LOCUS OF CONTROL

AND

PSYCHOSOCIAL ADJUSTMENT TO CHRONIC PAIN

by

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This study sought to examine the relationships between locus of control, psychosocial adjustment to chronic pain, and reported levels of pain for chronic pain patients who had completed an in-patient, multidisciplinary pain treatment program. The sample consisted of forty one individuals drawn from British Columbia, Alberta, and Saskatchewan all of whom had completed a pain treatment program in Vancouver, British Columbia during the years 1979-1982. All individuals completed the following questionnaires: a Biographical Information Questionnaire, Rotter's Locus of Control Scale, the Adjustment to Chronic Pain Scale (ACPS), and the McGill Pain Questionnaire. 

Five hypotheses were tested. Hypotheses One, Two, and Three were tested using Pearson Product-Moment correlation coefficients to establish the relationships between variables. Hypotheses Four and Five were tested using independent groups t-tests for the difference between means to determine if there was a statistically significant difference between the means of the two groups on different variables of psychosocial adjustment to chronic pain. 

Significant negative correlations were found for females between the Locus of Control scores and the ACPS scores suggesting a relationship between an internal locus of control and poor psychosocial adjustment. Similarly, a significant interaction was found between
internality and high levels of reported pain for females. For males, a significant correlation was found between external locus of control and high levels of reported pain. A secondary analysis found a significant curvilinear relationship between the extremes of locus of control (i.e. high internals and high externals) and poor psychosocial adjustment to chronic pain.

Implications for the constructive use of the locus of control measure as a therapeutic intervention strategy in counselling chronic pain patients are discussed.
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This thesis is dedicated to the memory of

Shari Podersky-Cannon,

a friend who helped me to live, and to know how and why.
CHAPTER ONE

Introduction

Chronic pain is one of the most prevalent and difficult problems physicians treat. Chronic pain ranks among the leading medical problems in terms of physician visits, hospitalization, costs, and disability payments (Nagi, Riley, & Newby, 1973). Pain, both acute and chronic, afflicts about one-third of the population of the United States each year. It ranks as perhaps the most frequent cause of disability and suffering, yet it is only now coming to be recognized as a disease entity with serious individual and societal impact (Lorenz, 1981). Chronic pain behaviors appear to share certain important commonalities with addictive states, including self-destructive features, intractability to treatment, frequency of recurrence, and high incidence of iatrogenesis. Seres, Painter, and Newman (1981) made the point that psychological, social, and environmental factors appear to be more closely related to pain and to pain relief than are such factors as severity of injury, number of surgeries, or radiographic findings.

Statement of the Problem

The cognitive, overt behavioral, and physiological responses seen in chronic pain patients are the endproducts of an extended learning history (Keefe, 1982). At the "acute stage" of coping with
pain, patients display pain behavior patterns that are adaptive. At this stage, decreases in activity and increases in medication intake may promote healing of tissue damage. Muscle spasm may immobilize joints and at least initially protect the individual from reinjury. As healing begins to take place (2-6 months post-injury) pain persists for some patients. These patients may enter a "pre-chronic" stage in which pain-behavior patterns may become more firmly entrenched. Patients at this stage typically attempt to return to a more active lifestyle. The manner in which the patient approaches this task may be critical. Patients who gradually resume activity without exacerbating pain are more likely to become pain free. Patients who are unable because of financial considerations or unwilling to gradually resume activity are likely to be at high risk for developing chronic pain.

Patients who abruptly resume activity often experience a flair-up in pain and revert to pain behaviors such as reliance on bedrest and pain medication. Each attempt to resume activity that fails leads once again to these pain behaviors, and as time continues and if this pattern is repeated, the pain behaviors become stronger and maladaptive. Patients may become cautious and guarded in their movements - patterns that lead to a shortening of muscles, increased muscle spasm, and fatigue. Patients may also become convinced that there is little that they can do to control pain and may become prone to cognitive distortions serving to increase depression and drug dependency.

As these pain behavior patterns recur, the likelihood that they will lead to positive social consequences is also increased. That
is, spouse and family members may become quite concerned and take over many of the patient's responsibilities and actually enforce inactivity and pain medication intake. At the "chronic pain stage" (6 months plus post-injury) evidence for underlying tissue damage responsible for pain is often absent or minimal. Powerful positive consequences such as solicitous attention from family or spouse, avoidance of unwanted work or home responsibilities, and financial compensation, however, may serve to reinforce and maintain pain behavior patterns.

Many observers have described the stressful nature of the chronic pain syndrome. To be successful in terms of pain management considerable self-discipline on the part of the patient and adherence to modalities learned in the treatment process are required. Failure to incorporate these behaviors often has as the consequence the perpetuation of chronic pain. This failure or lack of adjustment to pain management could result from an inability to recognize the consequences of one's behavior on the outcome of treatment.

Specifically, the concept of locus of control (Rotter, 1966) can be applied to an analysis of chronic pain patients' psychosocial adjustment to or management of pain after an in-patient pain treatment program. The locus of control construct refers to the degree to which individuals perceive the events in their lives as being a consequence of their own actions, and thereby controllable (internal control), or as being unrelated to their own behaviors and, therefore, beyond personal control (external control). Individuals with an internal locus of control tend to believe that events and rewards are contingent upon
their own behavior, while individuals with an external locus of control believe that events and rewards are largely the result of luck, chance, or fate.

According to Phares (1976) I-E scores (reflecting the subject's locus of control) can be altered by a range of conditions. These conditions include both very specific influences whose effects may be transitory and narrow, and also changes that have more pervasive, permanent effects on behavior. Locus of control can be altered by a variety of environmental forces. Some of these forces include factors that accompany age changes, conditions that affect a subject's certainty that control can be exerted, world or national events, special training programs, and a variety of therapeutic techniques.

Internal control can be construed as a very specific expectancy or a very general one, but in either case it is important to understand the conditions that will affect its strength. As Phares stated in order to enhance individuals' capacity to cope with the world successfully, one must influence their generalized expectancy for internal control. Phares suggested further that perceived control may be viewed as a somewhat narrow expectancy arising out of a specific situation, or it may be viewed as a relatively stable characteristic that persons carry with them from situation to situation.

If chronic pain patients are viewed from an external locus of control framework as some authors have suggested (Abramowitz, 1969; Harrow & Ferrante, 1969; Skevington, 1979), then failure to manage one's pain well after treatment probably results from a view point of the
patients that their actions do not affect their medical condition. This point of view suggests that the highly stressful nature of the chronic pain process itself tends to make individuals more external in their locus of control. Therefore, it could be important to know pre-treatment whether an individual has an internal or external locus of control. If the feeling of control were absent (high E score) then the effectiveness of many behavioral intervention strategies on the motivational components of pain could be expected to be substantially reduced.

Changes in locus of control occur as a result of natural events or a deliberate effort on the part of the individuals concerned. Examples of this are found in studies of successful psychotherapy, where recovery is accompanied by an increase in internality so that patients take greater personal control of their world. Here, an increase in internality is a sign of recovery.

Patients' beliefs about their chronic pain, and their coping with pain, may be determined by a cognitive style such as locus of control rather than by the actual severity of their disability. Coping strategies are determined by an individual's basic personality style. Locus of control is a personality variable that elucidates how an individual behaves within a social system (Lefcourt, 1976). The externally oriented individual may have trouble complying with treatments that require autonomous behavior. Individuals who have sought social reinforcement from external factors may find
rehabilitation difficult. The internally located individual may have
difficulty coping with the dependent nature of certain treatments.
Hence, the role of a personality variable like locus of control in
interacting with chronic pain management seems to warrant further
investigation.

Objectives of the Study

It is clear from the literature that there is wide-spread
interest in factors which influence chronic pain treatment and
management. This study is designed to explore the internal-external
locus of control dimension and its' relationship to the psychosocial
adjustment of chronic pain patients who have completed an in-patient,
multidisciplinary pain treatment program. The study will attempt to
answer the following questions:

1. Is there a relationship between locus of control (Rotter's
   internal-external) and psychosocial adjustment to chronic
   pain for chronic pain patients who have completed an
   in-patient pain treatment program?

2. Is there a relationship between locus of control and
   adjustment to chronic pain for males and for females who
   have completed an in-patient pain treatment program?

3. Is locus of control orientation related to reported pain
   for patients following an in-patient pain treatment
   program?

4. Are there gender differences in the psychosocial
   adjustment to chronic pain?

5. Do the good adjusters differ from the poor adjusters in
   terms of locus of control?
Significance of the Study

In order to better understand the question of which intervention works best for whom, information regarding the locus of control orientation of individual chronic pain patients may be important. Interventions may be more effective if they are tailored to different individuals. For instance, externally oriented individuals do not see themselves as having control over their fate, and therefore may not comply with treatments that require more autonomous behavior.

The findings will be viewed as supporting the need for the application of differential treatment strategies for patients. Strickland (1978) concluded after a review of the literature that externals tend to respond more favorably to interventions with imposed structure, whereas internals prefer those in which they can exercise their own responsibility or self-control. Hence, interventions may be differentially effective for patients depending on their coping styles or personality predispositions.

It is postulated that providers of pain treatment would do well to determine the posture of the patients on the locus of control dimension, in order to make available a more nondirective, patient participating program to internally oriented individuals, and a more staff controlled and structured program for externally oriented individuals. Phares (1976) made the point that perhaps internals can be enrolled in more independent, self-regulated programs while externals would profit most from programs that rely on prestige, suggestion, or support from others.
Existing data provide a very strong basis for the systematic incorporation of various means of evaluating locus of control beliefs into diagnostic and therapeutic efforts. Careful evaluation of patients' locus of control beliefs can be a real help to understanding those persons and to planning a sensible, efficient program to bring about desired changes in behavior. Alternately, pain treatment programs could apply techniques that would enhance an internal locus of control (if the individual lacks sufficient self-confidence to mediate certain desired behaviors) or that would reduce an internal locus of control (if the individual experiences overwhelming guilt).

Limitations

The research sample used in this study was restricted to subjects who agreed to participate on a volunteer basis, therefore the results may be considered relevant only to the individuals studied and may not be generalized to other chronic pain patients. All subjects were residents of a Western Canadian province and had completed an in-patient pain treatment program within the past three years. Such a sample may respond differently from an involuntary chronic pain population.

Overview of the Study

This thesis was organized into five chapters plus references and appendices. The first chapter provided an introduction to the study. Chapter two provides the conceptual foundation for this research and contains a review of the relevant literature. Chapter Three
describes the methodology of the study. Hypotheses to be tested and method of testing in this study are stated at the conclusion of this chapter. Chapter Four presents the results of the data analyses and tests of hypotheses. Chapter Five provides the conclusions, discussion and summary of the results, as well as implications arising out of these findings and suggestions for further research.
CHAPTER TWO

Review of the Literature

Introduction

The review of the literature relevant to this study is organized into two main areas of interest. The first section concerns issues involving the concept of chronic pain. Included here is an overall societal perspective, pain perception and measurement, treatment strategies, evaluation of adjustment, and gender differences. The second section presents the research related to locus of control. Included here is the theoretical context of the construct, conceptual assumptions, and a discussion of gender differences.

Chronic Pain - A Societal Perspective

Pain is a universal human experience that is usually thought to be a direct consequence of bodily damage or physiological dysfunction. As Melzack (1973) stated, however, there is over-whelming evidence that the report of pain does not have a simple one-to-one relationship with either bodily damage or physiological dysfunction. Extreme illustrations of this are the person who shows no evidence of pain in spite of injury and the person who reports pain in the absence of injurious stimuli.

The current abundance of literature on chronic pain is one indication that it is a common clinical problem which remains poorly
understood. Chronic pain has become recognized as a condition distinct from acute pain. Among the neurosurgeons, anesthesiologists, physiologists, psychologists, psychiatrists, and other health professionals who have dealt with chronic pain, there is limited agreement as to the nature and treatment of this condition. Chronic pain remains, as described by Melzack, a puzzle. Melzack noted that the classical specificity and pattern theories of pain lack unity, fail to integrate diverse theoretical mechanisms, and have not received substantial empirical verification.

