inducing conditions. Eichman concludes that the POMS appears to be a valid measure that is "optimally reliable and sensitive to change."
Beck Depression Inventory. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961) is a 21-item, self-report measure of the depth or severity of depression. The BDI contains items relating primarily to cognitive and affective aspects of depression (e.g., guilt, sadness, sense of failure); however, it does include some items related to physiological disturbance (e.g., insomnia, weight loss, loss of libido). Each item presents four alternative statements and is scored 0-3. The scale score is the sum of these item scores.

The BDI was selected for several reasons. It places less emphasis on somatic complaints than do many measures of depression. This is an important consideration in the assessment of depression in a chronic-pain sample. The BDI also has fewer items related to anxiety or agitation than do other measures and thus is a purer measure of depression. The BDI has been widely used in research, and a large body of evidence supports its reliability and validity (Stenhouver, 1985). For example, using a split-half technique Beck et al. (1961) reported a Pearson r of .86 and this correlation rose to .95 using the Spearman-Brown formula. Similar findings were later reported by Beck and Beamesderfer (1974). Beck and Beamesderfer also assessed internal consistency of the BDI by computing item-total correlations; they reported that all items, except weight loss, correlated with the total BDI score at a significance level of r < .001.

Other studies bearing on internal consistency have not, however, been as supportive. Langevin and Stancer (1979) reviewed factor-analytic studies of the BDI. They reported that researchers have found no fewer than three factors and—in one study—as many as eight factors. These factor-analytic studies indicate that the BDI does not assess a
unitary construct of depression. In view of the results of these factor studies, it is likely that if internal consistency were measured by coefficient alpha it would also be lower than the reported split-half coefficients. These findings do not, however, invalidate the BDI as a measure of depression. It is reasonable to expect that a complex condition like depression involves a number of symptom clusters that are closely related. An assessment instrument that adequately measures the related factors that make up depression will likely show only moderately high internal consistency. A measure that had extremely high internal consistency would probably tap only one of the relevant factors.

A number of studies have established the construct validity of the BDI by comparing groups of depressed and nondepressed subjects (as established by BDI scores) on measures of underlying personality traits. For example, research has indicated that BDI high-scorers have self-concepts that are more negative (Beck & Ward, 1961) and have lower levels of overt hostility (Gottschalk, Glesser & Springer, 1963) than do nondepressed subjects. Correlating the BDI with ratings by clinicians, with behavioral measures of depression, and with other self-report measures of depression has produced moderate to substantial validity coefficients (Beck & Beamesderfer, 1974; Byerly & Carlson, 1982; Schaefer et al., 1985; Williams, Barlow & Agras, 1972).

**Differential Personality Inventory Scales.** The Depression scale and the First Factor scale were taken from the 15-scale Differential Personality Inventory (DPI; Jackson & Messick, 1964). The DPI was designed to tap a number of aspects of psychopathology. The DPI is similar to the MMPI in intent but was developed with much greater psychometric sophistication. The authors insisted on internal consistency
of scales, they eliminated response-sets, and they used each item in only one scale. Although the DPI has not been widely used, there is research evidence for its measure's validity. Jackson and Carlson (1973) reported good convergent and discriminant validity for the DPI using a sample of 370 university students. A study of psychiatric inpatients (Kavanaugh & Auld, 1977) supported the validity of the DPI as a measure that could discriminate among types of psychotic behavior. Auld and Noel (1984) administered the DPI to 30 psychiatric inpatients and 30 psychiatric outpatients, and they compared these scores to subjects' ratings on the Brief Psychiatric Rating Scale. Although they reported varying degrees of correlation with criteria for the 15 scales, they counted the Depression scale among those which showed good validity.

The Depression scale is a 20-item, true-false scale with items balanced between the "true" and "false" alternatives. The scale was developed as a measure of the trait of depression. It contains items that tap cognitive and affective aspects of depression such as sadness, pessimism, sense of failure, and lack of enjoyment of daily life. No physiological symptoms of depression are represented by items in the scale. Jackson and Carlson (1973) report a K-R 20 of .87 for this scale, indicating a high degree of internal consistency.

It is not known whether administering the Depression scale independently affects its validity. This scale was designed to be administered as part of a broader measurement instrument. In this administration only the First Factor scale items were included with the depression items because of time constraints. The First Factor scale (also a 20-item, true-false scale) was included in an attempt to make the administration somewhat more similar to the conditions under which
the Depression scale was standardized and evaluated. The First Factor scale is a validity scale which reflects psychopathological content and tendencies to respond in an undesirable way. The Depression and the First Factor scales were combined into a single questionnaire, in which the order of the items was randomized. The resulting measure was labeled "Personality Inventory." The Inventory required approximately 10-15 minutes to complete.

**Expectancy Questionnaire.** A 12-item expectancy measure was developed by the author for this study. (See Appendix A.) Each item is a statement phrased in the first person followed by a 5-point rating scale with points ranging from "strongly disagree" to "strongly agree." Five activities involved in pain-management treatment were chosen: talking with a psychologist about the problem, increasing activity, using distraction, learning relaxation or self-hypnosis techniques, and decreasing analgesic medication. The questionnaire consists of parallel statements regarding (a) the subjects' abilities to perform each activity, and (b) the activity's perceived helpfulness. Two statements were also included that reflect the subject's belief in his/her ability to learn pain-management techniques in general, and his/her belief that those techniques overall will be helpful. The parallel items were designed to measure self-efficacy expectancy (e.g., "I could learn techniques such as relaxation or self-hypnosis.") and outcome expectancy (e.g., "Learning relaxation or self-hypnosis skills would help me manage my pain better."). These items were presented in a random order.

This instrument is an obvious, self-report measure that has good
face validity. There have been no previous attempts to establish its reliability or validity. It requires 3-5 minutes to complete.

Assessment Measures

Interview. A structured interview developed by Miller (1985) was conducted with each subject as part of the routine clinical assessment. This interview gathered information from the patient regarding pain symptoms, personal history, details of the employment situation, and impact of the pain condition on present emotional, social, and physical status.

Wechsler Adult Intelligence Scale-Revised. The Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1981) was administered to each subject by the psychometrist on the hospital staff. The WAIS-R is a widely used, individually administered test of general intelligence comprised of 11 subtests. This measure was administered to patients as part of the routine psychological assessment. In this study WAIS-R results were used as part of the performance feedback presented to subjects in a subsequent session.

Wechsler Memory Scale. The Wechsler Memory Scale (WMS; Wechsler, 1945) is a well-established measure of verbal and visual memory. It consists of seven subtests and yields an age-corrected memory quotient. This measure was also included in the routine assessment of patients. It was administered to all subjects in this study to obtain a measure of memory impairment that would make it possible to control for such impairment. The results were also used as part of the performance feedback.

Minnesota Multiphasic Personality Inventory. The Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1951) is a
566-item, true-false instrument designed to measure psychopathology. It provides 10 clinical scale scores and three validity scale scores. The MMPI was administered as part of the routine assessment. In this study it provided personality information that was incorporated into the performance feedback. The Depression scale of the MMPI (MMPI-D) was also utilized as another measure of depression in the present research. The MMPI-D has been criticized for the heterogeneity of its items. The scale also includes a number of items pertaining to various somatic complaints. Although the MMPI-D has been used in a number of studies of chronic-pain patients, these considerations make it less than ideal for use with this population. Despite its drawbacks the MMPI-D was also used in the present study as a criterion measure and was correlated with other depression measures because the scale score was provided as part of the routine assessment data.

