1988

Differential Effects of Avoidant and Attentional Coping Strategies on Adaptation to Chronic and Recent Onset Pain

Judith A. Holmes
Loyola University Chicago

DIFFERENTIAL EFFECTS OF AVOIDANT AND ATTENTIONAL COPING STRATEGIES ON ADAPTATION TO CHRONIC AND RECENT ONSET PAIN

by

Judith A. Holmes

A Dissertation Submitted to the Faculty of the Graduate School of Loyola University in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

October

1988

ACKNOWLEDGEMENTS

The author would like to express her sincere appreciation to Dr. Kevin Hartigan, chairman of her dissertation committee, for his guidance and support throughout the development and completion of this research. Further thanks goes to Dr. Steven Brown and Dr. Paul Camic for serving on the committee. Lastly, thanks goes to Crist Stevenson, M.A. for his assistance in data collection and analysis.

VITA

The author, Judith Holmes, is the daughter of Robert Holmes and Mary (Richardson) Holmes. She was born May 25, 1950, in Springfield, Massachusetts.

Her elementary education was obtained in the public schools of Agawam, Massachusetts. Her secondary education was completed in 1968 at Agawam Senior Highschool, Agawam, Massachusetts.

In January, 1976, Ms. Holmes entered the University of Texas at Arlington, Texas. She transfered to Lewis University in 1978, and received the degree of Bachelor of Arts in psychology in August, 1980. In September, 1980 Ms. Holmes received a scholarship to attend Roosevelt University and obtained the degree of Master of Arts in psychology in 1984.

TABLE OF CONTENTS

Appendix

LIST OF TABLES

INTRODUCTION

A review of the literature on coping shows differential adaptational outcomes for avoidant and attentional strategies in illness (Suls & Fletcher, 1985). Contrary to the widely held view that avoidance behaviors are universally negative, there is significant evidence that under certain conditions avoidance may be an effective response to a health stressor (e.g. Meyerowitz, 1983). Other studies exist establishing the utility of attention based strategies (Moos & Tsu, 1977). In reviews of outcome research on the effectiveness of coping strategies little evidence has been found to establish the efficacy of one strategy over the other (Silver & Wortmen, 1980). Recently, it has been suggested that differential outcomes may be in part a function of temporal factors (Mullen & Suls, 1982). That is, avoidance strategies are associated with more positive adaptation in the short run while attentional strategies produce superior long-term effects.

The present study focuses on the relative efficacy of avoidant and attentional coping strategies under conditions of chronic and acute pain, a major health stressor. Based on previous reviews, it was hypothesized that subjects in an acute stress condition (i.e. pain) would show greater benefits with avoidance strategies while subjects chronically stressed would show greater adaptation employing attentional strategies.

Coping

Individuals differ in their adjustment to stressors such as illness. Coping efforts have been hypothesized as one factor which may mediate the effects of a stressor (e.g. pain, illness, etc.) and account for observed differences in adjustment (e.g. Billings & Moos, 1981). Previous studies have documented the importance of coping responses in aiding individual adjustment to illness (e.g. Cohen & Lazarus, 1979).

Coping responses refer to the specific actions people take when faced with a stressful event. They include a complex set of processes directed toward modifying the impact of the stressor on psychological and physical adjustment. These responses serve to aid the individual's efforts to avoid or moderate the potential harm posed by a stressor (Pearlin & Schooler, 1978). Coping responses may be either cognitive or behavioral reactions which have as their focus either external events or internal states (Lazarus & Folkman, 1984). Regardless of the method or focus of coping, its function is to lessen the impact of the stressor and facilitate adjustment. Successful coping results in adaptation which implies that the person is functioning effectively despite the stressor.

It is generally conceded that the way in which an individual copes with a crisis affects their psychological, social, and physical health (e.g. Cohen & Lazarus, 1979; Moos, 1977). In a health crisis, the individual's response to the demands of the illness may be an important determinant in the course of the illness and the level of adaptation

achieved (Cohen & Lazarus, 1979). For instance, the efficacy of the individual's coping response may either aggravate or ameliorate the disease process and one's ability to manage the emotional consequences of illness. How a person copes with acute (Gentry, 1975) and chronic (Shontz, 1982) illness appears to be an essential feature in the course of many illnesses. It has been hypothesized that health outcomes may be enhanced through the improvement of coping skills (Moos & Tsu, 1977).

Types of Coping.

Various classification systems for coping responses have been suggested including those based on focus (problem & emotion; Lazarus, 1980) and method (active & avoidant; Moos, 1977). Tunks and Bellissimo (1988) for example, organize coping into three domains; appraisal focused coping (an attempt is made to understand and find a pattern of meaning in a crisis), problem focused coping (coping is aimed at dealing with the tangible aspects of a crisis and altering the situation) and emotion focused coping (coping is directed at managing the feelings evoked by a crisis). Regardless of the conceptual organization, two broad categories consistently emerge when reviewing the literature on coping: avoidance and attention based strategies. Avoidant strategies share as a common feature the focus of attention away from the source of stress and one's reactions to it. In avoidance, the subject attempts to avoid any active confrontation with the problem (e.g. keeps feeling

to self) and attempts to reduce tension indirectly by engaging in diversions (e.g. smokes, eats, drinks more etc.). These responses have been variously labeled denial, distraction, withdrawal and repression (see Roth & Cohen, 1986). Research findings exist pointing to the usefulness of avoidant strategies in certain circumstances to reduce stress, anxiety and/or pain (e.g. Meyerowitz, 1983).