To avoid confusion between pain thought of as a metaphor for all types of anguish and pain which is felt at a location in the body, the International Association for the Study of Pain (1979) defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (p. 250). Few would disagree with Black's (1975) characterization of the chronic pain patient as having intractable, often multiple, pain complaints for at least six months which are usually incongruent with existing somatogenic problems. Black further noted that patients with this chronic pain syndrome often reveal:

- a history of multiple physician contacts and many nonproductive diagnostic procedures;
- excessive preoccupation with the pain problem;
- an altered behavior pattern with some of the features of depression, anxiety, and neuroticism; and, in particular, no realistic plans for the distant future.

(p. 1000)
Fordyce (1976), Sternbach (1968) and others have suggested a variety of psychosocial factors that can exaggerate or prolong both the expression and experience of chronic pain. These factors include:

a) systematic social reinforcement of disability and expressions of suffering (pain behavior);

b) monetary compensation for pain through personal injury litigation and disability claims;

c) environmental stresses leading to affective distress (anxiety, depression);

d) systematic association between pain behavior and time out from stress or from unpleasant vocational or family responsibilities;

e) chronic pain as justification of failures to live up to self-expectations or the expectations of others;

f) pain providing justification of dependence on analgesics and/or alcohol;

g) past and present iatrogenic experiences with the health care system;

h) lack of prospects for satisfying one's needs outside of the pain patient role.

Typically, the chronic pain patient is firmly convinced that he or she has a strictly physical problem and hence seeks out the surgeon and other somatic specialists but shuns the psychiatrist or psychologist. A combined consideration of both the physical and psychological factors, however, allows a view of chronic pain as a specific psychobiological disorder.
Aronoff and Evans (1982) see chronic pain as a complex psychosomatic process in which suffering is a learned and goal directed behavior. They regard suffering as the emotional reaction to pain sensation and, as such, it is thought to be amenable to change even when the sensory quality of the pain remains unchanged. Comprehensive, multidisciplinary pain treatment programs all focus on teaching chronic pain sufferers ways to manage pain while maintaining self-reliance, self-control and the highest possible physical and emotional function. A central goal in most multidisciplinary treatment approaches is an improved quality of life in spite of any residual pain and suffering.

Pain Perception and Measurement

One of the most difficult tasks facing both research investigators and health professionals is the measurement of clinical pain. As noted earlier, pain is a subjective, unpleasant experience that may be associated with actual or potential tissue damage, and which is determined by sensory information, affective reactions, and cognitions (International Association for the Study of Pain, 1979).

Assessment of the patient's report of pain experiences is important for several reasons. First, patients who show improvements in behavior but who continue to complain of pain may elicit responses from spouse or family members that may reverse therapeutic benefits. Second, the persistent report of pain also increases the likelihood that chronic pain patients may undergo multiple diagnostic and surgical treatment, factors often associated with poor outcome. Third, and perhaps most
important, the perception of pain is often the patient's primary concern.

The meaning of control in pain perception is not entirely clear. Averill (1973) in an analysis of control as a variable, showed that it has been used to refer to behavioral control, cognitive control, or decisional control. Not all individuals feel equally capable of handling the responsibility that control implies. Clinically, some patients may be better off yielding control to the health-care provider. For instance, with placebo medication anxiety reduction occurs by the demonstration that something is being done to control pain even if it is not the patient who is exerting control.

Weisenberg (1980) stated that anxiety reduction is important in pain perception mainly when it is combined with a person's feeling of control. His analysis implies that anxiety reduction strategies such as desensitization, modeling, and relaxation increase tolerance to pain by giving the person a feeling that the pain will and can be controlled by someone, whether the patient himself or a trusted other person to whom he has yielded his own power of control. He proposed that when the feeling of control is absent, the effectiveness of many behavioral interventions on the motivational component of pain would be substantially reduced. This behavior regulation of pain is an essential part of the control of pain.

Traditionally, pain report has been assessed using numerical, verbal, or visual rating scales. Patients are asked to select a number or a word to describe the intensity of their pain. A variation of this
approach, the visual analogue scale (Huskisson, 1974), has been widely used to assess pain intensity in chronic pain treatment programs.

Rating scales have two major problems (Lodge and Tursky, 1981). First, these scales measure only one dimension, intensity, of a perceptual phenomenon that is multidimensional. Second, the distances between responses on these scales are unknown but are usually treated statistically as though they were equal (Tursky, Jamner, and Friedman, 1982). Pain researchers have recently devoted major efforts to developing pain perception measures that assess the multidimensional aspects of pain report in a valid and quantifiable manner. The McGill Pain Questionnaire (Melzack, 1975) is one result of this research and is probably the most commonly used measure of pain report since it is free from many of the difficulties associated with numerical, verbal and visual analogue scales.

Treatment Strategies

Recognition that chronic pain is a complex neurophysiological, behavioral, and psychological phenomenon has led to the development of innovative treatment programs. These programs share one common assumption. Specifically, if chronic pain is complex, then a combination of treatment techniques is needed to successfully treat patients. There has been a rapid growth in the number of pain clinics around the world since the concept of a multidisciplinary approach to pain problems was first introduced (Bonica & Black, 1974). However, there have been comparatively few reported studies of the effectiveness
of such clinics. Hallett and Pilowsky (1982) reviewed those results which have been published and concluded that the evidence thus far available suggests that multidisciplinary pain clinics make a useful and important contribution to the management of pain syndromes.

Pain clinics vary in their emphases and approaches. However, the importance of psychological and personality factors in chronic pain has become increasingly recognized (Fordyce, 1976; Sternbach, 1968), and with this has evolved the establishment of in-patient units. Sternbach (1974) has argued that only in-patient programs are adequate for the rehabilitation of the chronic pain patient because they provide close daily monitoring and supervision of the patient's behavior.

Psychological approaches for pain control, particularly behavioral and cognitive interventions, have recently increased considerably. Three related factors seem to be mainly responsible for this. First, the influence of contemporary concepts of pain, most notably the gate control theory (Melzack & Wall, 1975), which views pain as a complex phenomenon resulting from the interaction of cognitive, motivational and sensory components. Such concepts emphasize that pain is potentially modifiable by psychological methods. Second, the failure of purely somatic (medical and surgical) therapies in adequately alleviating pain for many chronic pain patients, as well as the occurrence of debilitating side-effects due to such treatments (Melzack, 1973). Third, the substantial evidence of psychological illness in chronic pain patients, many of whom do not respond well to traditional psychiatric techniques (Merskey, 1980).
Traditional management of chronic pain has generally encompassed such options as bed rest, physical therapy, potent medications, nerve blocks, surgery, and, at times, operative lesions to the central nervous system. Although these techniques may be useful in ameliorating uncomplicated chronic pain, acute pain, and terminal cancer pain, their effectiveness is marginal in dealing with the chronic pain syndromes most often encountered in pain centers. Experience has demonstrated the importance of the multidisciplinary team approach to chronic pain, particularly when the pain problem has eluded diagnosis and/or adequate management via conventional methods (Lorenz, 1981).

Pain centers usually combine traditional physical and medical treatments into a model that deals with the patient as a total being. There are features which are common to most chronic pain clinics with differing emphases on certain aspects. Patients are involved in an active program stressing exercise and application of proper exercise principles to posture mechanics and to daily activities. Included in this is physical therapy, recreational and pool exercises, and movement therapy. Psychotherapy in groups, individually, and with the spouse and/or family is an important part of most programs and might include operant conditioning techniques, hypnosis, modeling, and cognitive coping skills or strategies. Daily lectures and discussion groups provide patients with information regarding the source of the pain and the reasonable therapies available. Biofeedback and relaxation training are used as appropriate to the patient's needs. Patients are assisted in drug withdrawal and daily monitoring of medical problems. Vocational
rehabilitation counselling is part of any comprehensive program. The role of the pain center as a turning point in the patient's life is stressed.

The emphasis in these centers is on return to emotional health and functioning in spite of physical symptoms. Total relief of pain is often an unrealistic goal as evidenced by the patients' extensive histories of prior treatment failure. Most pain clinics, therefore, approach pain with the concept of control and management, and there are certain basic and characteristic goals which they have in common. These include:

a) eliminating the source of pain when feasible;
b) teaching the patient to function within pain limitations;
c) improving pain control through physical therapy and psychological methods;
d) relieving drug dependence;
e) treating underlying depression and insomnia;
f) addressing secondary gain issues;
g) improving family and community support systems;
h) providing access to vocational and occupational rehabilitation;
i) returning the patient to a functional and productive lifestyle;
j) stopping patients' 'doctor shopping' in search of symptomatic relief.
Evaluation of Adjustment

Long term follow-up studies of the physical and psychosocial adjustment of the chronic pain patient following treatment are rarely reported in the literature. A few studies have reported improvement in psychological (Sternbach, 1974) as well as physical function (Cairns, Thomas, Mooney, & Pace, 1976; Ignelzi, Sternbach, & Timmermans, 1977; Newman, Seres, Yospe, & Garlington, 1978) in patients following pain clinic treatment programs.

Very few studies have employed statistical techniques to examine the separate contributions of multiple variables to patients' self-perceptions of improvement in their pain condition. Toomey, Taylor, Skelton, and Carron (1982) in their study of the stability of self-report measures of improvement in chronic pain patients, noted the need for using multiple, functional criteria in assessing response to treatment, including both global pain ratings and functional-behavior measures of improvement. Included in the latter would be changes in physical abilities (e.g. ability to walk and bend, amount of time spent lying down due to pain), changes in vocational rehabilitation status, changes in recreation and social activities, and changes in health-seeking behaviors (e.g. absence of drug misuse, no additional surgeries for pain relief). Self-ratings of pain frequency and intensity would be used since results suggest that patients are inclined to judge improvement in terms of reduced exposure to pain as well as enhanced physical functioning. This lends support to behaviorally based treatment programs which emphasize increased levels of functioning and inattention to pain-related behaviors (Fordyce, 1976). Other factors
which contribute to successful or unsuccessful adjustment to chronic pain include changes in psychological measures (e.g. of depression, anxiety, self-esteem) and general life outlook and attitude. All of the above criteria are the ones which patients usually associate with improvement or nonimprovement of their chronic pain over an extended period of time.

**Gender Differences in Chronic Pain**

It is interesting to note that most of the literature on chronic pain seems to focus on men. This may be appropriate since representation in Worker's Compensation programs and rehabilitation services for chronic pain patients involves higher proportions of males. However, women do use these programs and services, notwithstanding the dearth of literature which deals with women and chronic pain. Likely it would be correct to say that women suffering from chronic pain face different personal, social, and cultural adjustments than do men with chronic pain.

Crook (1982) discussed the historical, social role, and socioeconomic perspectives of women with chronic pain and concluded that women do have different needs than men that, in general, are not being recognized by health professionals largely because of unexamined assumptions regarding what these needs are. Historically, to women complaining of pain often the first explanations given are based on the assumption of the fraility of the female body and the health problems throughout the female life cycle. These explanations and the prescriptions for symptom management (e.g. bed rest, curtailing or
discontinuing physical activities and work, and limiting any activities which cause discomfort) do nothing to allay fears but rather reinforce helplessness.

Women and men are often offered psychological explanations of their chronic pain, but women suffer a double liability in this regard. That is, women are more likely to interpret their pain symptoms psychologically and to present them in this way, and are most likely to accept psychological interpretations and treatment (Chesler, 1972). Splitting interpretations of pain into exclusive biological and psychological categories tends to be a powerful means of placing the blame on the patient.

Another way of examining the experience of women with chronic pain is to understand the difference between male and female social roles. Undeniably, family and caretaking roles are much more specifically bound to the female than they are to the male, and women often think that one of their primary functions is to maintain the emotional climate of the family. An important determinant of how women perceive the world is the socialization of women to serve others within their nurturant role. The caring and doing for others becomes a part of the expectations of others resulting in feelings of loss, anxiety and guilt for the women with chronic pain if she is no longer able to fulfil this role function. As Briscoe (1978) stated males and females do differ in their illness beliefs regarding behavior and expectations.

Briscoe tested the hypothesis that women express greater dissatisfaction with their health than men and found no difference in
expressed satisfaction, or in number or severity of symptoms reported. However, the results of that research appear to indicate that illness is more socially acceptable in women than in men, a view supported by other research (Verbrugge, 1976). Contrary to Briscoe's view, Verbrugge stated further that apart from the increased utilization of health services around reproduction and anatomical differences, health and morbidity statistics indicate that while the female life expectation exceeds that of males at every age, women exhibit higher illness rates for both acute and chronic disease. An adequate interpretation of these data must, however, take account of the fact that illness may be regarded in social as well as in clinical terms, and that one should distinguish between experienced illness and diagnosed illness. Thus, Verbrugge has suggested that males are, in fact, the physically sicker sex (due to both inherited and acquired health risks) but that social and psychological factors enhance female reports to such an extent that a female excess appears overall. The reasons for the greater morbidity with lesser mortality for women are not readily apparent, are subject to much speculation, and are important to consider in view of how the changing roles of women may influence these illness statistics.