Post-Assessment Materials

Self-Efficacy and Comparison Statements. The author developed two brief statements of approximately the same length. The statements used approximately parallel language and construction. The Self-Efficacy Statement (Appendix B) was designed to confront the negative perceptual bias assumed to be present in depression and to encourage subjects to attend to positive information during feedback. The author also intended to increase subjects' perceived self-efficaciousness by praising their coping efforts and by informing them that their assessments indicated they were the type of people who could successfully use psychological approaches to pain management. Outcome expectancies were addressed by stressing that many other patients like them had been helped by using psychological pain management techniques. The statement was
designed to increase subjects' senses of confidence and competence.

The Comparison Statement (Appendix C) was designed to be similar to the Self-Efficacy Statement in style and emotional tone. In this statement negative perceptual bias was addressed but the subjects were not encouraged to alter this style. The content of the Comparison Statement focused on subjects' difficulties and on the usefulness of the assessment data for increasing understanding of subjects' problems. No attempt was made to build subjects' confidence in either themselves or in treatment. The author intended this statement to be sympathetic but as neutral as possible regarding self-efficacy expectancies.

A pilot study was conducted to evaluate whether the statements were similar in overall tone. Fifteen adults were asked to read each statement and complete brief rating scales (Appendix D). A third statement (Appendix E), designed as an alternate comparison statement, was also included. This Alternate Statement was very similar to the Comparison Statement, but the wording and tone were designed to be somewhat less personal and supportive. The statements were presented to raters in a packet which began with written instructions (Appendix F). The statements were randomized in each packet and labeled only with initials (e.g., Statement "N"). The rating scales form followed each statement.

Feedback. Feedback about psychological assessment results was presented in a standard fashion. Five strengths and five weaknesses were chosen from each subject's WAIS-R, Wechsler Memory Scale, and MMPI results. Although specific content differed for each subject, the positive and negative characteristics were presented to each in the same randomized order (+, - , -, +, +, - , +, - , +, - ). (See Appendix G for
examples of feedback.) The feedback was also introduced to each subject in the same manner (Appendix H) and concluded in the same manner (Appendix I). Presentation of feedback required approximately 10-20 minutes. When subjects posed questions, made comments, or required clarification the presentation time was extended.

Profile of Mood States. The POMS, described in the Pre-Assessment Measures section, was administered twice during the post-assessment phase of the study.

Expectancy Questionnaire. The Expectancy Questionnaire, described in the Pre-Assessment Measures section, was also re-administered during the post-assessment phase of the study.

Recall Questionnaire. The author designed a Recall Questionnaire (Appendix J) for this study to assess cognitive bias in recall of feedback. This measure required subjects to list any of the positive information they could recall in one column and any of the negative information they could recall in another column on the same sheet. Subjects were encouraged to: "Write down anything you can remember in your own words even if you can't recall exactly what I said or how I said it." On a second sheet, subjects were asked to estimate the number of strengths and the number of weaknesses that had been mentioned in order to obtain an additional measure of recall bias. A 6-point rating scale was also included that required the subject to report how hopeful he/she felt after receiving feedback. This scale ranged from "extremely discouraged" to "extremely hopeful."

Modified Self-Efficacy Statement. The author developed a modified version of the Self-Efficacy Statement (Appendix K). This statement was delivered in the last session to subjects who had previously heard the Comparison Statement. The purpose of this Modified Self-Efficacy
Statement was to provide those subjects with the self-efficacy treatment prior to their decision-making regarding treatment. The author reasoned that these subjects should not be deprived of an intervention which was believed to affect subjects' willingness to initiate treatment. The statement was designed to convey fundamentally the same information as the Self-Efficacy Statement, but it was revised to be consistent with the circumstances of its delivery.

Feedback Audiotape Rating Form. The discussion of feedback with each subject was audiotape-recorded and a random sample of those tapes was reviewed by two raters. After reviewing a tape, each rater completed the Feedback Audiotape Rating Form (Appendix L) designed by the author for this study. These ratings were intended to serve as a control on the author's possible variation presumed to be primarily the result of subject variability. The form consisted of: 7-point rating scales evaluating the interviewer's clarity in presenting positive feedback and in presenting negative feedback; a 6-point rating scale evaluating the hopefulness of the interviewer's tone; and estimates of the number of positive qualities and the number of negative qualities presented to each subject. Raters were instructed not to keep a record of the number of qualities discussed while listening to the tapes. Rather, they were instructed to focus on the content of the discussion and then to record their impressions of the numbers of strengths and weaknesses.

Procedure

Session One

Each subject initially provided written consent to participate in this study (Appendix M). Subjects then completed the POMS, BDI, DPI scales, and the Expectancy Questionnaire. These four instruments were
presented in a random order. The remainder of the session consisted of
the structured interview conducted by the author. At the end of the
first session each subject was given a copy of the MMPI to complete at
home prior to the second session. Subjects were instructed not to
discuss their answers with friends or family members.

Session Two

In the second session the WAIS-R and the Wechsler Memory Scale were
administered to all subjects by the staff psychometrist. After these
tasks were completed, the psychometrist randomly selected either the
Self-Efficacy Statement or the Comparison Statement and read it to the
subject. The last subject was deliberately assigned the Self-Efficacy
Statement in order to have equal numbers in each statement condition.

She introduced the statement by saying, "Ms. Sprague and I have some
important information we would like you to hear. The wording is so
important that I have been asked to read it to you. I know that this is
a little awkward but please try to listen carefully because the statement
tells you some important information for your next meeting with Ms.
Sprague." After reading the statement the psychometrist placed a coded
card in a sealed envelope in the subject's test file. This card indicated
which statement had been delivered.

One subject was unable to complete testing during a single session
because of the severity of her pain. In her case, the statement was
read to her when she completed testing in a third session two days
following the second session. She heard the Self-Efficacy Statement.

Final Session

In the final session each subject initially completed the POMS. The
author then sought the subject's written consent to audiotape the feedback discussion (Appendix N). Only one subject refused to be audiotaped. The author then presented the assessment feedback to each subject. Following the presentation of feedback, subjects completed another POMS, the Expectancy Questionnaire, and the Recall Questionnaire. The POMS and the Expectancy Questionnaire required an average of 10-15 minutes to complete. Four subjects completed both measures in less than 10 minutes. In these cases, the author engaged the subject for a few minutes in conversation about his/her experiences during the assessment in an attempt to standardize the time lapse between completion of feedback and assessment of its recall.

While the subject was completing the post-feedback measures the investigator opened the envelope placed in the test file by the psychometrist and learned whether the subject had received the Self-Efficacy Statement or the Comparison Statement. Following completion of the post-feedback measures, subjects who had received the Self-Efficacy Statement were given further feedback about the assessment (e.g., discussion of how marital or other family problems were creating stress and contributing to the pain problem). The author then discussed treatment options and debriefed subjects about the study. For subjects who had received the Comparison Statement the procedure was altered slightly. Following completion of the post-feedback measures the author delivered the Modified Self-Efficacy Statement to these subjects. The session was then completed in the same fashion for these subjects as it was for the subjects who had initially received the Self-Efficacy Statement.

**Audiotape Rating**

When the study was completed 12 audiotapes were randomly selected
from the pool of 29 tapes. Two raters were recruited and were paid
$5 per hour to listen to these tapes and complete an Audiotape Rating
Form after each tape. Both raters had completed university degrees but
were not psychology majors and were naive regarding the purposes of the
study. They completed their ratings independently. As noted above,
they were instructed to listen to the content of each recording and to
complete the rating forms based on their impressions.
CHAPTER III

RESULTS

Pilot Study

The Self-Efficacy Statement and the Comparison Statement were included in a packet of three statements that were presented to 15 raters. The ratings of these two statements were compared to determine whether the statements were equivalent in overall tone. The statements were designed to differ only in terms of the self-efficacy dimension; they were supposed to be similar in tone. For this analysis, the scores on the first four scales were summed. This total score is derived from ratings on the following descriptors: "personal," "warm," "hopeful," and "encouraging." The Self-Efficacy Statement had a mean rating of 23.27; the Comparison Statement had a mean of 23.47. These are not significantly different, according to a paired-sample t-test ($t [14] = .064$).