In contrast, attentional strategies have been identified as those that focus attention on the source of threat and one's reaction to it. Attentional coping includes both cognitive (i.e. efforts aimed at altering one's appraisal of the situation) and behavioral (i.e. information seeking, etc.) efforts directed at altering the stressor. These active or approach responses include disease management strategies (e.g. adhering to dietary, medicinal, exercise or other preventative treatment routines in an effort to control exacerbations in chronic illnesses such as gastrointestinal disease, neuromuscular disorders, heart disease, etc.), information seeking, sensory monitoring and verbalization of one's feelings about the pain (see Roth & Cohen, 1986). Such responses have been identified as effective in mediating the impact of health stressors on adjustment (e.g. Suls & Fletcher, 1985). Attentional strategies may work by providing the individual with information necessary to effect appropriate cognitive and behavioral responses.

Both avoidance and attentional strategies have been found to result in positive adaptation under illness conditions. In reviewing the litera-

ture, one finds that at times attentional strategies appear superior (e.g. Rybstein-Blinchick, 1979) while in other instances avoidant responses are more facilitative of adaptation (e.g. McCaul & Malott, 1984). As noted by Crook, Tunks, Kalaher and Roberts (1988) coping strategies vary in their beneficial effects as a function of the match between strategy and task demand. Thus, it is the "appropriateness of the coping strategy for a particular stressful circumstance that determines whether adverse or beneficial effects result" (p. 176).

In addressing the equivocal findings in the coping strategy research, Mullen and Suls (1982) proposed a temporal x strategy interaction effect to account for the mixed results. A review of previous studies shows that when avoidant strategies have appeared superior little time had elapsed between stressor and outcome measures. In instances where attentional strategies emerged as more efficacious, greater lengths of time existed between stressor and outcome measure. Mullen and Suls (1982) reasoned that avoidant strategies may be more effective in the short-run by providing immediate relief from the stressor while attentional strategies produce greater long-term effects by providing the information necessary to facilitate more permanent adaptation. To test these predictions, the authors conducted a meta-analysis of 26 coping studies comparing the effects of attention and rejection (i.e. avoidance) strategies on physical adaptation. Their results supported the hypothesized relationship between strategy and time.

Extending these findings of physical adaptation, Suls and Fletcher (1985) compared the efficacy of avoidant and nonavoidant coping strategies on psychological adaptation. In a series of meta-analyses the authors again examined adaptational outcome in studies comparing nonavoidance (attentional) and avoidant strategies. Their findings supported the main hypothesis that avoidance was associated with more positive psychological adaptation in the short-run while attention was associated with greater long-term gains. They concluded that overall, avoidance is a useful strategy soon after a stressor begins (3 days) while attentional tactics are more beneficial for stressors of longer duration (2 weeks to 6 months) on indices of physical and psychological adaptation.

Purpose of Study

The present study was an attempt to further test the above hypothesis by assessing the relationship between coping strategy and adaptational outcome. Previous studies have been largely restricted to examining individuals in either a chronic or an acute health crisis focusing on a single point in time. This study served to provide a direct comparison of coping effects at two points in time by assessing the impact of attention and avoidance strategies on adjustment to both long-term and short-term pain. Findings from recent studies support the direct comparison of these two groups. For example, Zarkowska and Phillips (1986) examined subjective and behavioral dimensions of adjust-

ment in chronic and acute back pain patients. They found no significant differences in either pain behavior or pain intensity ratings between the two groups suggesting a similarity in pain experience and expression across the two conditions.

A second purpose of the study was to evaluate coping responses to similar stressful events. Meta-analytic studies have examined adaptational outcome for stressors of varying durations. Such comparisons however, have contrasted the outcomes of qualitatively different nociceptive stimuli. Typically, short-term studies have examined adaptational outcome to discrete stimuli such as shock, noxious medical procedures and cold pressor tests (e.g. Averill & Rosenn, 1972; Mills & Krantz, 1979). In contrast, long-term studies have focused on more protracted events such as intractable pain or chronic illnesses (e.g. Cohen & Lazarus, 1973; Felton & Revenson, 1984), conditions which often have many exacerbations and remissions. The meaning this situation holds for a person is clearly different than that of an individual awaiting a time-limited noxious event. The realization of an ongoing physical disability may affect the persons motivation, expectations and emotional state. One's choice and effort to employ coping strategies could reasonably be expected to be effected by these differences.

Differences in pain stimuli are evident even within specific subcategories of pain research. For example, in laboratory studies (short-term pain) the lack of comparability of various pain stimuli regarding intensi-

ty, duration and subjective appraisal produce significant differences in the subject's experience of pain. In studies of clinical pain, subjects with diverse pain syndromes have at times been treated as a homogenous population (e.g. Rybstein-Blinchik, 1979). This has occurred despite the probability that various aspects of adaptation (i.e. activity level, psychological adjustment, pain level) could be expected to vary across pain subpopulations as a function of pain intensity, location and duration. Such differences may produce significant differences in outcome measures contributing to a lack of clarity regarding the effects of coping on adaptation to pain.