Some of the usual explanations put forth to explain the higher morbidity rate of illness for women are female dependency, passivity, and a culturally accepted sick role. One must also consider three other possible explanations. The first is the gender preference in distribution of some diseases. The second is an iatrogenic component of physician judgement of the illness that determines how women as patients
are viewed and treated. The third is the different perception of illness roles of women as compared with men. As Crook (1982) noted it is more commonly encountered and more socially accepted for a man to abandon his family responsibilities on account of sickness and chronic pain than for a woman to do the same thing. Women, in general, do not relinquish their caretaking responsibilities and this results in a conflict between their illness roles and their other roles.

If a woman also has an occupational role the situation is complicated further. For women who drop out of the work force due to chronic pain there are usually two alternatives both of which render women powerless. If she is married she returns to the home, supported by someone else. If she is single, widowed or divorced she is often relegated to poverty unsupported by adequate rehabilitation or compensation services.

An investigation into the psychosocial adjustment of chronic pain patients needs to address all of these factors discussed above. These are some of the variables which influence the female experience of chronic pain and differentiate it from the male experience.

Locus of Control - Theoretical Context

The phrase "locus of control" refers to the perceived source of control over one's behavior. According to the concept of locus of control (Rotter, 1966), when individuals characteristically perceive reinforcers as noncontingently related to their behavior the occurrence
of reinforcement is attributed to luck, chance, fate or to powerful others and such individuals are said to be externally oriented. Conversely, when individuals characteristically perceive reinforcers as dependent entirely upon their own efforts, such individuals are said to be internally oriented. Individual differences exist with respect to magnitude of internal versus external orientations.

Since the introduction of the locus of control concept and the development of a scale to measure internal-external orientation (Rotter's Locus of Control Scale, 1966), considerable research has demonstrated that differences in orientation determine not only how an individual perceives, but also reacts to situations and events (Joe, 1971; Lefcourt, 1966, 1976; Procuik & Lussier, 1975; Rotter, 1966, 1975). Internally oriented individuals often have been described as more active, alert and direct in attempting to control and manipulate their environments than externally oriented persons (Lefcourt, 1976; Phares, 1976). Because locus of control refers to expectancies as to the amount of control one has over important life events, a higher frequency and level of coping efforts and overall general activity might be anticipated from internals. In contrast, externals often have been described as more passive, apathetic, anxious, less self-confident, and less confident of their ability to control events happening to them or around them.

Another approach to locus of control (LOC) was taken by Levenson (1973). She reasoned that externally oriented individuals might respond differently according to whether they saw powerful others or chance as responsible for their behavior. She expanded Rotter's
concept to produce a three-dimensional instrument and demonstrated that, in addition to internal control (LOC-I), the dimensions of control by powerful others (LOC-PO) and by chance (LOC-C) were consistent factors. Levenson's distinction may be important to the understanding of the nature of externality.

Locus of control seems especially relevant to a discussion of treatment of chronic pain patients. According to Bowers (1968) people who believe themselves unable to relieve or avoid pain or stress suffer more than those who perceive themselves to have control available. Attribution theory states that people seek causes or explanations for the observed events that take place around them. Using an attribution theory derivation, Davison and Valins (1969) showed how tolerance to pain increased when subjects were taught to attribute changes in pain tolerance to their own efforts as opposed to the effects of a pill.

Attribution of control as due to internal rather than external factors has been used by Gottlieb (1977) as a key factor in the treatment of patients with chronic low back pain. He found that such patients exhibit a learned helplessness as a result of their disability and that helplessness tends to become reinforced by massive medication and dependency on others. They feel unable to exert control over their pain and their living situation. As part of a comprehensive treatment program, these patients are taught self-regulation rather than drug regulation for dealing with their pain.

The unpredictability of chronic pain might lead one to suppose a significant relationship between learned helplessness and locus of
control. A study by Miller and Seligman (1973) failed to demonstrate a convincing link between learned helplessness and locus of control and studies still need to be done with pain patients in this area. However, depression is common in chronic pain patients (Sternbach, 1978) and several studies have examined the association between perceived locus of control of reinforcement contingencies and the symptoms of depression (Abramowitz, 1969; Archer, 1980; Becker & Lesiak, 1977; Calhoun, Cheney, & Dawes, 1974; Distefano, Pryer, & Smith, 1971; Emmelkamp & Cohen-Kettenis, 1975; Fogg, Kohaut, & Gayton, 1977; Harrow & Ferrante, 1969; Lamont, 1972). These studies report a consistent association between depressive symptoms and belief that outcomes are externally controlled (high E scores). It is therefore conceivable that chronic pain patients exhibit an external locus of control.

The research evidence linking locus of control and depression is far from clear for several reasons. First, most studies used college students and provide no evidence that depression in otherwise normally functioning college-age people is on a continuum with the depression found in a psychiatric population. Second, those studies that used patients have used hospitalized patients and as Harrow and Ferrante (1969) point out, mental hospitalization is often at least partly coercive and may well produce a sense of uncontrollability irrespective of the patient's disorder. Third, the effect of age on locus of control seldom is considered. Because Rotter (1966) defined locus of control in social learning terms as a result of subjective probability estimates of outcome contingencies based on experience, it is at least possible that locus of control scores will change in the course of one's life.
Costello (1982) found a high correlation between depression and externality, controlling for age and using both students and psychiatric outpatients. This is of some significance for causal models of depression, such as the revised learned helplessness model (Abramson, Seligman, & Teasdale, 1978), which makes extensive use of data from students to argue that clinical depression is a result of attributing responsibility for outcome contingencies to external factors. Costello stated, however, that until longitudinal data are collected it is uncertain whether externality has a truly causal relationship to depression.

In view of the dependence of chronic pain patients on family and professionals, and Sternbach's (1978) description of the chronic pain patient as a "petitioner for aid", externality for this population might take the form of a belief in "powerful others". Alternatively, patients who feel helpless and have lost faith in the medical community may be more inclined to believe in chance happenings.

Skevington (1979) studied locus of control with respect to three categories of pain patients—low back pain, psychosomatic pain, and rheumatoid arthritis pain—and found that beliefs about the controllability of events influence the reporting of pain with both the low back pain and rheumatoid arthritis patients. On the chance dimension of locus of control, Skevington's hypothesis that pain patients would have higher externality was confirmed. This study indicated a substantive belief in an external locus of control among chronic pain patients.
Beliefs that the world is governed by chance may increase the likelihood of helplessness more than a belief in a world controlled by "powerful others" since chance happenings are completely uncontrollable. This may shed some light on the lack of relationship between locus of control and learned helplessness. Where there are identifiable "powerful others" controlling the world, changing the situation may appear more hopeful than in situations where chance takes over, as "others" may be prevented from exercising control.

Locus of control - Conceptual Assumptions

A problem in conceptualization is the intrusion of a good/bad dichotomy. Throughout much of the locus of control research there seems to be a tacit assumption that internal locus of control is desirable while an external one is not. Rotter (1975) discusses how in spite of fears and even warnings to the contrary, some psychologists quickly assume that it is good to be internal and bad to be external. Of course, in some senses, this may be true, but the problem then lies in assuming that all good things are characteristic of internals and all bad things are characteristic of externals. Internals should be more liberal, more socially skilled, better adjusted, more efficient, etc. Aside from the peculiarities of one test or another there is no logical basis to assume any relationship.

Rotter (1975) also noted that the problem of the relationship between such a generalized expectancy as locus of control and adjustment is complicated. Adjustment is only a value concept, and any
relationship must depend upon the definition of adjustment. It seems clear that self-report locus of control scales correlate with self-report scales of anxiety, adjustment, or scales involving self-descriptions of symptoms. However, there are studies (Lipp, Kolstoe, James & Randall, 1968; Phares, 1968) that suggest that it is typical of internals to repress (or forget) failures and unpleasant experiences. Consequently they may report (or admit) less anxiety, fewer symptoms, etc., and thereby create a positive relationship between internality and adjustment.

It may be better for people who are in obvious difficulties, who are trying to cope with failing abilities, such as chronic pain patients, to have a greater feeling that they can, in fact, control what happens to them (i.e. be more internal). Many people, however, may already feel that they have more control than is warranted by reality (i.e. extreme internals), and they may experience (or have experienced) strong trauma when they discover that they cannot control some things such as accidents or disease. The early hypothesis (Rotter, 1966) that locus of control would have a curvilinear relationship with both extremes of the I-E dimension reflecting maladjustment has not been borne out, but the fault may be in the methods of measurement of the adjustment variable. In this view, it is people nearer the middle who respond in a more realistic fashion. That is, some situations, on a realistic basis, will seem largely within the individuals' control, while others will not. To be able to distinguish between these two classes of situations might be the most effective mode. As Phares (1976) pointed out perhaps more research should be devoted to the means
of teaching individuals when one or the other locus of control belief is the more useful. Probably people would benefit from learning how to discriminate among situations as regards an appropriate locus of control belief.

Locus of Control - Gender Differences

It appears from a review of the literature that until recently there were few reported gender differences on the Locus of Control Scale. Many studies do not report separate means for males and females and a large majority of studies did not find significant differences in the I-E scores between men and women. Although Rotter (1966) stated that sex differences on the I-E scale among college students appeared to be minimal, studies by Feather (1968) and Marks (1972) showed that females earned significantly higher external scores than males.

Rotter has suggested that sex differences may be related to geographical differences as well as sex-role identification. It seems that females have a higher belief in external control of their lives, although a study of college students in five countries indicated that belief in externality varied with the culture (McGinnies, Nordholm, Ward, & Bhanthumanavin, 1974). Tait, DeGood, and Carron (1982) studied chronic low-back patients in the U.S. and New Zealand and found that in both countries women rated themselves as having less personal control over health then men, a finding that they suggest indicates that men feel less helpless in dealing with their pain.

Gruen, Korte, and Baum (1974) found that in the black population sex differences were reversed, with girls significantly more
internal than boys. It may be that individual differences in locus of control reflect real differences in opportunities to control the results of one's behavior and, in general, females are socialized to make less connection between their behavior and its' consequences. A power-helplessness factor may have some validity in a discussion of female externality and perhaps externality for all chronic pain patients.

Further research is needed to understand better the relationships between gender, perceptions of control, and response to treatment. However, it is likely that gender differences in locus of control beliefs if and when they occur, are accounted for less by biological variables than by socialization patterns, different sex-role definitions, and/or different perceptions of control.

Summary

In this chapter the literature relevant to locus of control and psychosocial adjustment to chronic pain was reviewed. This literature review underlies the interest in and importance of the locus of control construct and its' application to the psychosocial adjustment of chronic pain patients, but demonstrates that the investigation is just beginning.

It was noted that the problem of chronic pain for individuals is very complex. It may be that the stability of locus of control as a personality trait as implied in earlier research must be looked at differently. Perhaps, for chronic pain patients one needs to be aware
of a more transient attribution about control, governed by social, environmental and individual factors.

This present study is concerned with exploring the relationships between locus of control, psychosocial adjustment to chronic pain, and present pain ratings.
CHAPTER THREE

Methodology

This chapter presents the sample, description of the instruments, data collection procedures, and the hypotheses with the analyses used to test the hypotheses.

Sample Characteristics

Forty one subjects participated in this study. The subjects were twenty eight males and thirteen females residing in British Columbia, Alberta or Saskatchewan. All had completed an in-patient, multidisciplinary pain treatment program in Vancouver, British Columbia within the past 3-1/2 years.