Audiotape Ratings

Two raters listened to and independently rated 12 feedback audiotapes. They first rated the investigator's clarity in presenting positive feedback and her clarity in presenting negative feedback. Both raters gave ratings of 7, "extremely clear," to every feedback tape. The raters also evaluated the hopefulness of her tone. The mean hopefulness ratings of the two raters were 4.33 and 4.42, respectively. The inter-rater correlation is .84. The mean ratings of hopefulness fell between the "moderately hopeful" and "mildly hopeful" points on the
scale. Subjects also made ratings of the hopefulness of the feedback on the Recall Questionnaire. When these ratings by subjects were converted to numbers corresponding to those used in the rating study, the mean hopefulness ratings of the 12 subjects was 4.83, which suggests that subjects tended to perceive the overall tone as slightly more hopeful than the raters in the rating study had.

The raters also estimated the number of positive qualities and the number of negative qualities mentioned in the feedback. The estimates of the two raters were radically different. One rater consistently estimated an equal number of positive and negative qualities whereas the other rater tended to estimate that the amount of positive feedback exceeded the amount of negative feedback.

Hypothesis 1

The hypothesized correlation between depression and negative bias in recall of feedback was evaluated in several ways. Only one of these analyses, however, supported the proposed relationship.

To test whether depression is related to greater recall of negative feedback, a series of 2 x 2 chi-square analyses were calculated. In each of these, one dimension was depression (high vs. low), the other was recall (greater recall of negative feedback vs. greater recall of positive). The test was done three times for each dependent measure, once using the Beck Inventory to measure depression, once using the DPI scale, and once using the MMPI scale. In each test subjects were called more depressed if they were above the median on the measure, less depressed if they were below the median. The medians of the three measures were: BDI, 14.5; DPI, 7.5; MMPI, 82.
In doing these tests three measures of recall were used: (a) accurate recalls of positive and of negative items; (b) number of positive and of negative recalls, disregarding whether the recalled items constituted duplications of other items or inaccurate memories; and (c) subject's estimate of number of positive and of negative items. In making these recall measures into a dichotomy, the investigator put the subject into a "greater recall of positive items" category if recall of items or estimate of positive exceeded recall or estimate of negative, and otherwise put the subject into the other category. With three measures of depression and three dependent (recall) measures, there were therefore nine chi-squares. None of them was significant.

The analyses just reported made use of measures of depression as a trait. One might wonder whether a transitory depressive mood would influence recall. Accordingly, the POMS measure of depression (that was obtained just before the recall data were gathered) was employed. Subjects were cross-classified on the POMS and the three recall measures. None of these three 2 x 2 chi-squares was significant.

The chi-square analysis gives a rough indication of whether depression and recall are related. A correlational analysis provides a more precise and more powerful test. Accordingly, the investigator computed the ratio of number of negative items recalled to the total number of items recalled, and correlated this with the subjects' scores on each of the three measures of depression. None of these product-moment correlations is significant. The investigator also did a correlational analysis using the data from subjects' estimates. In this analysis she computed an index by taking the square root of each subject's estimate of number of negative items and dividing it by the sum of the
square root of estimate of negative items and the square root of estimate of positive items. Otherwise expressed,

\[
\text{Index} = \frac{\text{SQRT (Negative items)}}{\text{SQRT (Negative items)} + \text{SQRT (Positive items)}}
\]

The index was correlated with each of the three depression measures. Neither the Beck Inventory nor the MMPI scale correlates significantly with subject's estimate. The DPI depression scale, however, correlates moderately \((r = .39)\) with subject's estimate of negativeness of feedback.

Hypothesis 2

It was hypothesized that higher levels of depression would be associated not only with cognitive distortion but also with less change of mood in a positive direction as a result of feedback. The mood measure used in the analysis was the Total Mood Disturbance (TMD) score calculated by summing the six POMS scale scores (Vigor being weighted negatively).

The investigator tested whether those subjects who were more depressed also changed in mood less from the second administration (pre-feedback) of the POMS to the third (post-feedback). To obtain a measure of mood change, she made use of the discrepancy between the subject's score on the third POMS from the score predicted, by multiple regression, on the basis of his/her second POMS score. These residuals were then correlated with each of the measures of depression: the BDI, the DPI, the MMPI. None of these correlations is significant.

Mean TMD scores for the three administrations of the POMS indicate slight positive mood shifts throughout the assessment. The means for those three administrations are 53.77, 45.63, and 43.23, respectively.
Paired-sample t-tests for the total sample indicated, however, that none of the differences is statistically significant. Mood data were also grouped according to gender of subject. Paired-sample t-tests for men indicated a statistically significant difference between time-1 and time-3, $t(13) = -2.65$, $p < .05$.

**Hypothesis 3**

It was predicted that depression would correlate negatively with both self-efficacy expectancies and outcome expectancies. In order to test this, the author correlated scores for self-efficacy expectancy and outcome expectancy from the first administration of the Expectancy Questionnaire with all the measures of depression: the BDI, the DPI depression scale, the MMPI-D, and the POMS depression score (first administration). These results are presented in Table 1.

As expected, correlations between the expectancy measures and the depression measures are negative. Before the research was carried out, the investigator believed the DPI depression scale to be the best measure of depression for chronic-pain patients because it is a trait measure and because it omits confounding somatic items. The DPI scale correlated more highly than any other measure with both the self-efficacy expectancy scores and the outcome expectancy scores. The BDI and MMPI-D scales have moderate correlations with expectancies. The POMS scale, which measures depressive mood or depressive state, has the lowest correlations with expectancies. These results support the hypothesis that the trait of depression is associated with decreased self-efficacy expectancy and with decreased outcome expectancy about psychological treatment.

Correlation of the self-efficacy expectancy scores and the outcome expectancy scores at time-1 was very high ($r = .76$, $p < .0001$).
Table 1

Correlations between Depression Measures and Expectancies

<table>
<thead>
<tr>
<th>Expectancy scores (time-1)</th>
<th>Depression measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DPI</td>
</tr>
<tr>
<td>Self-Efficacy expectancy</td>
<td>-.413*</td>
</tr>
<tr>
<td>Outcome expectancy</td>
<td>-.432*</td>
</tr>
<tr>
<td>Combined expectancies</td>
<td>-.451**</td>
</tr>
</tbody>
</table>

*p < .05

**p < .01
Hypothesis 4

Before testing the hypothesis that the Self-Efficacy Statement was an effective intervention for increasing expectancies about the treatment the author checked whether there was any difference between the time-1 and time-2 expectancies for either group. The correlation between time-1 and time-2 combined expectancies for the total sample was .78. There were slight increases in expectancy scores for both groups of subjects (those who heard the Self-Efficacy Statement and those who heard the Comparison Statement), but paired-sample t-tests indicated that these differences between time-1 and time-2 scores were not statistically significant.

Even though the lack of differences between time-1 and time-2 scores makes it unlikely that one could find an effect of the experimental manipulation, the investigator proceeded to make a direct test of this effect. She compared time-2 scores of subjects who heard the efficacy statement with those of subjects who did not. For the self-efficacy score, the group means differed very slightly but not significantly. For outcome expectancy the group means were exactly equal. At time-2, self-efficacy scores correlate .85 with outcome expectancy scores.