In an attempt to control for some of these methodological difficulties, the present study examined the impact of coping strategies at two points in time for comparable phenomena using standard outcome measures. This strategy allows for a direct comparison of coping effects on adjustment at two stages of pain (acute and chronic) within a single category of clinical pain (i.e. benign intractable).

A third purpose of the study was to evaluate adaptation employing similar outcome measures for two pain populations (i.e. recent onset and chronic). Typically, the dependent measures employed to assess outcome have been qualitatively different among analogue, clinical long-term and short-term pain studies making results comparison problematic. For instance, short-term studies often employ ratings of pain threshold or tolerance while ratings of functional capacity, pain behav-

iors, and psychological indices are frequently obtained in research on chronic pain.

Further, among clinical pain studies there has been a lack of standardization in the definition and measurement of coping efficacy and adaptation. Many studies have used either psychological or physical variables as indices of improvement, particularly studies of short-term pain. The present study employed multidimensional outcome indices including psychological, behavioral and somatic functioning thereby providing a more comprehensive assessment of adaptation for both acute and chronic pain subjects than previously available.

Based on past findings it was predicted that subjects experiencing an acute stressor (4 weeks or less) would show higher levels of psychological, behavioral and somatic adaptation when employing avoidant strategies while those subjects exposed to a chronic stressor (greater than 6 months) would show higher levels of adaptation on the above dimensions with the use of attention based strategies.

Pain

Pain was chosen for investigation in this study for several reasons. First, pain is obviously a major stressor. It may disrupt a range of activities and experiences for the individual suffering from severe pain. In a discussion of the impact of pain on adjustment, Linton, Melin and Gotestam (1984) noted that pain patients may suffer depression, anxie-

ty, social isolation, overuse of analgesics, physical inactivity, sexual dysfunction, sleep and interpersonal disturbances all due to changes brought on by pain. Thus, as do other health stressors studied previously, pain has important psychological, social and somatic implications for the patient. In addition, previous research indicates that individuals use specific coping strategies to deal with clinical pain (e.g. Copp, 1974) and that these strategies appear to be related to indices of adjustment (Rosenstiel & Keefe, 1983).

Pain was also selected due to its ubiquitous presence in the health care system. Chronic pain represents an enormous health problem in the United States today accounting for more than 13 billion health dollars annually (Bonica, 1980). It is estimated that pain affects some 86 million people in this country alone (Roberts, 1981). Despite its prevalence, pain has not been an area of success for traditional medicine and has generally proven to be relatively unamenable to standard medical interventions. Coping however, does appear to effect adjustment and one's experience with pain (Rosenstiel & Keefe, 1983). Thus, the individual's efforts to control or manage their medical condition through coping responses may have a greater impact on adjustment than physician based treatment.

An additional reason for selecting pain as a stressor is its prevalence in previous research on coping strategies and adjustment (e.g. Averill & Rosenn, 1972; Rosenstiel & Keefe, 1983). Both long and

short-term stress studies have frequently focused on pain as an independent variable and the effects of coping with pain on adaptational outcome.

Within the area of pain research, various pain syndromes have been identified and categories of pain developed (International Association for the Study of Pain, 1979). Turk, Meichenbaum and Genest (1983) distinguish several classifications of pain including recurrent (e.g. headaches), progressive (e.g. pain associated with malignancies) and intractable benign (e.g. musculoskeletal pain). The present study focused on intractable benign pain of both recent onset and chronic duration.

REVIEW OF THE LITERATURE

The efficacy of coping responses in adaptation to illness has been an area of ongoing theoretical (e.g. Lazarus 1983; Moos, 1977) and research interest (e.g. Felton & Revenson, 1984). Some theorists have speculated that coping efficacy is dependent on the stage of stress (Coyne & Holroyd, 1983; Lazarus, 1983, Shontz, 1975). This perspective offers a theoretical framework for understanding the equivocal research findings on coping and adaptation.

In a discussion of the role of coping in adaptation to illness, Coyne and Holroyd (1983) note that in the acute stages of stress efforts are best directed toward "minimizing or defensively distorting the event" (i.e. avoidance) while in the later stages "coping efforts directed at altering the situation" (i.e. attention) may be best (p 110).

Lazarus (1983) has also discussed the benefit of using different coping strategies at various stages of stress. He too posits the value of avoidant strategies early on when resources are insufficient to manage the stressor and problem-focused strategies later, after the individual is more able to deal directly with the problem.

Some empirical evidence for the differential effectiveness of avoidance and attentional strategies exists. Most notably, recent meta-analytic

studies have supported a strategy x stage or time interaction effect (Mullen & Suls, 1982; Suls & Fletcher, 1985). Mullen and Suls (1982) reviewed coping studies which compared the effects of attention and rejection (i.e. avoidance) on physical adaptation to a variety of health stressors. Their analysis of 26 studies indicated a temporal x strategy interaction effect. Specifically, they noted that rejection appeared more effective in the short-run while attentional strategies were related to greater long-term gains.