For all subjects, 19.5% were in the age range 20-40 years and 80.5% were in the age range 41-61+ years. All participants reported still experiencing some pain. For the females, 53.8% had experienced chronic pain five years or longer, while for the males 78.6% had experienced chronic pain for that period of time. None of the participants had experienced chronic pain for less than two years. Reporting on pain-related surgery prior to the residential treatment program, the figures were 78.6% for the males and 64.3% for the females. Two males reported additional pain-related surgery since completion of the treatment program and 16.7% of the sample reported recent hospital admissions for pain-related problems. Reporting on
medication use for pain, 53.6% indicated the same as before or less now, 
43.9% indicated no usage now, and 2.4% indicated more usage now. 
Reporting on time spent in bed or lying down due to pain, 46.3% reported 
either the same as before or more time than before. Reporting on 
ability to bend or walk, 34.1% reported either the same as before 
treatment or worse since treatment.

Instrumentation 

THE LOCUS OF CONTROL SCALE  

Rotter's Internal-External (I-E) Scale (Rotter, 1966) consists 
of a 29-item forced choice test. Six of the items are "fillers" 
intended to disguise the nature and purpose of the scale. Scoring 
corresponds to 1 point for each endorsement of an external control 
item. Scores may range from 0 (an individual with belief in completely 
internal control) to 23 (an individual with belief in completely 
external control). The Personal Locus of Control subscale (items 
2,6,11,15,16,23,25), a measure of personal control, and the 
Socio-political Locus of Control subscale (items 3,12,17,20,22,29), a 
measure of control over socio-political forces, are scored in the same 
manner as the full scale I-E (Mirels, 1970). A copy of the Locus of 
Control Scale is found in Appendix D.

Reliability: 

Internal consistency analysis (Kuder-Richardson) yielded a r 
of .70. Test-retest reliability coefficients of the scale range .60 to
.83 after one month, and from .49 to .61 after two months. Rotter speculates that the low reliability for the latter period may be due to differences in test administration. The first retest was administered in a group situation, the second individually. However, no specific method of administration is suggested (Rotter, 1966).

Validity:

Content Validity. Research has indicated that the Rotter Locus of Control Scale consists of a number of subfactors and is multidimensional (Abrahamson, Schluderman, & Schlederman, 1973; Kleiber, Vedman, & Menaker, 1973; Mirels, 1970; Reid & Ware, 1973).

Construct Validity. Numerous studies have established the construct validity of the scale supporting predicted differences in behavior and personality dimensions on the basis of locus of control (Joe, 1971; Lefcourt, 1966; Phares, 1976; Rotter, 1966).

ADJUSTMENT TO CHRONIC PAIN SCALE (ACPS)

Psychosocial adjustment to chronic pain was measured by the Adjustment to Chronic Pain Scale (ACPS). This instrument was modelled on the Psychosocial Adjustment to Illness Scale (Derogatis, 1975). The ACPS is a self-report questionnaire which can be used to gather information about patients' opinions on their own adjustment. The ACPS questionnaire consists of 27 items, each composed of four statements used as a 4-point scale where the subject's response may range from 0 'no disturbance' to 3 'marked disturbance'. Thus, the lower scores
indicate better adjustment and higher scores indicate poorer adjustment. A copy of the ACPS is found in Appendix E.

Each of the 27 items contained in this instrument pertain to an aspect of adjustment and can be grouped according to seven subtests as follows:

(1) Health care: Item numbers 1, 2, and 3. The items are concerned with the current health care posture and whether it is conducive to positive adjustment to chronic pain after treatment.

(2) Vocational environment: Item numbers 4, 5, 6, and 7. The items in this subtest assess disruption in job performance, job satisfaction, and adjustment which is attributable to chronic pain or disability.

(3) Domestic Environment: Items numbers 8, 9, 10, and 11. The items in this subtest assess chronic pain induced difficulties which arise primarily in the home or usual family environment. It is designed to assess problems in adaptation experienced by the patient and the family unit in response to the subject's chronic pain.

(4) Sexual Relationships: Items numbers 12, 13, 14, and 15. The items in this subtest assess any shifts in quality of sexual behavior or relationship attributable to chronic pain.

(5) Extended Family Relationships: Items numbers 16, 17, and 18. The items in this subtest reflect any difficulties in relationships within the extended family constellation that arise as direct or indirect effects of the chronic pain.
(6) **Social Environment:** Items numbers 19, 20, 21, and 22. The items of this subtest assess the degree to which chronic pain has impaired the subjects' social and leisure activities.

(7) **Psychological Distress:** Items numbers 23, 24, 25, 26 and 27. The items in this subtest cover the degree to which pertinent psychological difficulties have risen associated with the occurrence of chronic pain.

**Instrument Analysis**

**Reliability:**

Reliability of the ACPS was assessed using the Laboratory of Educational Research Test Analysis Package (LERTAP). This program uses an internal consistency method based on Hoyt's (1941) procedure and is the most appropriate analytic technique for Likert-type scales. Internal consistency is an estimate of the extent to which each test item taps whatever the test item is measuring. If one considers each test item as a sample test from the total domain then the internal consistency is roughly equivalent to the average correlation between all pairs of items. Hoyt's anova approach allows for the differential weighting of test items and hence has some advantage over other algebraically equivalent procedures such as Kuder-Richardson formulas and Cronbach's coefficient alpha. The summary of results is presented in Table 1.
## TABLE 1

Internal Consistency Scores for the ACPS

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Hoyt Estimate of Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>2</td>
<td>0.48</td>
</tr>
<tr>
<td>3</td>
<td>0.35</td>
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<tr>
<td>4</td>
<td>0.83</td>
</tr>
<tr>
<td>5</td>
<td>0.57</td>
</tr>
<tr>
<td>6</td>
<td>0.83</td>
</tr>
<tr>
<td>7</td>
<td>0.85</td>
</tr>
<tr>
<td>Total Test</td>
<td>0.89</td>
</tr>
</tbody>
</table>

**Item Analysis.** Item analysis is the selection of an item for inclusion in one's scale based on the reliability and validity of the item. A straightforward item analysis procedure is the item-to-total correlation technique. LERTAP calculated individual item correlations (Pearson's) with the total test scores. Item correlations of 0.30 to 0.50 with total test scores are considered good, while coefficients greater than 0.50 indicate superior items. The summary of results is presented in Table 2.

Another procedure for item analysis can be the size of the standard deviation calculated for each item. For a 4-point scale (such
<table>
<thead>
<tr>
<th>Subtest</th>
<th>ACPS Item</th>
<th>Standard Deviation</th>
<th>Total Test Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0.84</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.03</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.87</td>
<td>0.54</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>0.94</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1.35</td>
<td>0.51</td>
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<tr>
<td></td>
<td>6</td>
<td>1.04</td>
<td>0.30</td>
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<tr>
<td></td>
<td>7</td>
<td>1.19</td>
<td>0.21</td>
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<tr>
<td>3</td>
<td>8</td>
<td>0.71</td>
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<td></td>
<td>9</td>
<td>0.95</td>
<td>0.32</td>
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<td></td>
<td>10</td>
<td>1.01</td>
<td>0.31</td>
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<tr>
<td></td>
<td>11</td>
<td>0.83</td>
<td>0.45</td>
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<tr>
<td>4</td>
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<td>0.88</td>
<td>0.69</td>
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<tr>
<td></td>
<td>13</td>
<td>0.99</td>
<td>0.62</td>
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<td></td>
<td>14</td>
<td>0.86</td>
<td>0.55</td>
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<td></td>
<td>15</td>
<td>0.76</td>
<td>0.55</td>
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<td>5</td>
<td>16</td>
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<td></td>
<td>17</td>
<td>0.75</td>
<td>0.30</td>
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<td></td>
<td>18</td>
<td>0.75</td>
<td>0.61</td>
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<tr>
<td>6</td>
<td>19</td>
<td>1.04</td>
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<tr>
<td></td>
<td>20</td>
<td>1.01</td>
<td>0.63</td>
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<tr>
<td></td>
<td>21</td>
<td>0.88</td>
<td>0.76</td>
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<td></td>
<td>22</td>
<td>1.03</td>
<td>0.65</td>
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<tr>
<td>7</td>
<td>23</td>
<td>0.94</td>
<td>0.53</td>
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<td></td>
<td>24</td>
<td>0.91</td>
<td>0.70</td>
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<td></td>
<td>25</td>
<td>0.81</td>
<td>0.58</td>
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<tr>
<td></td>
<td>26</td>
<td>1.07</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>0.99</td>
<td>0.70</td>
</tr>
</tbody>
</table>
as the ACPS) a standard deviation of 0.80 to 1.00 would be considered good, while a standard deviation greater than 1.00 would indicate superior items. In other words, the degree of response to these items would be dispersed by at least one scale step on a 4-point scale. The summary of these results is presented in Table 2.

Validity:

Content validity is often the main concern in attitude measurement, and refers to the degree that the score or scale used represents the concepts about which generalizations are to be made. One's measuring instrument shows content validity to the degree that sampling from the domain of content is representative of all strata and to the degree that items constructed tap the subtleties of meaning within each of these areas. There is no single statistical criterion which can be used to determine whether or not one has properly sampled from the domain of content. However, the researcher can take several precautions to help guarantee the representation of the various shades of meaning from within the domain. The ACPS was constructed with content validity procedure in mind as follows:

a) The domain of content was identified (i.e. psychosocial adjustment to chronic pain) and arranged into seven major components;
b) Several items were written and re-written, or adapted from existing scales;
c) The ACPS was then designed, critically analyzed, and modified with respect to format, content, and vocabulary.
Validity of the ACPS was further assessed using an internal consistency approach involving item analysis as discussed previously. High internal consistency between items on the ACPS illustrate this aspect of validity.

Comment:

The implication of these findings is that the ACPS can be administered with an acceptable degree of reliability and with an initial measure of confidence in its' validity. Conclusive demonstration that an instrument possesses validity increases over time as it is used in a number of studies and is shown to behave in a consistent manner.

With minor expectations, the separate subtests are relatively independent of each other and contribute significantly to the total score. This finding supports the contention that the instrument appears to have a satisfactory structure for assessing multiple domains subsumed within psychosocial adjustment. Revision of items in the Domestic Environment subscale, as well as those in the Vocational and Extended Family subscales, could further strengthen the psychometric properties of this instrument.

MCGILL PAIN QUESTIONNAIRE (MPQ)

The McGill Pain Questionnaire (Melzack, 1975) is a pain-perception measure that assesses the multidimensional aspects of pain-report. As such it is free from many of the difficulties associated
with numerical, verbal and visual analogue scales. The MPQ consists of 20 category scales of adjective pain descriptors that are considered to be representative of the sensory, affective, and evaluative dimensions of pain (Melzack, 1975). This questionnaire is probably the most common measure of pain report currently used in chronic pain research studies and is designed to evaluate both the quality and the intensity of pain. The MPQ has been shown to distinguish different pain conditions with 77% efficiency (Dubuisson & Melzack, 1976), assist in determining the functional status of pain (Leavitt & Garron, 1980), and perform as a dependent measure in pain treatment evaluations (Fox & Melzack, 1976). A copy of the MPQ is found in Appendix F.

Reliability:

Three investigations of the MPQ's reliability have been published (Fox & Melzack, 1976; Melzack, 1975; Melzack & Perry, 1975) and all yield evidence suggesting that individuals' choices of category scales appear to be adequately consistent across one week time periods. Graham, Bond, Geekovich and Cooke (1980) tested cancer pain patients with the MPQ at 4 successive weekly intervals and found consecutive consistency ratings of 75.0%, 66.0%, and 80.4%. Thus, the MPQ yields highly comparable measures when administered more than once.

Validity:

Content and Construct Validity. Several investigations (Fox & Melzack, 1976; and Melzack & Perry, 1975) have provided consistent and
positive evidence regarding the content and construct validity of the MPQ. Prieto, Hopson, Bradley, Byrne, Geisinger, Midox and Marchisello (1980) found that low back pain patients' responses to the MPQ produced 3 factors that were composed solely of sensory, affective and evaluative category scales, respectively. This latter study as well as Reading's (1979) factor analysis of patients' responses provide further evidence concerning the construct validity of the MPQ.

Data Collection

Initial contact with the subjects was made by a letter (Appendix A) sent to one hundred individuals who had completed the pain treatment program. They were a simple random sample selected by using a table of random numbers. Included in the mailing were the following:

a) Instruction Sheet (Appendix B);
b) Biographical Information Questionnaire (Appendix C);
c) Rotter's Locus of Control Scale (Appendix D);
d) Adjustment to Chronic Pain Scale (Appendix E);
e) McGill Pain Questionnaire (Appendix F);
f) A stamped, self addressed return envelope.