These results do not support the hypothesis that a treatment using social persuasion can alter self-efficacy expectancies or outcome expectancies about treatment.

Hypothesis 5

The author also predicted that the Self-Efficacy Statement, by changing self-efficacy expectancies, would have an impact on depressive cognitive distortion. The previous results made it unlikely that such an experimental effect would be noted. Nonetheless, the investigator directly tested the hypothesis that subjects who heard the Self-Efficacy Statement would be less biased in their recall of feedback than subjects
who heard the Comparison Statement. She compared those groups using the accurate-recall ratio (number of negative items divided by total number of items recalled) and the estimate ratio (square root of negative estimate divided by square root of negative estimate plus square root of positive estimate). She did t-tests comparing the groups on accurate recall and on estimation of feedback. Group differences were not statistically significant.

Hypothesis 6

The investigator also hypothesized that the Self-Efficacy Statement by decreasing subjects' cognitive distortion would increase the mood change they experienced as a result of feedback. Again, this hypothesis was directly tested although previous results made it seem improbable that an effect of the experimental manipulation would be found. She tested whether subjects who heard the Self-Efficacy Statement experienced more mood change in a positive direction from the second administration of the POMS to the third. Once again, to obtain a measure of mood change the author made use of the discrepancy between the subjects' TMD scores on the third POMS from the score predicted, by linear regression, on the basis of the second TMD score. She compared the group of subjects who heard the Self-Efficacy Statement with the group that heard the Comparison Statement. The results of a t-test were not significant.

Hypothesis 7

Although the prior analyses do not offer support for the effectiveness of the Self-Efficacy Statement, the investigator also directly tested the hypothesis that its effectiveness would be moderated by the subject's level of depression. There were three possible measures of the statement's
effectiveness: expectancies regarding treatment, recall bias, and mood change as a result of feedback. The moderating effect of depression on expectancies was tested in the following manner.

The total sample was divided into two groups (each with \( n = 15 \)), those who heard the Self-Efficacy Statement and those who heard the Comparison Statement. Within each group the combined expectancy scores (self-efficacy expectancy plus outcome expectancy at time-2) were rank-ordered according to subjects' scores on the DPI-D scale. Thus Subject 1 in each group had the highest DPI-D score while subject 15 in each group had the lowest DPI-D score. The difference in combined expectancy scores for subjects at each rank was calculated. The author then correlated these difference scores with rank and obtained a non-significant correlation coefficient of \( .29 \).

This same procedure was followed to assess whether depression moderated the Self-Efficacy Statement's effect on recall bias. The investigator carried out the analysis using the recall ratio (negative accurate recall divided by total accurate recall) and the estimate ratio (square root of negative estimate divided by the square root of the negative estimate plus the square root of the positive estimate). Correlations between difference scores and rank were very slight and not statistically significant.

Because pre- and post-feedback mood measures were so highly correlated (\( r = .97 \)) this hypothesis was not tested using change in mood.

The results of these analyses do not support the proposal that depression moderated the effectiveness of the Self-Efficacy Statement.

**Hypothesis 8**

The hypothesized relationship between self-efficacy expectancies
about treatment and likelihood of choosing psychological treatment—that those expecting treatment to be effective were more likely to choose it—was also evaluated. The group of subjects who chose to pursue treatment and the group who refused treatment recommendations were compared on their combined treatment expectancies (self-efficacy plus outcome expectancies), both at time-1 and time-2. Two types of treatment were considered: (a) the Pain-Management Course (a specialized, time-limited group program), and (b) other type(s) of psychological treatment (individual, couple, family and/or group treatment). These treatments were not mutually exclusive; most subjects were offered both the Pain-Management Course and at least one other treatment option. Of the total sample of 30 subjects, 28 subjects were offered the Pain-Management Course and 25 chose it. All 30 subjects were offered another type of psychological treatment, and 15 chose it. The investigator did t-tests to compare the total expectancies, both at time-1 and at time-2, of the group that chose the Pain-Management Course with the expectancies of the group that did not. Differences were not significant. The difference for time-2 came so close to the conventional boundary for significance that the exact probability bears mentioning: p was .0553. The effect size was also calculated and is large (d = .82). The author also did t-tests to compare the subjects who chose another type of psychological treatment with those who did not. These group differences regarding treatment expectancies were also not statistically significant.

Hypothesis 9

It was also predicted that subjects who were more depressed would be less likely to choose any type of psychological treatment. Depression scores of subjects who chose any treatment (Pain-Management Course or other type of treatment) and of those who did not were compared. The
author used as depression scores the three trait measures of depression (BDI, DPI-D and MMPI-D) and the POMS depression score. The POMS score was from the test administered just prior to patients' telling the investigator their decisions about treatment. A series of t-tests failed to indicate any significant difference on any variable.

Additional Analyses

Some additional statistical analyses were done to investigate questions not directly related to the hypotheses. A few of these provided interesting results.

To investigate whether recall of feedback is related to memory ability, scores on the feedback recall measure were correlated with memory quotients from the Wechsler Memory Scale. These product-moment correlations are presented in Table 2. Accurate memory for positive feedback is significantly correlated with memory quotient.

It would be expected that the lethargy and decreased cognitive efficiency common in depression would affect overall memory functioning. To assess this, the author correlated scores on the two best trait measures of depression (the BDI and the DPI-D) with total accurate feedback recall, with total feedback recall, and with the Wechsler Memory Quotients. These correlation coefficients are presented in Table 3. All are in the expected direction, but none is statistically significant.

Scores from the three trait measures of depression (BDI, DPI-D, MMPI-D) were also correlated with each other. These correlations are presented in Table 4. All coefficients are statistically significant.
Table 2
Correlations between Wechsler Memory Quotients and Recall

<table>
<thead>
<tr>
<th>Recall measures</th>
<th>Positive items</th>
<th>Negative items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate recall</td>
<td>.462*</td>
<td>.298</td>
</tr>
<tr>
<td>Total recall</td>
<td>.194</td>
<td>.184</td>
</tr>
<tr>
<td>Estimate</td>
<td>.095</td>
<td>-.154</td>
</tr>
</tbody>
</table>

*p < .05

Table 3
Correlation of Depression Measures and Memory Measures

<table>
<thead>
<tr>
<th>Depression measures</th>
<th>Accurate recall</th>
<th>Total recall</th>
<th>Wechsler memory quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>-.219</td>
<td>-.041</td>
<td>-.272</td>
</tr>
<tr>
<td>DPI-D</td>
<td>-.120</td>
<td>-.050</td>
<td>-.334</td>
</tr>
</tbody>
</table>
Table 4

Correlation of Depression Measures

<table>
<thead>
<tr>
<th></th>
<th>BDI</th>
<th>DPI-D</th>
<th>MMPI-D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td></td>
<td>0.760**</td>
<td>0.613**</td>
</tr>
<tr>
<td>DPI-D</td>
<td></td>
<td></td>
<td>0.577*</td>
</tr>
</tbody>
</table>

*p < .01

**p < .001
CHAPTER IV

DISCUSSION

Overview of Results

Results of this study support two of the key hypotheses but do not support the other seven. The two hypotheses that are supported are: (1) subjects who are more depressed demonstrate a greater negative bias in their recall and evaluation of the assessment feedback than subjects who are less depressed; and (2) subjects who are more depressed have lower expectations of their abilities to learn pain management techniques (self-efficacy expectancy) and lower expectations that these techniques help achieve treatment goals related to pain (outcome expectancy) than subjects who are less depressed.