A further test of this hypothesis was made by Suls and Fletcher (1985) who examined the impact of avoidant and non-avoidant (i.e. attentional) strategies on psychological adaptation. The authors included 43 studies that compared coping strategies used in response to a range of health stressors of varying duration including pain, surgery, stressful life events and chronic illness. This investigation produced findings similar to the initial Mullen and Suls (1982) study. In particular, an analysis of main effects showed neither strategy to be superior. Rather, the investigators observed the same interaction effect reported in the earlier meta-analytic study. The authors concluded from the series of analysis that generally, avoidance appears to be the better strategy for short-term stress situations, particularly in the 3 to 14 day period. They speculate that just as posited by Lazarus (1983), resources may be insufficient to cope with the demands of stress in the early stages. They further report that beyond 14 days, attention ap-

pears to be associated with greater adaptation. They suggest that in the later stages of stress the individual may be better able to confront the stressor and develop cognitive or behavioral interventions aimed at ameliorating the situation.

Individual investigations provide further evidence of a strategy x time interaction effect: In a classic study, Wolff, Friedman, Hofer and Mason (1964) examined the relationship between coping and corticosteroid secretion during various stages of stress. They found that certain physiological effects of stress were related to both the stage of stress and the use of avoidance coping among parents of terminally ill children. The authors found that parents who engaged in denial early on showed lower stress ratings as evidenced by reduced corticosteroid levels compared to nondenying parents. In a follow-up study after the child's death, the nondenying (attentional) parents with initially high secretion levels now demonstrated lower ones (Hofer, Wolff, Friedman & Mason, 1972). Based on their cumulative findings the authors speculated that denial was beneficial early on in the crisis but attentional strategies may be more useful in the long run.

Pain studies

Some researchers have attempted to evaluate the effects of coping on adjustment to pain in particular. These studies generally fall into the categories of laboratory, short-term clinical and long-term or chronic

clinical pain research. Taken together, the findings from these areas provide evidence in support of the hypothesized relationship between coping strategy and time or stage of stress.

Laboratory studies.

Much of the information available regarding the effects of coping on adjustment to pain has been drawn from analogue research. Typically, these studies consist of normal subjects who are exposed to a brief painful stimuli. A coping strategy is then introduced and subjects are directed to use this method during pain induction. Outcome measures such as pain tolerance or pain threshold are assessed to determine adaptational capacity. Based on the aforementioned stage theory, one would expect to find avoidant strategies superior to attention in laboratory studies due to the short duration of the stressor. Much of the available research evidence supports this prediction.

Some laboratory studies have directly compared avoidance with attentional techniques. Pennebaker, Skelton, Wogalter and Rodgers (cited in Pennebaker, 1982) had subjects either attend to pain or use avoidance (imagery) in a cold pressor task. They found that subjects using the avoidance strategy had higher pain threshold ratings than those using the attentional strategy.

Similar findings have been reported by other investigators comparing avoidance and attentional coping strategies (e.g. Hackett & Horan, 1980; McCaul & Haugvedt, 1982). For example, McCaul and Haugvedt

(1982) examined the effects of distraction (avoidance) and redefinition (attention) as coping strategies in a cold pressor test. They found that subjects who employed distraction (avoidance) had higher ratings of pain tolerance than did the attentional coping group. Many other researchers have reported positive findings for the differential efficacy of avoidant strategies for laboratory pain (e.g. Ahles, Blanchard & Leventhal, 1983; Epstein, Rosenthal & Szpiler, 1978; Kanfer & Goldfoot, 1966; Pennebaker & Lightner, 1980).

Many multicomponent treatment interventions include both attentional and avoidance techniques. Some component analysis studies have been conducted in laboratory studies providing information on the differential effects of avoidance and attention. For example, Hackett and Horan (1980) examined the relative efficacy of various aspects of stress-inoculation training. The authors divided the treatment package into three components: (1) relaxation training, (2) distraction and (3) self-instruction corresponding to mixed, avoidant and attentional strategies, respectively. The results indicated that the group employing the avoidance strategy (i.e. distraction) showed the highest increase in pain threshold ratings in response to cold pressor stimulation. In contrast, the group using the attentional strategy (i.e. self-instruction) showed no significant improvement on either ratings of pain threshold or pain tolerance. The third group using a mixed strategy (i.e. relaxation) with features of both attention and avoidance, showed moderate

improvement in pain threshold ratings. These results are consistent with the prediction that avoidance is more effective for short-term pain while attentional strategies are ineffective for this type of stress.

Based on such findings some reviewers have concluded that avoidance techniques appear to be superior to attentional strategies under certain conditions (e.g. McCaul & Malott, 1984). For example, McCaul and Malott (1984) conclude in their extensive review of coping with pain that overall, distraction appears to be effective for acute and in particular, laboratory pain.

Other reviewers note that while much evidence is convincing some inconsistent findings regarding strategy effectiveness remain. Turk, Meichenbaum and Genest (1983) have addressed this issue noting that ambiguous findings in specific investigations may be understood by examining the coping strategies employed for comparison of effects. Specifically, most short-term and laboratory studies compare one avoidance strategy (e.g. imagery) with a second form of avoidance (e.g. proofreading) or to a no treatment control group. Thus, the no significant differences conclusion arrived at in some instances may be a function of comparing variations of the same method of pain control (e.g. attention diversion vs. imagery). Under these conditions one could expect that the two strategies would produce similar effects resulting in a conclusion of no significant differences.