All subjects were asked to fill out the questionnaires and return them by mail in the envelope provided. Two weeks after the mailing all subjects were contacted by telephone followup.
Research Hypotheses and Method of Testing

Hypothesis 1.

There will be a statistically significant linear relationship between locus of control, as measured on Rotter's Locus of Control Scale, and psychosocial adjustment to chronic pain, as measured on the Adjustment to Chronic Pain Scale (ACPS), for patients who have completed an in-patient, multidisciplinary pain treatment program.

A Pearson Product-moment correlation coefficient was computed using total scores for each subject on locus of control and total scores for each subject on adjustment to chronic pain.

Hypothesis 2.

There will be a statistically significant positive relationship between locus of control, as measured on Rotter's Locus of Control Scale, and adjustment to chronic pain, as measured on the Adjustment to Chronic Pain Scale (ACPS), for males who have completed an in-patient pain treatment program and for females who have completed an in-patient pain treatment program.

Pearson Product-moment correlation coefficients were calculated, one for males and one for females, using total scores for each male and each female on locus of control and total ACPS scores for each male and each female.
Hypothesis 3.

There will be a statistically significant linear relationship between the total scores on Rotter's Locus of Control Scale and total scores on the McGill Pain Questionnaire (MPQ) for patients following an in-patient, multidisciplinary pain treatment program. A Pearson Product-moment correlation coefficient was computed using total scores for each subject on locus of control and total MPQ scores for each subject.

Hypothesis 4.

Mean Adjustment to Chronic Pain Scores (ACPS) for males will be significantly different than mean ACPS scores for females. The independent groups t-test for the difference between means was used to determine if there was a statistically significant difference between the means of the two groups at the .05 level of significance.

Hypothesis 5.

Those subjects who report good adjustment on the ACPS (lower scores) will score significantly different on the Locus of Control Scale than those subjects who report poor adjustment on the ACPS. The independent groups t-test for the difference between means was used to determine if there was a statistically significant difference between the means of the two groups at the .05 level of significance.
Summary

In this chapter a description of the sample was presented, followed by a description of the instruments, data collection procedures, and the research hypotheses and the methods of testing. The following chapter presents the results of the data analyses.
CHAPTER FOUR

Results

In the preceding chapter, the procedure for both data collection and analysis were presented. This chapter consists of a restatement, for the convenience of the reader, of each research hypothesis along with the method of testing and a summary of the results of the analysis carried out to test each hypothesis.

Hypotheses, Method of Testing and Results

Hypothesis 1 stated that there will be a statistically significant linear relationship between locus of control, as measured on Rotter's Locus of Control Scale, and psychosocial adjustment to chronic pain, as measured on the Adjustment to Chronic Pain scale (ACPS), for patients who have completed an in-patient, multidisciplinary pain treatment program.

In analyzing the data a Pearson Product-moment correlation coefficient was calculated using total scores for each subject on locus of control and total scores for each subject on adjustment to chronic pain. The results of the statistical analysis on 41 subjects reveal no statistically significant linear relationship ($r = -0.05$, $p = 0.39$) between how people rate themselves on the Locus of Control Scale and self-ratings on the ACPS. That is, participants who score high on the Locus of Control Scale (external) do not necessarily score high on the
ACPS (poor adjustment). The probability of a Type I error is quite high (0.39) and therefore it is likely that the null hypothesis is true. Locus of control scores and adjustment to chronic pain scores for all subjects are presented graphically in Figure 1.

While the correlation coefficient is low and appears nonsignificant according to the statistical test, the graphic representation of the data indicates a trend in the direction of an inverse relationship between locus of control scores and adjustment to chronic pain scores. More of the data points are in Quadrants 1 and 3 ($\bar{X}$ of ACPS scores = 36.59; $\bar{X}$ of LOC scores = 7.44) indicating perhaps that participants who scored low on the Locus of Control Scale (internal) may score high on the ACPS (poor adjustment).

The presence of two outliers indicates that the statistical analysis may have been affected by outlier contamination. The scores of these two research subjects differ remarkably from the general pattern established by other subjects in the sample. Closer inspection of the individual scores revealed that the two subjects represent the extremes of the internal-external scale. Their scores could be viewed as deviants or outliers in the statistical analysis. A recalculation of the Pearson Product-moment correlation coefficient on the "trimmed" data may reveal a different correlation coefficient, since it is possible that the outliers contaminated the data resulting in a highly suspect correlation coefficient.

A recalculation of the Pearson Product-moment correlation coefficient was done, omitting the two subjects defined above as outliers, using total scores for each subject on locus of control and
Figure 1. Locus of control scores and Adjustment to chronic pain scores for 41 subjects, $r = -0.05$. 
total scores for each subject on adjustment to chronic pain. The results of this second statistical analysis on 39 subjects reveal no statistically significant inverse relationship ($r = -0.07, p = 0.33$) between how people rate themselves on the Locus of Control Scale and self-ratings on the ACPS. However, the negative r value indicates perhaps a trend that participants who score low on the Locus of Control Scale (internal) may score high on the ACPS (poor adjustment).

**Hypothesis 2** stated that there will be a statistically significant linear relationship between locus of control, as measured on Rotter's Locus of Control Scale, and psychosocial adjustment to chronic pain, as measured on the Adjustment to Chronic Pain Scale (ACPS), for males and for females separately who have completed an in-patient, multidisciplinary pain treatment programs.

In analyzing the data two Pearson Product-moment correlation coefficients were calculated, one for males and one for females, using total scores for each sex on locus of control and total scores for each sex on adjustment to chronic pain. The results of the statistical analysis for 28 male subjects reveal no statistically significant linear relationship ($r = 0.25, p = 0.10$) between how males rate themselves on the Locus of Control Scale and how they rate themselves on the Adjustment to Chronic Pain Scale. That is, males who score high on the locus of control scale (external) do not necessarily score high on the ACPS (poor adjustment). Locus of control scores and adjustment to chronic pain scores for male subjects are presented graphically in Figure 2.
Figure 2. Locus of control scores and Adjustment to chronic pain scores for 28 male subjects, \( r = 0.25 \).
The results of the statistical analysis for 13 female subjects reveal a statistically significant inverse relationship ($r = -0.74$, $p = 0.002$) between how females rate themselves on the Locus of Control Scale and how they rate themselves on the ACPS. That is, females who score high on the Locus of Control Scale (external) also score low on the ACPS (good adjustment). Locus of control scores and psychosocial adjustment to chronic pain scores for female subjects are presented graphically in Figure 3.

Hypothesis 3 stated that there will be a statistically significant linear relationship between the total scores on Rotter's Locus of Control Scale and the total scores on the McGill Pain Questionnaire (MPQ) for patients following an inpatient, multidisciplinary pain treatment program.

In analyzing the data a Pearson Product-moment correlation coefficient was calculated using total scores for each subject for locus of control and for MPQ. One subject was dropped from the analysis since no MPQ score was available. The results of the statistical analysis on 40 subjects reveal no statistically significant linear relationship ($r = 0.04$, $p = 0.39$) between individuals' locus of control scores and their present rating of pain scores. That is, participants who score high on the Locus of Control Scale (external) do not necessarily score high on the MPQ.

It is possible that a relationship between the variables of locus of control and reported pain may have been obscured by treating the two genders as a homogenous group. Pearson Product-moment correlation coefficients were calculated for males and females
Figure 3. Locus of control scores and Adjustment to chronic pain scores for 13 female subjects, $r = 0.74$. 
separately using total scores for each sex for locus of control and MPQ. The results of these statistical analyses are presented in Table 3.

TABLE 3

Pearson Product-Moment Correlation Coefficients
For Males and Females Using Total Scores
For Each Sex on Locus of Control and MPQ

<table>
<thead>
<tr>
<th></th>
<th>Males n = 27</th>
<th>Females n = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>0.33</td>
<td>-0.74</td>
</tr>
<tr>
<td>p</td>
<td>0.05</td>
<td>0.00</td>
</tr>
</tbody>
</table>

For males, there appears to be a statistically significant linear relationship (r = 0.33) between how they rate themselves on locus of control and their present rating of pain. That is, males who score high on locus of control (external) also score high on the MPQ (high rating of pain). For females, there appears to be a statistically significant inverse relationship (r = -0.74) between how they rate themselves on locus of control and their present rating of pain. That is, females who score low on locus of control (internal) also score high on the MPQ (high rating of pain).

Hypothesis 4 stated that the mean ACPS (adjustment to chronic pain) scores for male subjects will be different than the mean ACPS scores for female subjects.
In analyzing the data, a two-tailed t-test for independent
groups was done to determine the significance of the difference between
the means on the male and the female groups. The level of significance
was set at .05. The means, standard deviations and the results of the
t-test using the ACPS to compare the two groups are presented in
Table 4.

**TABLE 4**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>38.11</td>
<td>13.03</td>
<td>1.07</td>
<td>0.29</td>
</tr>
<tr>
<td>n = 28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>33.31</td>
<td>14.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The hypothesis that the psychosocial adjustment to chronic
pain of males is different than the psychosocial adjustment to chronic
pain of females is not supported by the results of the analysis. That
is, after an in-patient, multidisciplinary pain treatment program no
significant differences are found between the male and female groups on
the mean scores of the ACPS.
Hypothesis 5 stated that those subjects who reported good psychosocial adjustment on the ACPS (lower scores) will have significantly different scores on the Locus of Control Scale than those subjects who report poor psychosocial adjustment on the ACPS (higher scores).

The subjects were 24 males and females selected from the total sample of 41 on the basis of their scores on the ACPS. The good adjusters (n = 9) consisted of participants who scored from 10-24 on the ACPS and the poor adjusters (n = 15) consisted of those who scored from 44-63 on the ACPS. These groups represented roughly the lower and upper thirds of the ACPS score distribution. The means and standard deviations for ACPS scores for the good and poor adjusters with a breakdown by sex is presented in Table 5.

**TABLE 5**

Means and Standard Deviations of ACPS Scores for Two Adjuster Groups of Males and Females

<table>
<thead>
<tr>
<th>Variable</th>
<th>Good Adjusters</th>
<th></th>
<th>Poor Adjusters</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>N</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Mean</td>
<td>14.50</td>
<td>19.80</td>
<td>17.44</td>
<td>50.46</td>
<td>50.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5.45</td>
<td>3.70</td>
<td>5.08</td>
<td>4.00</td>
<td>8.68</td>
</tr>
</tbody>
</table>
In analyzing the data a two-tailed t-test for independent groups was done to determine the significance of the difference between the means of the 2 groups. The level of significance was set at .05. The means, standard deviations, and the results of the t-test using locus of control scores to compare the 2 groups are presented in Table 6.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good adjusters</td>
<td>8.22</td>
<td>2.73</td>
<td>0.27</td>
<td>0.79</td>
</tr>
<tr>
<td>n = 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor adjusters</td>
<td>7.80</td>
<td>4.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The hypothesis that those subjects who report good psychosocial adjustment to chronic pain will have different locus of control scores than those subjects who report poor psychosocial adjustment is not supported by the results of the analysis. No significant differences are found between those subjects who report good psychosocial adjustment and those subjects who report poor psychosocial adjustment on the mean scores of the Locus of Control Scale.
Secondary Analysis

In addition to the above five analyses, a secondary analysis was performed to explore another possible relationship.

Hypothesis 1 examined the correlation between locus of control and psychosocial adjustment to chronic pain. Further examination of the scatterplot of the research data indicated that the relationship between the variables locus of control and psychosocial adjustment to chronic pain might be nonlinear. In those instances where the relationship between variables is markedly nonlinear the Pearson Product-moment correlation coefficient is inappropriate, and would underestimate the strength of association. Rotter (1966) and Phares (1976) indicated some support for the existence of a curvilinear relationship between the extremes of locus of control scores and maladjustment.

To test the curvilinearity of the data a correlation ratio (eta) was calculated using total scores for each subject on locus of control and ACPS. The results of the statistical analysis on 41 subjects reveal a statistical departure from linearity (eta = 0.62, eta squared = 0.39) between how people rate themselves on the Locus of Control Scale and self-ratings on the ACPS. That is, participants who score high on the Locus of Control Scale (external) and participants who score low on the Locus of Control Scale (internal) tend to score high on the ACPS (poor adjustment). About 39% of the total variance is accounted for by the independent variable, psychosocial adjustment to chronic pain.
Summary of Results

This study was designed to investigate five hypothesis each concerned with the variable of locus of control and psychosocial adjustment to chronic pain. The summary presents the results of the testing of each hypothesis.