The first hypothesis received some support. Bias in the free recall of feedback is not related to level of depression as measured by BDI or DPI-D; however, bias in evaluation (measured by estimation of the number of negative and of positive feedback statements) is significantly related to depression scores on the DPI-D scale (but not to scores on the BDI or MMPI-D). The second hypothesis that received support predicted that subjects who were more depressed would have lower self-efficacy expectancies and lower outcome expectancies. Both types of expectancy are significantly correlated with depression scores on the DPI-D. However, when the BDI or the MMPI-D were used to measure depression, a moderate relationship, which was not statistically significant, between expectancies and depression emerged.
The hypothesis that subjects who were more depressed would experience less improvement in mood as a result of the feedback was not supported. There is also no evidence that the Self-Efficacy Statement had any of the predicted effects on expectancies, on cognitive distortion, or on mood change. There were also no significant differences in expectancies or in depression between subjects who chose psychological treatment and those who did not. The difference in combined expectancies (self-efficacy plus outcome expectancies) between subjects who chose the Pain Management Course (n = 25) and those who did not (n = 3) came very close, however, to the conventional boundary establishing statistical significance. This suggests that subjects who had lower expectancies regarding the effectiveness of psychological treatment for chronic pain were less likely to choose such a treatment program.

Cognitive Distortion and Depression

The chi-square and correlational analyses provide no evidence of a relationship between depression and negative bias in recall of feedback. The analyses provide mixed results, however, regarding evaluation bias as reflected in subjects' estimates. The DPI depression scale correlated moderately (r = .39) with subjects' estimates of negativness of feedback. It might be supposed that the findings of the audiotape rating study would help us to understand those results.

One of the raters of the 12 feedback tapes consistently estimated an equal amount of positive and negative feedback whereas the other rater tended to estimate that the positive feedback exceeded the negative feedback presented by the investigator. This finding raises the possibility that the investigator may have presented the feedback in a manner that encouraged a positive perceptual bias. Indeed, to facilitate
the patients' progress, the investigator deliberately presented feedback in a hopeful, encouraging manner. Although equal numbers of positive qualities (strengths) and negative qualities (weaknesses) were discussed with every subject, even the negative information was presented very supportively. One can speculate that the overall positive tone and style of presentation led one of the raters to perceive the feedback as incorporating a greater number of strengths than weaknesses. Because there were only two raters it is impossible to evaluate this further.

If the investigator presented information in a very positive style and, further, if she presented it even more positively to depressed subjects, it might mask or counteract a negative bias in subjects' recall. There is no evidence, however, that the investigator was inconsistent in her presentation to depressed and nondepressed subjects; and there is no reason to suppose that the possible "positive bias" would have had an impact on the cognitive processing only of depressed subjects, thereby diminishing group differences in recall. Rather, previous research (Ingram, et al., 1985) and cognitive theory predict that depressed subjects would be less responsive to positive information than normal subjects would. In the present research, subjects, regardless of level of depression, tended to remember just slightly more positive feedback than negative feedback. Subjects who were more depressed (i.e., about the median on the BDI and the DPI-D) did remember slightly less of the positive feedback than did less depressed subjects, but none of these differences approached statistical significance.

There is, however, a significant correlation between recall of positive feedback and Wechsler Memory Quotients. This last finding suggests that memory ability is related more strongly to performance on the free recall task than is depressive cognitive style.
In order to correlate subjects' estimates of the number of negative and positive feedback statements with depression, these data were expressed as ratios of the number of weaknesses to the number of strengths plus the number of weaknesses estimated. These data were transformed by taking the square root of each estimate in order to normalize the distribution of estimates. The significant correlation between the transformed data and the DPI-D scores provides support for the hypothesis that chronic pain patients who are more depressed demonstrate a greater negative bias in their evaluation of feedback. The results indicate that nondepressed chronic-pain patients more accurately judge the number of strengths and weaknesses as compared to the depressed subjects. The absence of a control group without chronic pain makes it impossible to draw conclusions about whether the nondepressed subjects are responding as normal subjects would. It would be important for those doing future research to compare the cognitive processing of chronic-pain patients (with and without depression) with that of appropriate non-pain controls. If one accepts that chronic pain is an expression of an underlying depressive process one would expect that a depressive cognitive style would be observed in chronic-pain patients even in the absence of overt depressive symptoms. Previous research (e.g., Nelson & Craighead, 1977) indicates that depressed subjects are sometimes accurate in their perceptions and evaluations whereas nondepressed subjects are selectively attentive to positive information. Having a control group would permit exploration of whether accurate recall and evaluation are associated with depression.

**Effect of Feedback on Mood**

Although the study provides evidence that depressed subjects judged
the feedback to be more negative, there was no evidence for the predicted difference in mood improvement; there was no evidence that subjects who had a lower level of depression experienced a greater improvement in mood (as a result of feedback) as compared to subjects who were more depressed.

Change in mood from pre-feedback to post-feedback (a time interval of approximately 30 minutes) was slight. There were no apparent group differences. These results suggest either that subjects' moods did not change as a result of feedback or that the changes were too subtle to be measured by the self-report inventory. The POMS is designed to measure transitory affective states and has been utilized in research to assess change over relatively short periods. It is possible that the POMS may not have the sensitivity to detect mood change over a period of 30 minutes, however, unless an emotionally intense event is experienced within that brief intervening period.

As discussed earlier, the subjects' moods improved steadily throughout the assessment. This finding suggests that a 3-session outpatient assessment can have therapeutic benefit. Research which investigates changes in mood during the assessment process may lead to strategies for enhancing therapeutic effects of the assessment intervention. The finding that overall mood change (time-1 to time-3) was significant for men but not for women might be related to the gender of the investigator. She may have given more encouragement to the male subjects or they may have responded more positively to a woman therapist. Because there was only one female investigator, however, this cannot be determined. Given this finding, future researchers could investigate the impact of therapist's gender on mood change during a brief assessment intervention.
Depression and Self-Efficacy Expectancy

Results support the predicted relationship between subjects' expectancies and level of depression. As expected, subjects who were more depressed had lower self-efficacy expectancies and lower outcome expectancies. This finding fails to support Bandura's prediction that depression is associated with a pattern of low self-efficacy expectancies and high outcome expectancies.

One criticism of Bandura's theory is that he fails to make the distinction consistently between the two types of expectancy. Moreover, researchers have had difficulty distinguishing the two types of expectancy (e.g., Manning & Wright, 1983). The results of this study indicate that self-efficacy expectancies and outcome expectancies are highly correlated. Since many of these chronic-pain patients seek a psychological assessment because their physicians have instructed them to do so, it is reasonable to expect that they would initially have low expectancies of the effectiveness of psychological techniques (outcome expectancy) although they would likely have variable scores on a measure of self-efficacy expectancy. It is significant to note that the data fail to differentiate these two types of expectancy. The expectancy questionnaire utilized in the present study has not been validated previously and it is also possible that it is an inadequate measure of self-efficacy expectancies and/or outcome expectancies. Validation of this measure with a larger sample of chronic-pain patients is needed.

Effectiveness of Verbal Persuasion

The Self-Efficacy Statement did not have any effect on subjects' expectancies or on cognitive distortions. This study was undertaken because there is growing evidence that brief intervention strategies are
effective. The subjects in this study had long-standing pain problems. Many of the patients were also significantly depressed and may have had a depressive cognitive style that pre-dated both the chronic pain and their overt depression. Chronic-pain patients may be particularly motivated to resist increasing their expectancies about psychological treatment. Professionals, family, friends, and employers have often doubted the suffering of these patients. As a result, chronic-pain patients may interpret a referral for psychological treatment as implying that the referring professional believes, "The pain is all in your head." Although these patients may comply with the referral to a psychologist they may feel hostile to and threatened by the intervention. They may believe that if their pain problems improve with the psychological assistance then this implies it is not a "real," legitimate physical problem. In view of these beliefs, a one- or two-minute intervention may have been too brief to have a powerful effect.