Furthermore, Turk et al (1983) point out that in some instances there is a lack of comparability in procedures observed, particularly in laboratory studies of pain. They note for example that instructions to subjects may vary greatly ranging from suggestions that it "is absolutely critical for the success of the study that they tolerate the noxious sensations as long as possible (Knox, 1973) to directions that "this is not to determine how far you can go " (Johnson, 1973). Such instructional differences may produce variable motivation levels effecting outcome measures such as pain tolerance and threshold. Despite some mixed evidence then, it appears that overall the available research data strongly supports the use of avoidant coping strategies for laboratory pain.

Short-term studies.

Studies of coping with short-term or acute clinical stress have also addressed the issue of coping efficacy. Typically, this research focuses on the use of various coping strategies in response to time-limited clinical stressors (e.g. noxious medical procedures, dental work, childbirth, etc.). Many examples exist in the literature demonstrating the utility of avoidance strategies for stress of a short-term clinical nature (e.g. Cohen & Lazarus, 1973; George, Scott, Turner & Gregg, 1980; Hackett, Cassem & Wishnie, 1968; Miller & Mangan, 1983).

For example, Cohen and Lazarus (1973) assessed the effects of coping responses in post-surgical recovery. They found that the use of

avoidance strategies was associated with a greater reduction in anxiety levels and a more rapid recovery from surgery compared to subjects using nonavoidant strategies.

In an effort to extend these findings, Kaloupek, White and Wong (1984) conducted two studies examining the relationship between coping strategies and response to a stressful medical procedure. The authors assessed coping responses used in blood donation, a mildly painful experience. Using the coping strategy categories outlined by Billings and Moos (1981) the authors found that those subjects employing avoidance strategies appeared to be more effective in stress management as evidenced by lower anxiety and distress ratings than subjects relying on non-avoidant cognitive or behavioral strategies. These findings are consistent with the prediction of greater psychological adaptation for subjects using avoidance strategies in response to short-term stress.

In a study of coping with acute pain Rosenstiel (1982) investigated the role of coping strategies in adjustment to surgery. She examined the type of strategy used and its relationship to post-surgical adjustment. The author found that acute pain patients use coping strategies similar to those of chronic pain patients but with differential effects. Specifically, she observed that while catastrophizing, an avoidance technique, was related to poor adjustment for chronic pain patients, it was related to positive adjustment for acute pain patients. The results indicate that there was differential efficacy for an avoidant coping

strategy across the two populations (acute and chronic), a finding similar to that of Mullen and Suls (1982) and Suls and Fletcher (1985).

Chronic pain studies.

Studies examining the effects of coping on adaptation to long-term or chronic conditions support the utility of attentional strategies for a wide range of health stressors including myocardial infarctions (Byrne, 1982; Byrne, Whyte & Butler, 1981), asthma (Staudenmayer, Kinsman, Derks, Spector & Wangard, 1979), cancer (Visintainer & Casey, 1984) and stressful life events (Billings & Moos, 1981).

In a study investigating the relationship between coping and stressful life events, Billings and Moos (1981) identified various categories of coping responses. They assessed subject's use of active cognitive (i.e. redefinition), active behavioral (i.e. taking positive action) and avoidance coping (i.e. denial). The study included 294 families who rated their coping responses and the number of negative stressful events incurred over a one year period. The results indicated that those using active, attentional strategies to a greater extent, and avoidance to a lesser extent showed better adaptation on psychological and physical indices. In discussing these findings, Moos and Billings (1981) proposed that the relationship between coping and outcome may be in part a function of temporal factors. They suggest that while avoidance may serve as an initial tension reduction device, such responses may have poorer long-term consequences particularly in illness conditions where avoidance may postpone necessary medical intervention.

Research on coping with chronic illness has also demonstrated the positive effects of problem-focused, attentional strategies. For example, Visintainer and Casey (1984) examined the use of coping strategies among a group of cancer patients. They reported that those with high levels of distress who used problem-focused coping had lower levels of psychological disturbance, higher activity levels of natural killer cells (an immunological mediator) and a lower rate of relapse nine months post surgery compared to those subjects using non-problem focused coping. In discussing the role of coping in the course of cancer Levy (1985) suggests that the findings from this and other studies provides evidence that commitment and an attempt to exercise control rather than avoidance and passivity play an important role in cancer risk. She notes that among studies on coping with cancer there is a consistent finding that "patients who are characterized as passive have worse cancer outcomes" (p 165).

The findings from pain research also support the use of attentional strategies for adaptation to chronic stress. Unlike short term and laboratory pain research however, few long term studies have directly compared avoidance with attention. More typically, researchers of chronic pain focus on treatment outcome and patient response to multifaceted intervention programs geared toward improving the functional level of this difficult to treat population. This approach makes identifying the specific effects of attention and avoidance difficult. Nevertheless, some

interventions are largely attentional in nature and the findings from these studies provides indirect evidence for the superiority of attentional strategies for chronic pain management.