Hypotheses

1. There appears to be no statistically significant linear relationship between how participants rate themselves on locus of control and self-ratings on psychosocial adjustment to chronic pain.

2. There appears to be no statistically significant linear relationship between how males rate themselves on locus of control and self-ratings on psychosocial adjustment to chronic pain. There appears to be a statistically significant inverse linear relationship between how females rate themselves on locus of control and self-ratings on psychosocial adjustment to chronic pain.

3. There appears to be no statistically significant linear relationship between participants' locus of control scores and their present rating of pain. For males, there appears to be a significant linear relationship between how they rate themselves on locus of control and their present rating of pain. For females, there appears to be a statistically significant inverse relationship between
how they rate themselves on locus of control and their present rating of pain.

4. There appears to be no significant difference in the psychosocial adjustment to chronic pain scores (ACPS) of males and females.

5. There appears to be no significant difference in the locus of control scores between those subjects who report good psychosocial adjustment and those subjects who report poor psychosocial adjustment.

Supplementary Analysis

1. There appears to be a statistically significant curvilinear relationship between the extremes of locus of control (internals and externals) and poor psychosocial adjustment to chronic pain.
Summary, Conclusion and Discussion

The preceding chapter presented a restatement of each hypothesis along with the method of testing and the results of the analysis carried out to test each hypothesis. This chapter presents a summary, conclusions and discussion. In addition, limitations of the investigation, implications and suggestions for future research are discussed.

Summary

Chronic pain patients constitute a population where the issue of control over reinforcement is likely to be an important factor in their rehabilitation or psychosocial adjustment to chronic pain. Regardless of how physically or medically advisable some activities may be, if they are not perceived and interpreted as beneficial or within one's control then the impact of treatment may fail on psychological grounds.

The variables involved in psychosocial adjustment to chronic pain are numerous. In an effort to better understand certain factors which contribute to poor and good psychosocial adjustment, this study sought to examine the relationship between internal-external locus of control and psychosocial adjustment. The research was intended to see whether there is any validity in applying the construct of locus of control to the concepts of psychosocial adjustment to chronic pain and
reported pain for subjects who had completed a multidisciplinary pain treatment program. The research questions assumed that a relationship exists between an individual's belief that desired outcomes are contingent upon his/her own behavior and good psychosocial adjustment as related to various areas of one's life. Furthermore, it was reasoned that locus of control, as a personality measure, would be reflected by the degree of an individual's reported pain post-treatment.

The objectives of the study were to answer five questions. First, is there a relationship between locus of control and psychosocial adjustment to chronic pain for chronic pain patients who have completed an in-patient, multidisciplinary pain treatment program? Second, is there a relationship between locus of control and adjustment to chronic pain for males and for females. Third, is locus of control related to reported pain for chronic pain patients post-treatment? Fourth, are there gender differences in the psychosocial adjustment to chronic pain? Fifth, do the good adjusters differ from the poor adjusters in terms of locus of control? To answer the questions developed for the study, a sample of forty one subjects was drawn from throughout Western Canada. All forty one subjects had completed a six-week residential, multidisciplinary pain treatment program in Vancouver, British Columbia within the past three years. Each subject was mailed questionnaires.

In terms of the objectives of the study the results indicate that there appears to be a statistically significant curvilinear relationship between the extreme scores of locus of control (internals and externals) and poor psychosocial adjustment to chronic pain. The
study further demonstrates a strong correlation for females between internality and poor psychosocial adjustment to chronic pain. No correlation was found between reported pain scores and locus of control scores when the sexes were analyzed together. However, there were significant correlations for males between external scores of locus of control and high levels of reported pain, and for females between internal scores of locus of control and high levels of reported pain. It was noted that no significant differences existed between males and females in their reported psychosocial adjustment to chronic pain. Additionally, there were no significant differences between the reported good adjusters and the reported poor adjusters in their locus of control scores.

Conclusions and Discussion

Locus of Control and Psychosocial Adjustment

There appears to be no significant linear relationship between how subjects' rate themselves on the Locus of Control Scale and self-ratings on the ACPS. However, the results of a secondary analysis are supportive of a curvilinear relationship between locus of control and psychosocial adjustment for all subjects. There is some evidence to support the contention that there might be a U-shaped relationship with both very external and very internal subjects indicating poor psychosocial adjustment to chronic pain.

A possible explanation might be that extremely internal individuals could be so overwhelmed with a sense of personal
responsibility over each failure of their own regarding pain management and hence feel very helpless. Due to the very frustrating and unpredictable nature of chronic pain, these extreme internals might react with uncertainty regarding their own instrumentality. The very attribute which in other situations enhances individuals' capacity to cope successfully with the world (i.e. an internal locus of control) in this instance may make adjustment or adaptation difficult.

Alternately, it is possible that since internals are more resistant to influence (Strickland, 1978) they might have responded to the treatment with reluctance. There is evidence to suggest that internals have greater success in dealing with their environments than those who score high on externality. Internals tend to use information more productively, and are less manipulated or coerced (Lefcourt, 1966; Doctor, 1971). Since success in a pain treatment program (i.e. better psychosocial adjustment in this study) is dependent, at least in part, on compliance to behavioral interventions it is possible to speculate that the individuals who reported high internality were very resistant to instruction. That is, they may have had difficulty coping with the dependent nature of certain treatments. There is also the possibility that internals, feeling more in control, may in effect have less of a need to actively respond to therapeutic interventions.

If chronic pain patients are viewed from an external locus of control framework as some research suggests (Abramowitz, 1969; Harrow & Ferrante, 1969; Skevington, 1979) then failure to adjust well on the psychosocial dimensions after a pain treatment program may result from
a viewpoint of the individual that one's action do not affect one's pain condition. The extreme externals' inability to see how their behavior might influence pain management, may result in passivity and loss of initiative.

As discussed in the review of the literature there is some speculation about both extremes of locus of control and the relationship to maladjustment (Phares, 1976; Rotter, 1975). Perhaps, poor adjustment is found in both people who possess a strong generalized expectancy that outcomes are their own responsibility and people who do not expect to attain valued goals or outcomes. Thus, a population of extreme internals and extreme externals, having both very high and very low generalized expectancies for success in attaining important goals, may show poor adjustment. The externals think they cannot do anything about their chronic pain and are poorly adjusted psychosocially. The internals may be poorly adjusted because of guilt and responsibility they feel over inability to cope well with their chronic pain.

**Locus of Control and Psychosocial Adjustment for Males and Females**

The results of the statistical analysis appear to indicate a gender difference between the relationship of locus of control scores and adjustment to chronic pain scores. Females who indicated an external locus of control also tended to indicate better psychosocial adjustment to chronic pain.

One possible explanation for the external females indicating good adjustment is that they may have underplayed their symptoms
responding on the ACPS in the direction of less distress. This thinking is supported by Phares (1976) who stated that externals may be better able to handle threatening material because their externality provides a convenient mode of anxiety reduction, namely denial. In this case the potentially threatening stimuli would be failure or personal inadequacy, and one would respond to items on the questionnaire in a socially desirable way. Perhaps the female externals had a greater need to be seen in a socially acceptable light and thus were less willing (or able) than the female internals and the males to acknowledge the extent of their difficulties.

Perhaps an explanation for finding female externals reporting better psychosocial adjustment is strictly a matter of higher levels of compliance in females. A recent survey of the literature on conformity, persuadability and influenceability indicates that women are not as compliant in group situations as they are usually portrayed as being (Eagly, 1978). They are, however, more likely to conform than men when the situation involves male expertise or when their behavior is being evaluated in the presence of a male expert as was the case for the pain center population from which the sample was drawn.

In view of the better adjustment which appears to be reported by the externally oriented females, it appears that externals are responsive to the more prestigious sources of therapeutic influence within a structured situation. That is, they are receptive to suggestions and directions given by professionals, a view supported by Abramowitz, Abramowitz, Roback, and Jackson (1974), Balch and Ross
(1975), and Kilmann, Albert, and Sotile (1975). This view suggests that if the treatment strategies are closely controlled, externals should demonstrate more therapeutic responsiveness than internals. This appeared to be so for the females in the present study.

For the female internals reporting poor psychosocial adjustment it appears that feeling one controls one's reinforcement is not sufficient. For women coping with chronic pain it does not seem to help to have a belief system in which they perceive the events in their lives as being a consequence of their own actions, and thereby controllable. Perhaps, these females may experience tremendous difficulty with their sense of instrumentality regarding management of pain. The very nature of chronic pain makes adjustment hard. Despite their perception that outcome is contingent upon their own control, total relief from chronic pain is elusive. Frustration is experienced, and a heightened sense of helplessness and hopelessness. These individuals may feel that they have more control than is warranted by reality, and experience great difficulty when they discover that they cannot control some things such as chronic pain. In fact, the female internals who tended to report poor psychosocial adjustment may be more representative of chronic pain patients in general. This notion is given some support by the evidence previously discussed supporting a U-shaped relationship with both very external and very internal individuals indicating poor psychosocial adjustment to chronic pain.

In a large number of studies Lefcourt (1976) found that persons holding an internal locus of control can withstand pressures
directing them to behave in certain circumscribed manners. This is not true in all instances, as internals do yield to pressures but not to the same pressures as externals. Statements presented by authorities do not seem to impress internals, but internals do respond to reasoned arguments regardless of the status of the source. Internals also shift their own attitudes and behaviors when allowed more active participation. Externals appear to be more responsive to more prestigious sources of influence, and the desire for affiliation and dependence may be more important to externals (Johnson, Ackerman, Frank, & Fionda, 1968). For chronic pain patients, particularly for females, an internal locus of control seems to be associated with a tendency to be circumspect in the face of pressure to yield to influence.

For males, there appears to be no significant linear relationship between locus of control scores and psychosocial adjustment to chronic pain. The absence of any significant relationship is puzzling given the very strong correlation for females between these variables. Perhaps, the generally different patterns of male and female socialization require different adjustment criteria for males and females. That is, since traditionally defined female roles may imply greater concern with emotions and feelings, while male roles traditionally have been associated with greater overt activity and instrumental acts, the notions of psychosocial adjustment as presented here might make more sense as criteria for adjustment for females than for males.

Alternately, research has shown that people in many minority
and disadvantaged groups tend to score in the external direction, perceiving their life situations realistically (Gruen, Korte, Baum, & 1974). In general blacks, women, and lower socioeconomic class individuals have more restrictions on their own successes regardless of what they do or do not do. Perhaps those females who reported good psychosocial adjustment and scored in the direction of externality have a realistic perception of their instrumentality in this situation. Males, on the other hand are not affected in the same way by socially determined restraints. The relationship between perceived locus of control and situational powerlessness (i.e. a situation of an individual coping with chronic pain) may be mediated in part at least by the variable of gender.

Locus of Control and Present Pain Ratings

There appears to be no significant statistical support for a linear relationship between locus of control scores and MPQ scores for all subjects. However, when the two sexes are treated separately statistically significant results are obtained. Males who scored high on locus of control (external) also scored high on the MPQ (high rating of pain). Females who scored low on locus of control (internal) scored high on the MPQ (high rating of pain).

The findings for the females is consistent with the results of hypothesis two since the female internals reporting high levels of pain also reported poorer psychosocial adjustment to their pain. As noted earlier, it is possible that these females may experience frustration in
dealing with the variable nature of chronic pain and hence experience difficulty with their sense of instrumentality. These feelings of helplessness do not preclude good response to treatment and pain management. Logically, if individuals report poor psychosocial adjustment to chronic pain those same individuals would be expected to experience high levels of pain.

The results for the males seem to suggest that males with high reported pain tend to see themselves as having less personal control over their pain (external). For these individuals who experience an absence of control, the effectiveness of many behavioral interventions on the motivational component of pain is likely substantially reduced. Weisenberg (1980) supports this notion by further stating that anxiety reduction is important in pain perception mainly when it is combined with an individual's feeling of control. Males with an external locus of control may see themselves as having less personal control over their pain. For these males the experience of chronic pain may occasion more of an attitude of helplessness, precluding, as with the females, good response to pain management.