An important goal of psychological treatment for pain patients is to help them learn to manage pain better by using psychological techniques. These persons, because they have been medical patients for a long time, are often quite passive and insecure, and expect to be cured by some external agent or procedure. Another important goal is to help the patient become an active participant in the treatment process.

Despite the chronicity of pain patients' problems and their feelings of hostility and vulnerability, it is important to try to improve self-efficacy and treatment efficacy. The 8-Week Pain Management Course in which many of these patients participate involves techniques such as verbal persuasion and performance feedback aimed at changing patients' expectancies and at improving their functioning. The results suggest,
however, that a one- or two-minute statement was insufficient to effect a change in such entrenched beliefs. It should be noted that a 3-hour intervention (the assessment) did have an effect on subjects' moods. In view of the chronicity of most subjects' pain problems, that is still a brief intervention.

In this design, the psychometrist delivered the statements so that the investigator would be blind concerning which statement the subject had heard. To achieve consistency in presentation the psychometrist read the statements (along with an appropriate introduction). Having her read the statements increased the experimental rigor of the design but may have diminished the impact of the persuasive message. The psychometrist reported anecdotally that a few subjects queried whether the statement was read to all patients; they seemed to doubt it was intended only for them. Accordingly, reading the statement may have diminished its credibility. Future research that investigates the effectiveness of verbal persuasion should maximize its impact by having it delivered in a natural and convincing manner by someone perceived as high in status.

Treatment Choice

The final issue addressed in this study is the relationship between psychological factors and motivation to pursue further treatment. The investigator predicted that persons who were more depressed and had lower expectancies regarding treatment would be more likely to reject psychological treatment. The prediction was not confirmed, although one test of the hypothesis came close to significance. The data indicate that even depressed patients and even those with low self-efficacy expectancies regarding treatment tend to choose some kind of psychological treatment after having completed an assessment intervention.
The difference in expectancies between those subjects who chose the Pain Management Course and those who did not fell short of statistical significance, but, as noted in the Results, the effect size (d = .82) was substantial. Effect size provides an estimate of the degree or strength of relationship between variables. In this case, the large effect size suggests that treatment expectancies are strongly related to the choice of the Pain Management Course although, because of the small sample size, results of the t-test were not significant. This finding supports a key element of Bandura's theory of self-efficacy--namely, that self-efficacy expectancies and outcome expectancies determine the initiation of coping efforts. It is suggested that future research investigate further the relationship between self-efficacy expectancies and treatment choice.

Additional Issues

As in many studies, in this study the issues of self-selection and representativeness of sample should be kept in mind in the interpretation of all findings. Of the patients referred for assessment and contacted by the investigator, 12 chose not to begin the assessment and 7 dropped out before it was completed. Those 19 patients not only refused to participate in a study but, more important, they refused to participate in a psychological assessment that would likely lead to an offer of treatment. One can speculate that these patients who refused intervention differ from the subjects in this study on qualities such as those being investigated (depression and expectancies). If, for example, more severely depressed patients refused intervention, this would lead to a restriction of range of depression scores that could make it more difficult to establish a relationship between depression and recall bias
or between depression and expectancies.

The DPI depression scale proved to be the best measure of depression in the present research as judged by ability to predict other relevant behavior. The BDI was somewhat less successful and, as expected, the MMPI-D was the least effective predictor in this study. The superiority of the DPI-D over the BDI in this research suggests that depression in chronic-pain patients is best measured by a scale that omits confounding somatic items. The DPI depression scale is well-constructed and reliable. This study provides further evidence of its validity. The relationship of the DPI scale with expectancies and with negative bias in evaluation provides primary support for the validity of this brief scale. The high correlation (.76) of the DPI-D and the well-established BDI supports—by the concurrent measure approach—the validity of the DPI-D. The present research indicates that the DPI scale would be a good choice for other studies of depression in chronic-pain patients or in medical patients. Of course, if the purpose of a study called for identification of a major affective disorder, it would be necessary to utilize an instrument that included physical symptoms of depression; in such a context the DPI-D would not be a sufficient measure.

Many of the findings in this study are relevant to clinicians who routinely provide assessment feedback to patients. In the past several years psychologists have developed an increased interest in providing feedback to patients regarding their psychological assessments. This interest comes partly from the socio-political context. Access by individuals to personal information previously protected by professions and institutions has been recognized as a civil right. Among psychologists there has also been a growing appreciation that providing
assessment feedback to their patients can be an important clinical intervention.

The findings in the present research that subjects recalled (10 minutes after feedback) an average of two positive and two negative items out of a total of 10 items discussed makes clear the importance of clinicians' stressing and reiterating important information to patients. It may be helpful in some situations to encourage patients to take notes during feedback. The finding that the more depressed subjects evaluated the feedback as being more negative should also guide clinicians in their presentations. For example, clinicians could check whether the patient has in fact understood positive feedback and perceived it as positive. It is also important for clinicians to know that an assessment intervention as brief as three hours can lead to significant mood changes.

Most feedback research has utilized college samples and has addressed issues such as whether students can differentiate actual statements from vague, global statements about their personalities. Few studies can even be considered as clinical analogue studies. It is suggested that research using clinical samples and actual feedback is needed if psychologists are to have a well researched basis for providing feedback in a meaningful and effective manner.

It would be a help to clinicians to know how a general sense of confidence, competence, and self-esteem influences the sense of efficacy that persons have in dealing with specific situations. Some investigators in the field of self-efficacy expectancy (e.g., Tipton & Worthington, 1984) have differentiated between such general and specific self-efficacy expectancies. The present research measured specific self-efficacy expectancies--those regarding a psychological, pain-management treatment.
Tipton and Worthington suggested that when people have had little previous experience about a situation they may rely on general self-efficacy expectancies to make predictions and decisions. Future research should assess general self-efficacy expectancies as well as specific self-efficacy expectancies. If subjects have had little previous experience with psychological treatment, their general expectancies may be better predictors of treatment success.
APPENDIX A

EXPECTATIONS
PAIN MANAGEMENT SERVICE

EXPECTATIONS

Name: __________________________

Date: __________________________

Please rate (by circling the appropriate number) how much you agree or disagree with each of the following statements.

1. If I were meeting with a psychologist to learn how to handle my pain better, I could talk about my problems.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree

2. Changing my activity level would help me feel better.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree

3. I could learn pain management techniques if given training and help.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree

4. Learning pain management techniques would help me cope better with my pain problem.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree

5. Learning how to distract myself more from the pain would be helpful to me.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree

6. I could make gradual changes in my activity level.

   1  2  3  4  5
   strongly disagree  disagree  undecided  agree  strongly agree
7. Meeting with a psychologist to learn how to handle my pain better would be helpful to me.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree

8. I could learn techniques such as relaxation or self-hypnosis.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree

9. I could decrease the number of pain killing pills I take or take them less frequently.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree

10. I could learn to distract myself more from the pain.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree

11. Decreasing the number of pain pills I take or taking them less frequently would be helpful to me.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree

12. Learning relaxation or self-hypnosis skills would help me manage my pain better.

1  2  3  4  5
strongly disagree disagree undecided agree strongly agree
APPENDIX B

SELF-EFFICACY STATEMENT
SELF-EFFICACY STATEMENT

Next time you'll be meeting with Ms. Sprague to talk about the results of your assessment and our treatment recommendations. She'll talk with you about the tests and questionnaires you did and will speak in terms of your strengths and weaknesses. I'm sure that she'll be talking about your strong points as well as the difficulties you have.