For example, Turner (1979) compared the effects of a cognitive-behavioral treatment intervention with relaxation and attention control. The cognitive-behavioral treatment consisted of guided imagery, coping self-statements and relaxation. The author found that the group receiving training in coping self-statements (an attentional strategy) showed significantly greater ratings of pain tolerance and higher ratings of functional capacity than did either the relaxation or attention control groups. Further improvements were noted in pain severity ratings, use of analgesic medication and anxiety levels at follow-up one month later for the attentional group.

In a study of coping with chronic pain, Rybstein-Blinchik (1979) examined the efficacy of various cognitive strategies in a group of mixed pain patients. Fourtyfour patients with a mean pain duration of five years were assigned to one of three treatment conditions (reinterpretation, diversion, sensory monitoring) or to an attention placebo control group. The author found that the attention based reinterpretive strategy (replacing the word pain with a new label such as "I feel sharpness or stabbing") was superior to both attention diversion (thinking of an important event in one's life) and sensory monitoring (passive attention) on measures of subjective pain ratings, overt pain behaviors (grimac-

ing, touching painful area, talking about pain, isolation, inactivity and guarded movements) and independent ratings of patient functioning (nursing notes of patient eating, sleeping and medication use patterns). These findings have important implications for the treatment of chronic pain and suggest that not all attention based strategies are equally beneficial. Specific attentional techniques such as reinterpretation which require an active effort may be superior to not only avoidance but to passive attentional strategies as well for adaptation to long-term stress. This may be so because passive attention does not serve to alter either the source of stress or one's reaction to it. Instead, experimental evidence suggests that attention to sensations may be a useful strategy for short-term laboratory pain (e.g. Suls & Fletcher, 1985). Some theorists speculate that for noxious stimuli of brief duration subjects may benefit from a framework that allows them to process pain in an objective, non-threatening manner (Leventhal, 1982). For short-term pain this works by allowing subjects to codify the noxious input in a non-emotional fashion (i.e. attending to objective sensory elements such as feeling in body part, strength and quality of pain stimulus, etc.) thereby reducing distress. Leventhal, Brown, Shacham and Engquist (1979) reported that subjects instructed to process information in this way during a cold pressor test demonstrated lower levels of psychological distress than subjects who attended to the cold and were encouraged to emote about the experience. While sensory monitoring

may be useful in managing short-term stress, it is less valuable as a coping method in long-term conditions where continuous monitoring of unpleasant bodily sensations offers no opportunity to alter or improve the situation. Evidence from learning theory would predict that under these conditions the individual will learn that outcome is independent from their response. The uncontrolable nature of the situation produces a condition of learned helplessness and results in a tendency to adopt a passive mode of response (Seligman, 1975). Such passivity has been associated with poorer outcome for a variety of medical conditions (e.g. Levy, 1985).

In another study investigating the use of attentional cognitive coping strategies for clinical pain, Rybstein-Blinchik and Grzesiak (1979) reported positive outcome with a cognitive-behavioral treatment approach for a group of mixed chronic pain patients. The treatment package included a reinterpretive attentional strategy which encouraged patients to relabel their pain sensations as something other than pain. Once again, the authors noted that the use of an active cognitive coping strategy resulted in significant reductions in posttreatment and follow up ratings of pain intensity and pain behaviors for this group.

Crook et al (1988) investigated the effects of coping strategies on adaptation for two groups of chronic pain sufferers. Using the coping categories outlined by Billings and Moos (1981) they assessed the type of coping used and the impact these strategies had on psychological ad-

aptation (i.e. depression and anxiety ratings). They found that subjects who engaged in dysphoric withdrawal, avoidance behavior and catastrophizing had higher ratings of depression and anxiety than subjects who did not use these methods of coping. They concluded that pain treatment should include efforts to aid patients in identifying and altering such behaviors and attitudes in order to facilitate adjustment.

Other investigators have examined the relationship between coping and adjustment to specific types of pain. Keefe and Dolan (1986) examined preferred coping strategies and adjustment among low back and myofascial pain dysfunction patients. They found that subjects using the avoidance techniques of distraction and hoping/praying did significantly poorer on ratings of functional capacity (daily activity, medication use and pain behaviors) and pain intensity than subjects using these strategies to a lesser degree. The findings suggest that under conditions of long-term back and head pain, avoidant strategies may be associated with poorer ratings of adaptation.

In a study of coping and adaptation to chronic low back pain, Rosenstiel and Keefe (1983) examined the differential effects of coping strategies on psychological and behavioral indices of adjustment. They assessed subject's use of several coping responses and their psychological (depression, anxiety), functional (hours of downtime, pain interference with activities of daily living) and pain intensity ratings. They found that the use of specific types of coping were differentially related

to individual dimensions of adaptation. They noted in particular that high scores on cognitive coping and supression (mixed strategy) were associated with greater functional impairment (hours spent reclining and activities of daily living) while high scores on helplessness (avoidance) were associated with greater emotional impairment (anxiety and depression). Further, those subjects with high scores on distraction and praying (avoidance) demonstrated both higher pain ratings and greater functional impairment than other subjects. The results suggest that for chronic pain, specific types of avoidance may be related to particular facets of adaptation and that distraction and praying may result in poorer adaptation than other avoidance strategies.