**Psychosocial Adjustment for Males and Females**

There was no significant statistical support for gender differences in psychosocial adjustment to chronic pain contrary to the findings of Toomey, Taylor, Shelton, and Carron (1982) who found that males are decidedly more conservative than females in reporting improvement in a wide spectrum of areas. Possibly the findings of the
The present research were affected by the validity of the ACPS as a measuring instrument. While any explanation of these results is speculative, it may be that the seven subtests of the ACPS do not have the same meaning for males and females. Another possible explanation for the lack of gender differences is that the ACPS fails to measure all of the complex and multiple factors in psychosocial adjustment to chronic pain which would have different importance for each sex.

Although there was no significant difference in the psychosocial adjustment to chronic pain of males and females using total ACPS scores, subsequent t-tests on the seven subtests and on the twenty-seven items revealed some significant differences. Subtest 2, Vocational Environment, revealed significant differences between the males and females with the females reporting better adjustment than the males. However, the Hoyt estimate of reliability for this subtest was low and it is likely that if the reliability of the subtest were improved the mean difference would decrease.

Two items in Subtest 7, Psychological Distress, (with a high estimate of reliability), revealed significant differences between males and females. Males indicated more distress than females in the amount of worrying they do since the development of their chronic pain, and males also experience more depression than females related to the experience of chronic pain. Litigation, compensation, and traditional male and female roles may explain these results. The cultural stereotype requiring males to be more physically strong and vocationally productive than females may cause males to worry more and be more
depressed than females when faced with chronic pain, disability, and vocational disruption. The results of these analyses are presented in Appendix G.

Locus of Control and Good and Poor Psychosocial Adjustment

There appears to be no significant difference in the locus of control scores for reported good adjusters and reported poor adjusters. The results call into question the theoretical rationale for this hypothesis, namely, that individuals who report good psychosocial adjustment to chronic pain are more likely to have different levels of expectancy as to the amount of control they have over their life events than those individuals who report poorer psychosocial adjustment to chronic pain. The lack of substantiation for the hypothesis may possibly have resulted from methodological considerations. The subject pool was small (nine good adjusters and fifteen poor adjusters). Moreover, the subjects participating were volunteers. Both of these factors make the generalizability of the results dubious.

Pivotal to this hypothesis was the concept that there would be a difference in locus of control orientation between those subjects who report poor psychosocial adjustment to chronic pain and those subjects who report good psychosocial adjustment. If however, the results of the supplementary analysis to hypothesis one are supported (that there might be a curvilinear relationship with both very external and very internal subjects indicating poor psychosocial adjustment) then the question addressed in this hypothesis is moot.
In fact, there was a marked difference in the variability of the two groups as presented in Table 6. The reported poor adjusters' extreme scores may reflect their tendency to be either internal or external. The reported good adjusters, in contrast, were more homogeneous in their responses reflecting a commonality in their reported locus of control scores.

Limitations of the Investigation

The current research sample was restricted to subjects who agreed to participate on a volunteer basis. This may have biased the sample towards including chronic pain patients whose experiences with the chronic pain treatment centre were generally positive. The individuals who consented to participate in this research project generally may have experienced better psychosocial adjustment to chronic pain than those who did not participate. This affects the generalizability of the findings to the general population since there is no way of knowing whether subjects who respond to followup assessment differ in some systematic way from those who do not.

This study is based exclusively on self-report techniques which are subject to distortion by the individual (Keefe, 1982). Sanders (1980) found that chronic low-back pain patients consistently distorted their reports of activity in a negative direction. The design might have been strengthened had face to face interviews with the subjects been attempted and observational data collected.
This was a study to observe the relationships between locus of control, psychosocial adjustment to chronic pain, and reported pain. These relationships surfaced with the instruments applied and the validity and reliability of the instruments is, therefore, crucial to the study. Although the researcher has confidence in Rotter's Locus of Control Scale and the McGill Pain Questionnaire, the reliability and validity of the Adjustment to Chronic Pain Scale have not yet been well established.

Relationships between variables perhaps were obscured by treating the two sexes as a homogenous group. Once the sexes were divided the small sample of females made it difficult to generalize from the results. A much larger sample would have been necessary in order to attain a more adequate number of females from which to generalize. The results indicate that the locus of control concept might have a different level of complexity for each sex. Hence, it would be advisable to take sex specificity into account.

This study is correlational in nature and it is impossible to separate cause from effect in any definitive way. Does poor psychosocial adjustment to chronic pain lead to highly external and highly internal belief systems or do the extremes of locus of control orientation lead to poor psychosocial adjustment? Or do the same conditions (social, familial, and personal correlates) that lead to extreme external and extreme internal beliefs also lead to poor psychosocial adjustment? These are important questions, but the research cited does not, by its nature, allow us to investigate the cause and effect question.
No effort was made by the researcher to differentiate between those subjects involved in litigation or compensation cases and those not. It is possible that litigation and compensation have implications regarding gender differences in adjustment to chronic pain, locus of control, and responses to pain. The compensation and legal systems appear to reward illness behaviors and dependency and to punish individuals' efforts to exert control over their pain conditions.

This study may not have adequately investigated the concept of reinforcement value. It was assumed that individuals experiencing chronic pain place a high value on being well adjusted on a variety of psychosocial dimensions, the reinforcement in this investigation. However, the value of this reinforcement was perhaps not the same for all participants. It might be different for males and for females, and also for those individual involved in litigation or compensation disputes and for those not so involved.

Implications of the Study

The implications of this study would appear to be interesting in terms of differential treatment strategies for chronic pain patients and of treatment strategies designed to change locus of control beliefs. This study seems to indicate both a curvilinear relationship between the extremes of locus of control and poor psychosocial adjustment to chronic pain, and, for females, a relationship between internality and poor psychosocial adjustment.

In general past studies report that individuals with an
internal locus of control perform better and function more successfully in numerous personal and social areas than do individuals with an external locus of control. A comparison of the results of this study with the literature cannot be readily done since few reports examine the relationship between locus of control and psychosocial adjustment for chronic pain patients. However, the findings in this study appear to contradict the previously cited literature and raise interesting questions regarding the concept of locus of control for chronic pain patients and for male and female chronic pain patients separately.

The findings in this research have implications for counsellors, therapists, and health professionals who are treating chronic pain patients. It may be beneficial to measure the locus of control orientation of individuals upon initial assessment prior to treatment since the results of this study appear to suggest poorer psychosocial adjustment for both extreme externals and extreme internals. The results of this measure could then help the therapist establish treatment strategies tailored to individuals' generalized expectancies regarding locus of control. Similarly, these measures could help the therapist establish goals for change with their clients to increase the individuals sense of instrumentality leading to better psychosocial adjustment to pain.

For those individuals reporting high external locus of control scores encouraging an internal locus of control would be one of the treatment goals. Not a great deal of systematic research has been carried out in this area and the findings are still sketchy. However,
Phares (1976) noted that what research has been accomplished and reported seems consistent with the view that an internal locus of control may be one prerequisite of competent behavior and enhanced coping efforts.

Internality training for the extreme externals could take many forms, but one should keep in mind that changes in beliefs or expectancies are only relevant if accompanied by desired behavior change. However, obtaining behavior change data is not always possible and expectancy data will add to understanding of the change or lack of change in behaviors. Thus, use of a locus of control measure is recommended in conjunction with behavioral measures to evaluate treatment programs for chronic pain patients.

The goal of internality training should be to train responsible internals who will recognize the need to use health professionals as an appropriate resource, but who will also see that actions of their own (based on sound advice) will be necessary to obtain and maintain pain management. DeCharms (1968) emphasized four major concepts: (1) self-concept, (2) achievement motivation, (3) realistic goal-setting, and (4) personal causation training. Other researchers suggest that the experience of problem confrontation leads to a heightened feeling of internal control (Gottesfeld & Dozier, 1966), and there is a shit in internality for self-determination groups (Tobias & MacDonald, 1977). Support for the notion that effectively coping with one's problems can raise internal beliefs was revealed in the work of Dua (1970). He indicated that both action-oriented and reeducative therapy led to increased internal scores.
It is clear that belief in an internal locus of control can provide individuals with a greater sense of control and thus a greater potential for power and efficacy. Reduction of the externals' sense of powerlessness, hopelessness and helplessness is the aim on internality training. Discussions and behavior assignments designed to increase the extent to which the individuals feel in control of their environment ought to be useful therapeutic procedures.

For those individuals who reported extreme internal locus of control scores, and also for those females reporting internality, the implications for counsellors and therapists are of a different nature. The therapeutic goals for these individuals is to change one's expectations regarding personal responsibility. Since the issue here is an overwhelming sense of power or control over one's environment, techniques could be used to reduce the internal locus of control which is causing guilt, helplessness, frustration and feelings of defeat in pain management. These clients need to learn that some of the control which they experience is unrealistic in dealing with chronic pain, and that it is appropriate in certain situations to discriminate and give up some control. In this way their expectancy for success would be enhanced. As MacDonald (1971) noted motivation coupled with positive expectancy equals optimism; motivation coupled with negative expectancy equals despair.

Counsellors and therapists need also to be aware that gender differences may exist regarding chronic patients' experiences of pain, meanings of pain, psychosocial adjustment to pain, and locus of control
beliefs. Further research needs to be done in these areas, but preliminary results appear to indicate that perhaps differential treatment strategies may be appropriate for the two sexes as well as training to alter locus of control beliefs.

It is important to realize that the solution is not to find the right therapeutic technique to enhance appropriate internal control beliefs. Many such techniques will have appropriate effects. Rather, the goal should be the systematic investigation of the effect of different techniques with various kinds of patients and their subsequent psychosocial adjustment to chronic pain. Then one might be in a position to state that for one individual one could attempt to increase his or her internality by means of a Rogerian approach encompassing warmth, acceptance and listening, while for another patient one should utilize active, manipulatory techniques.

Similarly, internals could be encouraged to participate in the management of their treatment subjecting them to fewer environmental constraints, while externals might profit most from treatments relying on prestige suggestion or support from others. In these ways, the construct of internal and external locus of control as an expectancy for success could be operationalized as measures for in-patient and out-patient treatment outcome research.

Suggestions for Future Research

Research dealing with the relationship between the locus of control construct and psychosocial adjustment to chronic pain appears to
be a new area of investigation. Based on the results of this study, future research might first consider replication of the study with a larger sample.

The current investigation was further limited in that only psychosocial variables were used to predict adjustment. Since the psychosocial variables are only one set of factors influencing adjustment to chronic pain, the predictive power of the study would have been increased had variables been included such as evaluations of functional status, evaluations of medication or alcohol usage, and evaluations of surgeries and treatment since discharge.

Refinement of the ACPS as a measuring instrument would also include taking the possibility of gender differences into account since the ACPS does not appear to apply to both sexes in the same way. The generally different patterns of masculine and feminine experience may require different adjustment criteria for males and females, since the ACPS does not appear to predict psychosocial adjustment for males. It may not be enough to say that the more internal females experienced poorer psychosocial adjustment to chronic pain without understanding which females and what kinds of adjustment. Specifically, the variables must be weighed more completely and the gender differences looked at more critically to illuminate patterns and their interplay with personality.

Similarly, a factor analysis of the locus of control scale might indicate that while similar for the sexes the locus of control concept might have a different level of complexity for each sex. Hence,
sex specificity should be considered in future studies using the locus of control construct.

The hypothesis that a curvilinear relationship exists between psychosocial adjustment to chronic pain and locus of control should be investigated further. Accepting the notion of a U-shaped relationship it appears that both the extreme externals and extreme internals are more poorly adjusted psychosocially. Since each is relatively removed from the middle of the distribution, each seems likely to respond in an inflexible way after categorizing situations. The people nearer the middle should respond to situations in a more realistic fashion. Future research might also investigate the relationship of other variables such as age, sex, chronicity, etc. to good and poor psychosocial adjustment to chronic pain and to locus of control orientation.

**Conclusion**

Based on the measures used in this study and the statistical analyses applied, the relationships between locus of control, psychosocial adjustment to chronic pain, and present pain ratings for the subjects studied were different for males and females, and for those subjects who reported poor psychosocial adjustment. Those subjects who scored at both extremes of the locus of control scale (i.e. highly external or highly internal) reported poorer psychosocial adjustment suggesting a curvilinear relationship between the variables. For females, there appears to be a substantial relationship between poorer
psychosocial adjustment to chronic pain and internality, and between internality and high levels of reported pain. For males, it seems the more external the locus of control orientation the higher the reported pain. More research is necessary to establish any causal relationships between these variables.
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APPENDIX A

LETTER OF CONTACT
May 31, 1983

PROJECT: What effect does a chronic pain treatment program have on an individual's adjustment to pain?