You know, usually when someone's been in pain for a long time and is having a rough time, it can be very hard to think about your strengths. When you're feeling "down" it can be hard to hear and remember the good things about yourself. It's often easier to think about how bad things are and maybe to think that everything is bad, which of course is not true. When we feel low we often tend to be hard on ourselves and overly critical. But, if you relax and really listen to the things that Ms. Sprague will be telling you, I know that you'll be able to take in the important positive things that she's going to discuss. It's very important for you to do that because you have so many important strengths. These positive qualities are going to be a great help to you. (Pause). I was really impressed with all the good things you've been doing to try to help yourself get better. You really should give yourself a lot of credit.

One of the other things that impressed us in looking at what you've done so far is that you are the kind of person who can learn to manage your pain better. You're someone who can use psychological ideas. I'm sure that you appreciate that such ideas, as well as medical approaches, can be helpful to you. And, you're also very motivated. You're certainly not ready to throw in the towel or give up. That's not you at all. You're a fighter. In our experience, people like you do very well when they take advantage of psychological treatment programmes like individual counseling or group treatment programmes.

You know, you've really been coping remarkably well given how hard it is to live with a chronic pain problem. And it's obvious you already have a lot of coping skills that you've learned on your own that help you get through the rough times. It may be that you are not even aware of all of the good coping skills that you already are using. Psychological treatment would build on those skills that you already have and teach you some new ones that have helped a lot of other people cope better with their pain.

You and Ms. Sprague will be talking more about what kind of treatment we recommend later when you meet for the feedback session and she'll go through the tests you did, one by one. She'll give you a call within a few days to set up the appointment. Are there any questions you have before we finish up today?
APPENDIX C

COMPARISON STATEMENT
COMPARISON STATEMENT

Next time you'll be meeting with Ms. Sprague to talk about the results of your assessment and our treatment recommendations. She'll talk with you about the tests and questionnaires you did and will speak in terms of your strengths and weaknesses. I'm sure that she'll be talking about your strong points as well as the difficulties you have.

You know, usually when someone's been in pain for a long time it's really rough and when you're feeling "down" it's often easy to think about how bad things are and maybe to think that everything is bad. When we feel low we often tend to be hard on ourselves and overly critical. But if you relax and really listen to all the things that Ms. Sprague is going to be telling you I know that the information you hear will be very helpful to you. If you are able to do that you will learn a lot about your situation. I know this information is going to be helpful for you. (Pause). I've been impressed with how complicated your situation is. If you think about the things that have contributed to your difficulties and try to understand them, that will help you.

One of the things that impressed us in looking at what you've done so far is that other people are very important to you. You're the kind of person who needs other people. Establishing close relationships with other people is important to you.

You know, I'm also sure that this assessment has been stressful in some ways for you. It's natural for people to feel they didn't do all that well, especially if they're feeling uncomfortable. But, the assessment provides valuable information about you that Ms. Sprague will be discussing in detail. I know that psychological tests can be long and time-consuming and may be especially difficult for someone who is experiencing pain. They do provide us with information though about how you think and feel and what your reactions are likely to be in different situations. We do understand that it's really hard to live with a chronic pain problem. There certainly are a lot of rough times and I'll bet a lot of the time you feel discouraged about the situation. I believe that it would be important for you to consider the possibility of psychological treatment.

You and Ms. Sprague will be talking more about what kind of treatment we recommend later when you meet for the feedback session, and she'll go through the tests you did, one by one. She'll give you a call within a few days to set up the appointment. Are there any questions you have before we finish up today?
APPENDIX D

PILOT RATING FORM
RATING SCALE

Rate the statement you just read by circling the appropriate number.

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>How personal the statement was</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>How hopeful the statement was</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>How much warmth it conveyed</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>How encouraging the statement was</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>How competent it made you feel</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

ALTERNATIVE COMPARISON STATEMENT
ALTERNATE COMPARISON STATEMENT

Next time you'll be meeting with Ms. Sprague to talk about the results of your assessment and our treatment recommendations. She'll talk with you about the tests and questionnaires you did and will speak in terms of your strengths and weaknesses. I'm sure that she'll be talking about your strong points as well as the difficulties you have.

Usually when someone's been in pain for a long time it's really rough. When you're feeling "down" it's natural to think about how bad things are and maybe to think that everything is bad. When we feel low we often tend to be hard on ourselves and overly critical. It will be really important for you to relax and really listen to all the things that Ms. Sprague is going to be telling you because the information will be very helpful. It's extremely important for you to do that so you can learn as much as you can about your situation. This information is going to be helpful for you. (Pause). I'm really impressed with how complicated your situation is. You really should think about all the things that have contributed to your difficulties. I'm sure that you appreciate that if you understand them then you can do something about them.

One of the things that impressed us in looking at the results of the assessment is that you are the kind of person who can understand what's going on. You're able to develop insight.

I'm sure that this assessment has been stressful in some ways for you. It's natural for people to feel they didn't do all that well, especially if they're feeling uncomfortable. The assessment provides valuable information about you that you and Ms. Sprague will be discussing in detail. I know that psychological tests can be long and time-consuming and may be especially difficult for someone who is experiencing pain. They do provide us with information though about what you think and feel, and what your reactions are likely to be in different situations.

We do understand that it's really hard to live with a chronic pain problem. There certainly are a lot of rough times. I would imagine that a lot of the time you feel discouraged about the situation. It would be important for you to consider the possibility of psychological treatment.

You and Ms. Sprague will be talking more about what kind of treatment we recommend later when you meet for the feedback session and she'll go through the tests you did, one by one. She'll give you a call within a few days to set up the appointment. Are there any questions you have before we finish up today?
APPENDIX F

INSTRUCTIONS TO RATERS
INSTRUCTIONS TO RATERS

Take a few minutes to imagine that you have been experiencing chronic pain for a period of several months or years. This pain could be headache, backache or any other type of chronic pain. You have been referred by your physician to a psychological pain service for an assessment and, possibly, for psychological treatment to help you manage your pain problem more effectively.

At your first appointment you met with a psychologist who explained the service and interviewed you. You are just finishing your second appointment. During this second appointment you met with another member of the psychology staff who conducted some psychological tests with you. You're finished with the testing now and the staff member makes one of the following statements to you.

Read each of the attached statements carefully. The statements are quite similar but also have some important differences. After reading each statement, complete the brief rating scale that follows it. Please read the statements and complete the rating scales in the order in which they appear.

Thank you for your help!
APPENDIX G

FEEDBACK EXAMPLES
**FEEDBACK EXAMPLES**

**High Digit Symbol Subtest Score**

You did very well on the subtest in which you had to write in the special marks that matched the numbers (show the test form). That task tells us a number of things, but one important thing it tells us is whether you can learn new material quickly. Learning new material quickly is one of your important strengths and that's probably a big help in your day-to-day life. You were able to pick up on those "symbols" or special marks and remember which number each one matched. It may appear to be a simple task, but to do it fast and accurately you have to have the ability to learn new information quickly—and you do.

**Low Digit Symbol Subtest Score**

You didn't do well on the subtest in which you had to write in the special marks that matched the numbers (show the test form). That task tells us a number of things, but one important thing it tells us is whether you can learn new material quickly. It may be that right now your pain is interfering and you're not as efficient at learning new material as usual. Or, being nervous in the testing situation, may have "got in the way" of being fast and accurate. Whatever the reason, you didn't do as well on this task and that may cause some problems in your day-to-day life. Learning new information quickly is one of your problem areas or weaknesses right now.