Rosenstiel and Keefe (1983) noted that contrary to their expectations, distraction was not positively related to lower ratings of pain, a finding consistent with research on experimental pain (McCaul & Malott, 1984). They suggest that this may be due to temporal differences in experimental (acute) and clinical (chronic) pain arguing that the time-limited nature of experimental pain makes the use of self-control techniques (such as distraction) more effective. They speculate that this may occur because self-control techniques may breakdown over time, a view shared by behavior theorists (e.g. Kanfer & Goldfoot, 1966).

Further, Philips (1987) in a discussion of the role of avoidance in sustaining chronic pain suggests that avoidance behavior serves to reduce the sufferer's sense of control over pain and increases their ex-

pectation of pain. In contrast, by exercising attentional/active strategies the individual with chronic pain has an opportunity to increase their self-efficacy and to gain more realistic outcome expectations (Philips & Jahanshahi, 1985).

In summary, research on coping and adaptation to long-term pain shows that in general attentional based strategies appear to be positively related to measures of adaptation. Beyond this it seems that active attention based coping strategies which aid the patient in reinterpreting their experience of pain may be superior to passive attentional strategies such as sensory monitoring.

Conclusions

Based on the available research, it appears that ample evidence exists to support a hypothesis of differential effectiveness of avoidance and attentional coping strategies. While many studies suggest this interaction effect, some findings have been inconsistent with this view. In order to put these inconsistent findings in perspective it should be noted that studies of clinical pain often rely on combined treatment packages for pain control. Such interventions typically include both attentional and avoidant components (e.g. imaging and redefinition). Few researchers have conducted component analyses of multifaceted treatment programs. This appears to be especially so in research with chronic pain patients who are generally encouraged to use a wide vari-

ety of strategies to manage their pain. Consequently, the specific effects of individual strategies are not always evident in these investigations.

A second source of mixed findings stems from research comparing the effects of coping strategies to no treatment control groups. These studies typically compare the utility of a particular coping strategy to a no treatment control group. The findings in such studies are often that of no significant difference. However, as Turk et al (1983) point out, control subjects may be spontaneously using their own strategies which may account for the no difference findings. In addition, many studies do not report duration of pain. Conclusions about strategy x time interaction effects cannot be determined without knowing the length of the stressor.

Despite these difficulties, it does appear that consistent with the findings in meta-analytic research, there is evidence of differential effectiveness for coping strategies over time. The most direct association between strategy and time is evident in laboratory research which fairly consistently points to the superiority of avoidance techniques (McCaul & Malott, 1984). Studies of short-term clinical pain in which strategies are operationalized and outcome data obtained in 14 days or less of stress onset also support the utility of avoidance (Suls & Fletcher, 1985).

Finally, the available evidence from long-term chronic health stressors clearly shows a strong trend favoring the use of active, attentional strategies (e.g. Billings & Moos, 1981, etc).

METHODS

The study employed survey methodology. A 2 (Recent Onset and Chronic pain) x 2 (Attentional and Avoidant coping) factorial design with 15 subjects in each cell was used.

Subjects

Participants consisted of 60 subjects from the Pain Clinic at the University of Chicago Medical Center and Sports Medicine of Chicago. The University of Chicago Pain Clinic is a multidisciplinary clinic with the departments of neurology, psychiatry, psychology and physical therapy providing treatment to patients as needed. This clinic is part of the services offered by a major medical center. Sports Medicine of Chicago is also a multidisciplinary treatment facility with representatives from physiatry, psychology and physical therapy involved in patient treatment. This facility offers services to an outpatient population and is not part of a hospital system.

Participants were nonhospitalized adults experiencing either a chronic (over 6 months duration) or acute (4 weeks or less) pain episode. Each person was informed that the project was an investigation into the role of coping and adjustment to pain. All subjects were told that their

involvement would require completion of the assessment packet one time only and that no individual benefit or reward would be forthcoming as a result of their participation. Each person was then asked to sign a consent form (see Appendix A) indicating their willingness to participate and to complete the questionnaires. In order to clarify the nature of the relationship between coping x duration on adjustment 60 subjects from an initial pool of 140 were drawn thereby producing extreme groups for data analysis.

Inclusion was based on subject's meeting the following criteria:

(1) Over 18 years of age

(2) Have persistent pain as a current presenting complaint as a result of an injury

(3) No pending psychological or pharmacological treatment for anxiety, depression or pain management

(4) Have no other major illness or disorder at the present time

The International Association for the Study of Pain (IASP) has defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage" (1979, p. 250). In addition, a classification model for pain syndromes has been identified (Turk et al, 1983). The present study focused on the category of intractable benign pain. Based on the above, the following criteria for a diagnosis of clinical pain was made:

(1) The presence of a discernable pathological process confirmed by physical findings referable to the patient's pain complaint

and diagnosed by a clinic physician

(2) A subjective experience of persistent pain

(3) An identifiable external trauma marking the onset of pain

Once enlisted, subjects were labeled either Chronic or Recent Onset pain patients depending on the duration of their complaint. Those subjects with persistent pain complaints of six months or more were included in the long-term Chronic condition while those with pain of less than four weeks duration formed the Recent Onset condition.