Dear

I am seeking your involvement in a study being carried out by myself and Dr. Marv Westwood of the Department of Counselling Psychology at UBC.

I am interested in finding out how you've managed in various aspects of your life since you finished the residential pain treatment program at the Columbia Centre. This involves answering the four questionnaires included with this letter. Approximately 1-1/2 hours of your time will be required. The information gained from this study will be helpful to professionals working with patients suffering from chronic pain. In addition, as you complete the questionnaires, you may discover some interesting things about yourself and about how people like yourself respond to pain.

Your participation in this study would be very much appreciated. However, I want to emphasize that participation is totally voluntary. All information gathered will be kept entirely confidential, used for research purposes only, and will be destroyed when the study is
APPENDIX B

INSTRUCTION SHEET
APPENDIX C

BIOGRAPHICAL INFORMATION QUESTIONNAIRE
PART A BIOGRAPHICAL INFORMATION

Your cooperation in providing this information is appreciated. Please be assured of strict confidentiality and do not write your name on the questionnaire.

AGE

20-30 ________
31-40 ________
41-50 ________
51-60 ________
61+ ________

SEX

Female ________
Male ________

HOW LONG AGO did you complete the residential pain treatment program?

_______ months ago
_______ years ago

If you no longer experience pain, indicate how long you have been PAIN FREE (omit if you still have some pain).

_______ weeks
_______ months
_______ years

DO NOT WRITE BELOW THIS LINE: (FOR TABULATING USE)
HOW LONG have you experienced chronic pain?

- 1 year or less
- 2 years or less
- 2-5 years
- more than 5 years

PRIOR to the residential pain treatment program did you have any pain-related surgery?

- yes
- no

ADDITIONAL pain-related surgery since completion of the residential pain treatment program?

- yes
- no

Have you had any recent hospital admissions for pain-related problems?

- yes
- no

Have you sought other treatment for pain relief since completion of the residential pain treatment program?

- yes
- no

If yes, what?

How much medication do you take for your pain? (indicate one)

- no medication for pain now
- less than before treatment
- same as before treatment
- more than before treatment
Has the amount of time which you spend in bed or lying down because of pain changed since you completed the residential pain treatment program? (indicate one)

- [ ] spend no time in bed or lying down due to pain
- [ ] spend less time in bed or lying down due to pain
- [ ] spend the same amount of time as before
- [ ] spend more time than before

Has there been a change in your ability to bend or walk since you completed the residential pain treatment program? (indicate one)

- [ ] function completely improved or restored
- [ ] function slightly better than before treatment
- [ ] function the same as before treatment
- [ ] function worse than before treatment
APPENDIX D

LOCUS OF CONTROL SCALE

(ROTTER, 1966)
PART B - OPINION QUESTIONNAIRE

DIRECTIONS

I am trying to find out what men and women think about certain things. I want you to answer the following questions the way you feel. There are no right or wrong answers.

One of your concerns during this part of the questionnaire may be, "What should I do if both (a) and (b) express my opinion or if neither express my opinion?" It's not unusual for that to happen. If it does, select the one that is more nearly true in your opinion. Try not to leave any blank.

For each question select which statement is closer to your opinion and circle either (a) or (b).
PART B - OPINION QUESTIONNAIRE

1. a. Children get into trouble because their parents punish them too much.

   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard one tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.

   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.

   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.

   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.

b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.

b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.

14. a. there are certain people who are just no good.

b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.

b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

b. Getting people to do the right thing depends upon ability; luck has little to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

b. There really is no such thing as "luck".

19. a. One should always be willing to admit mistakes.

b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
   b. How many friends you have depends upon how nice a person you
      are.
21. a. In the long run the bad things that happen to us are balanced
      by the good ones.
   b. Most misfortunes are the result of lack of ability, ignorance,
      laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
   b. It is difficult for people to have much control over the things
      politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades
      they give.
   b. There is a direct connection between how hard I study and the
      grades I get.
24. a. A good leader expects people to decide for themselves what they
      should do.
   b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things
      that happen to me.
   b. It is impossible for me to believe that chance or luck plays an
      important role in my life.
26. a. People are lonely because they don't try to be friendly.
   b. There's not much use in trying too hard to please people, if
      they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
   b. Team sports are an excellent way to build character.
28. a. What happens to me is my own doing.
   b. Sometimes I feel that I don't have enough control over the
      direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the
      way they do.
   b. In the long run the people are responsible for bad government
      on a national as well as on a local level.
APPENDIX E

ADJUSTMENT TO CHRONIC PAIN SCALE
PART C WORK, LEISURE AND FAMILY LIFE QUESTIONNAIRE

I am interested in how you have been affected by your chronic pain and I would like you to answer these questions about your work, spare time activities and your family life.

Please CIRCLE the number beside the one statement which best states how you think or feel.

1. How do you feel about the various treatments you have received for your chronic pain?

   0 very positive with high levels of confidence
   1 generally positive with some reservations
   2 somewhat negative with cynicism
   3 negative with a lack of confidence

2. How do you feel about the level of competence of the doctors who have treated you for your chronic pain?

   0 very positive with high levels of confidence
   1 generally positive with some reservations
   2 somewhat negative with cynicism
   3 negative with a lack of confidence

3. Do you believe you were given enough information about your chronic pain condition to make a difference in your daily living?

   0 complete information for my purposes
   1 adequate, but I could have used more
   2 less than adequate
   3 no information to make a difference

4. Have you had to change the kind of work you do as a result of your chronic pain, by finding new employment or by changing the nature of your work?

   0 unchanged
   1 slight modification
   2 significant modification
   3 completely different
5. Has the amount of satisfaction you get from your job changed since you have experienced chronic pain?

0 more satisfaction now
1 same satisfaction now as before
2 less satisfaction now
3 no satisfaction now or before

6. The amount of time you have lost from the job as a result of your chronic pain has been

0 none
1 less than 1 year
2 more than 1 year but less than 1-1/2 years
3 1-1/2 years or more

7. How often do you experience difficulties (e.g. hostility or anger, resentment, etc.) on the job with co-workers as a result of your chronic pain?

0 never
1 rarely
2 often
3 always

8. How would you characterize your relationship with your closest family member?

0 very good
1 adequate
2 somewhat inadequate
3 very inadequate

9. Has it been difficult for the person or people you live with to talk about or adapt to any changes resulting from your chronic pain?

0 not difficult at all
1 mildly difficult
2 moderately difficult
3 extremely difficult

10. Have your financial resources been affected by your chronic pain experience?

0 no affect
1 slightly affected
2 moderately affected
3 drastically affected
11. Do you depend on the person or people you live with for any help or assistance because of your chronic pain?

0 totally independent
1 mildly dependent
2 moderately dependent
3 totally dependent

12. Since you've experienced chronic pain, has there been any change in the pleasure or satisfaction you derive from sexual activities?

0 no change in sexual pleasure or satisfaction
1 slight reduction in sexual pleasure or satisfaction
2 moderate reduction in sexual pleasure or satisfaction
3 no sexual pleasure or satisfaction

13. Since you've experienced chronic pain has there been any change in your interest in sexual activities?

0 no change in interest
1 slight change in interest
2 moderate change in interest
3 no interest

14. Have you had any problems during sexual intercourse (e.g. discomfort or difficult reaching climax) since the development of your chronic pain?

0 never
1 rarely
2 often
3 always

15. Has there been any change in the frequency of your sexual activity since you've experienced chronic pain?

0 no change in frequency
1 slight reduction in frequency
2 moderate reduction in frequency
3 no sexual activity

16. How would you characterize your relationship with your relatives (i.e. your parents, brothers, sisters, in-laws, and children not living at home) since the development of your chronic pain?

0 very good
1 adequate
2 somewhat inadequate
3 very inadequate
17. Do you depend on your relatives who do not live with you for any help or assistance because of your chronic pain?

0 totally independent
1 mildly independent
2 moderately dependent
3 totally dependent

18. Are you interested in spending time with and talking to your relatives since the development of your chronic pain?

0 very interested
1 moderately interested
2 somewhat interested
3 not at all interested

19. Have you maintained your interest in social activities (e.g. social clubs, entertaining, church groups, going to the movies, going to sports events, etc.) since the development of your chronic pain?

0 same level of interest as previously
1 slightly less interest than before
2 significantly less interest than before
3 little or no interest remaining

20. Have you maintained your participation in social or leisure activities (e.g. social clubs, entertaining, church groups, going to the movies, going to sports events, etc.) since the development of your chronic pain?

0 same level of participation as previously
1 slightly less participation than before
2 significantly less participation than before
3 little or no participation now

21. Have you maintained your participation in individual leisure activities (e.g. sports, gardening, dancing, other hobbies, etc.) since the development of your chronic pain?

0 same level of participation as previously
1 slightly less participation than before
2 significantly less participation than before
3 little or no participation now
22. Have you maintained your interest in individual leisure activities (e.g. sports, gardening, other hobbies, etc.) since the development of your chronic pain?

0 same level of interest as previously
1 slightly less interest than before
2 significantly less interest than before
3 little or no interest remaining

23. Have you been feeling anxious or nervous recently?

0 not at all
1 mildly
2 moderately
3 extremely

24. Has the amount of worrying you do changed since the development of your chronic pain state?

0 didn’t worry before and still don’t
1 worry less now
2 worry the same now as before
3 worry more now

25. Do you think about your body differently since the development of your chronic pain?

0 I like my body more now
1 I like my body the same now as before
2 I like my body less now
3 I didn’t like my body before and I don’t like it now

26. Has there been any change in the amount of anger you feel towards friends or relatives since the development of your chronic pain?

0 I feel less anger now
1 I feel the same amount of anger now as before
2 I feel more angry now
3 I never got angry before and I don’t now

27. Has there been any change in the amount of depression you feel since the development of your chronic pain?

0 I get depressed less often now than before
1 I get depressed now about the same as before
2 I feel more depressed now
3 I never got depressed before and I don’t now
APPENDIX F

MCGILL PAIN QUESTIONNAIRE

(Melzack, 1975)
PART D PAIN QUESTIONNAIRE

DIRECTIONS What Does Your Pain Feel Like?

Some of the words below describe your present pain.

Circle ONLY those words that best describe it. Leave out any category that is not suitable. Use only a single word in each appropriate category - the one that applies best.

1 Flickering
   Quivering
   Pulsing
   Throbbing
   Beating
   Pounding

2 Jumping
   Flashing
   Shooting

3 Pricking
   Boring
   Drilling
   Stabbing
   Laciniating

4 Sharp
   Cutting
   Lacerating

5 Pinching
   Pressing
   Gnawing
   Cramping
   Crushing

6 Tugging
   Pulling
   Wrenching

7 Hot
   Burning
   Scalding
   Searing

8 Tingling
   Itchy
   Smarting
   Stinging

9 Dull
   Sore
   Hurtling
   Aching
   Heavy

10 Tender
    Taut
    Raspining
    Splitting

11 Tiring
    Exhausting

12 Sickening
    Suffocating

13 Fearful
   Frightful
   Terrifying

14 Punishing
   Gruelling
   Cruel
   Vicious
   Killing

15 Wretched
   Blinding

16 Annoying
   Troublesome
   Miserable
   Intense
   Unbearable

17 Spreading
   Radiating
   Penetrating
   Piercing

18 Tight
   Numb
   Drawing
   Squeezing
   Tearing

19 Cool
   Cold
   Freezing

20 Nagging
   Nauseating
   Agonizing
   Dreadful
   Torturing
APPENDIX G

T-TESTS USING ADJUSTMENT TO CHRONIC PAIN SCORES TO COMPAR MALES AND FEMALES
### T-Tests Using Adjustment to Chronic Pain Scores to Compare Males and Females

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
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<td><strong>Subtest 2, Vocational Environment</strong></td>
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<tr>
<td>Males</td>
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<tr>
<td>Females</td>
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<tr>
<td><strong>Subtest 7, Psychological Distress</strong></td>
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<tr>
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<tr>
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<td>0.95</td>
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<tr>
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<tr>
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<tr>
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