**Low Hypochondriasis (Hs) Scale Score**

One of your strengths that showed up on your personality inventory is your ability not to focus on health concerns. In other words, you can think about other things, and you're not preoccupied with health problems. When you're in pain it's easy to be more aware of matters pertaining to
health and to worry more about your health. That fact that you're not doing that is to your credit. When you're not preoccupied it means that it's probably easier to think about other things and distract yourself from the pain. I'm sure you've noticed that when you're caught up in something else and distracted from the pain, it helps. That's why it's such an important strength not to be preoccupied with health concerns and to be able to think about other things. That's one of your positive qualities that can be built on in treatment.

**High Hypochondriasis (Hs) Scale Score**

One of your problem areas that showed up on your personality inventory is your preoccupation with health concerns. It's hard for you to think about other things. Of course, it makes sense that having a pain problem you'd be more aware of matters pertaining to your health and it's easy to get worried about possible health problems. I focus on your preoccupation as a problem though because it's one of the things that can make a pain problem worse. When you're preoccupied with your health it's very hard to distract yourself from the pain and to be interested in other things. I'm sure you've noticed that when you're caught up in something else and distracted from the pain, it helps. That's why it's important to identify your preoccupation with health concerns as a problem area or weakness that can be worked on in treatment.
APPENDIX H

INTRODUCTION TO FEEDBACK
INTRODUCTION TO FEEDBACK

Now we'll be discussing your test results. I'll focus on some of your strengths and some of your weaknesses. Of course, you know yourself better than anyone else does, so I would like your help in making sense of the results. If I say something that makes sense to you or fits with what you know about yourself, please let me know. And, if I say something that seems wrong or doesn't fit, let me know about that, too. That way we can understand the assessment results and use them to help you. I'm sure that nothing I tell you will come as a surprise, but some things you may not have thought much about before. Please ask any questions you'd like as I go along. I want you to know that I do have something to offer you and we'll be talking about that at the end of the session today. First, let's look at some of your strengths and weaknesses from the assessment results.
APPENDIX I

CONCLUSION OF FEEDBACK
CONCLUSION OF FEEDBACK

Well, I've gone over quite a few of your positive qualities and your problem areas with you. Why don't we stop here and complete the rest of the research questionnaire? After that, I'll talk more with you about your personal situation and my treatment recommendations, and I'll be glad to answer any other questions you might have.
APPENDIX J

RECALL QUESTIONNAIRE
FEEDBACK RECALL

Name: ____________________________

Date: ____________________________

List all of the good things about you that were just discussed.

List all of the negative qualities about you that were just discussed.
CIRCLE THE APPROPRIATE NUMBER

Even if you can't recall exactly what they were, how many good things about you did the psychologist mention?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

more than 15

Even if you can't recall exactly what they were, how many negative qualities about you did the psychologist mention?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

more than 15

The discussion I just had with the psychologist left me feeling:

1 2 3 4 5 6

extremely  somewhat mildly mildly somewhat extremely
hopeful  hopeful  hopeful  discouraged  discouraged  discouraged
APPENDIX K

MODIFIED SELF-EFFICACY STATEMENT
MODIFIED SELF-EFFICACY STATEMENT

Before we go on to discuss our recommendations for treatment, there are a few additional things I would like to talk about. We've just talked about some of your strengths and weaknesses, the positive and negative things about you. I know that when you've been in pain for a long time it's easier to think about how bad things are and maybe to think that everything is bad rather than to hear the good things about yourself. I want to stress that overall you impressed me as the kind of person who certainly can learn to manage your pain better. You're someone who can use psychological ideas and you have an appreciation of the fact that such ideas, as well as medical approaches, can be helpful to you. And, you're also very motivated. You're certainly not ready to give up. You're a real fighter. In our experience, people like you do very well when they take advantage of psychological treatment programmes like individual counseling or group treatment programmes.

You've really been coping remarkably well, given how hard it is to live with a chronic pain problem. It's obvious that you have a lot of coping skills that you've learned on your own and that you're already using. Psychological treatment would build on those skills that you already have and teach you some new ones that have helped a lot of other people cope better with their pain.

Let's talk about the treatment options that I believe would be helpful to you.
APPENDIX L

AUDICTAPE RATING FORM
FEEDBACK AUDIOTAPE RATING FORM

SUBJECT'S NAME: _________________________

1. Please rate how clearly the psychologist presented and explained the strengths or positive qualities of the subject.

   1  2  3  4  5  6  7
   extremely moderately somewhat undecided somewhat moderately extremely confusing confusing confusing clear clear clear clear

2. Please rate how clearly the psychologist presented and explained the weaknesses or negative qualities of the subject.

   1  2  3  4  5  6  7
   extremely moderately somewhat undecided somewhat moderately extremely confusing confusing confusing clear clear clear clear

3. What was the psychologist's overall tone during the discussion?

   1  2  3  4  5  6
   extremely somewhat mildly mildly somewhat extremely
discouraging discouraging discouraging hopeful hopeful hopeful

4. How many positive qualities would you estimate that the psychologist mentioned?

   1  2  3  4  5  6  7  8-9  10  11  12  13  14  15  more than 15

5. How many negative qualities would you estimate that the psychologist mentioned?

   1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  more than 15

ADDITIONAL COMMENTS:
APPENDIX M

1st CONSENT FORM
CONSENT FORM

I, ____________________________, hereby agree to take part in a research study being conducted by Ann Sprague and Dr. R. S. Miller in the Department of Psychology at Toronto General Hospital. I understand that the purpose of this study is to investigate how people with different health conditions think and feel. My participation will involve the following:

1. I will attend three assessment sessions which ordinarily last about one hour. Because of the research study, the sessions will instead last about 90 minutes.

2. During the sessions, I will complete several questionnaires.

All information about me will be confidential and neither my name nor any other identifying particulars will be made available to anyone other than the investigators or appear in any publications without my prior approval.

I understand that I may refuse to participate in this study or withdraw from it at any time and still receive appropriate psychological treatment. My decision to participate will not in any way affect the care I will receive, neither will it delay my receiving treatment from Dr. Miller.

Signature of Participant: ____________________________

Signature of Witness: ____________________________

Date: ____________________________
APPENDIX N

2nd CONSENT FORM
CONSENT FORM

I, ______________________ hereby agree to have my feedback session with Ann Sprague audiotaped for research purposes. This tape will be listened to by two reviewers who will be assessing Ms. Sprague's discussion. The tape will be reviewed anonymously. The reviewers will not be aware of my name or any other identifying particulars. The tape will be erased following this review.

I understand that I may refuse to have this session audiotaped. My decision will not in any way affect the treatment I receive.

Signature of Participant: ____________________________

Signature of Witness: ________________________________

Date: ____________________________
REFERENCES


Miller, R. S. (1983). *Preliminary questionnaire*. Psychology Department, Toronto General Hospital, Toronto, Ontario.


*Journal of Psychology, 19*, 87-95.


*Journal of Consulting and Clinical Psychology, 42*, 911.


VITA AUCTORIS

Ann M. Sprague was born on May 6, 1950 in Detroit, Michigan. She graduated from St. Philip Neri High School, Detroit, Michigan in June, 1968. In September, 1968 she enrolled at Wayne State University and graduated with a Bachelor of Arts degree in Psychology in September, 1972. She worked as a counselor and social worker in Detroit from February, 1973 to August, 1976. In September, 1976 she enrolled as a make-up year student in the Master's program in the Clinical Psychology area at the University of Windsor, Windsor, Ontario. She graduated with a Master of Arts degree in September, 1979. Since that time she has been enrolled in the Doctoral program at the University of Windsor.