The subjects were 24 male and 36 female pain patients who volunteered to participate in the study. The mean age was 39.6 years with a range of from 18 to 70 years (Recent Onset=37.8, Chronic=41.5). Other demographic variables were distributed as follows: Occupation = 1.7% unskilled labor, 13.3% skilled labor, 13.3% clerical, 20% managerial, 15% professional and 25% other (e.g. housewife, student, self-employed); Marital status = 56.7% married, 25% single, 6.7% divorced and 6.7% widowed. Of the sample, 37 subjects had undergone some type of surgery with a range of from 1 to 14 surgeries (Recent Onset = 1.2, Chronic = 3). The mean income range was $20,000 to 30,000 with subjects reporting incomes of from less than $10,000 to over $50,000 per year. Education ranged from less than high school (10%) to graduate training (1.7%) with the modal amount of education 12 years.

Measures

Biographical data.

A two page demographic information sheet was included in the assessment packet. Subjects were asked to indicate sex, age, prior surgeries, pharmaceuticals presently used, pending compensation litigation and disability status resulting from their pain condition.

Coping.

Coping strategy was assessed by responses on the Coping Scale constructed by Billings and Moos (1981). This instrument consists of 19 items identified as active-cognitive, active- behavioral and avoidance strategies. Of these items, 12 are described as attentional and 7 as avoidance responses by Billings and Moos (1981). The present study followed the conceptualization of Rosenstiel and Keefe (1983) however, who categorize hoping/praying as an avoidant strategy rather than an active-cognitive response. The Coping Scale thus consisted of 11 attentional and 8 avoidance responses.

Respondents were asked to state how often they used each of the named strategies in response to their pain in order to obtain a situation specific measure (e.g. Talked with a professional about the situation, Try to reduce tension by smoking, Try to find out more about the situation, etc.). Responses were rated on a 5 point Likert scale ranging from 1 - never to 5 - most of the time (adapted from Felton, Revenson

& Hinrichsen, 1984). Each strategy was summed and divided by the number of items pertaining to that strategy (11 attentional, 8 avoidant). The resulting percentage reflected the frequency the subject used each of the two types of strategies. Individuals were classified as primarily Attentional or Avoidant responders based on the strategy type employed most frequently in response to pain. Internal consistency testing on the dimensions of Avoidance and Attention for this measure provided reliability coefficients of .51 and .76, respectively using Chronbach's Alpha.

Dependent Measures

To assess the impact of coping on adjustment it has been suggested that researchers employ multiple outcome measures including indices of psychological, behavioral and somatic functioning (Watson & Kendall, 1983). Psychological adaptation implies maintaining a positive emotional balance despite the limits imposed by an illness. Previous research has found negative affect to be related to coping strategy employed (Felton et al, 1984). Behavioral functioning suggests that the individual is able to carry out some activities of daily living and maintain a satisfactory level of social interaction. Past research has demonstrated that activity level is related to coping strategy (Rosenstiel & Keefe, 1983). Somatic adjustment relates to the patient's ability to experience bodily sensations without undue or excessive psychological distress. Somatiza-

tion has been previously found to be related to functional capacity, one measure of adjustment (i.e. headaches, pains in lower back, numbness or tingling in parts of the body, etc.) (Rosenstiel & Keefe, 1983). Coping effectiveness therefore was evaluated by examining indices of psychological adjustment (Anxiety and Depression), behavioral functioning (Activity Level) and somatic adjustment (Somatization and Pain Severity).

Depression and Anxiety

Psychological functioning was assessed with the Symptom Check List 90 Revised (SCL-90R, Derogatis, 1977). The SCL-90R is a 90 item questionnaire for assessing psychological and somatic symptoms. It has been suggested for use with medical populations (Derogatis, 1977) and has been previously employed as a measure of adjustment for chronic pain patients (Keefe & Dolan, 1986). Each item is rated on a 5 point scale from "not at all" to "extremely". The instrument yields 9 symptom dimensions (Somatization, Obsessive-Compulsiveness, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism). Based on previous research, two of these subscales, Depression and Anxiety, were included as measures of psychological adjustment. Internal consistency coefficients for scales has been reported ranging from .77 to .90 and one week test-retest reliability coefficients of from .78 to .90 (Derogatis, 1977).

Somatization

Somatic adjustment was assessed by subject ratings on the Somatization Scale of the SCL 90R. This scale was designed to evaluate distress arising from bodily dysfunction (Derogatis, 1977). The Somatization Scale has previously been found to relate to coping strategy outcome with pain patients (Keefe & Dolan, 1986).

Pain Severity

The West Haven Yale Multidimensional Pain Inventory (WHYMPI, Kerns, Turk & Rudy, 1985) was developed to provide a multidimensional assessment of pain. It contains three sections two of which were used in the present study, Pain Severity and Activity Level. The Pain Severity Scale consists of 28 items that produce five subscales (Interference, Pain Severity, Self Control, Negative Mood and Social Support). The Pain Severity subscale assesses the patient's present experience of pain severity and suffering (Kerns et al, 1985). Subjects are asked to rate items on a 6 point Likert scale including the severity of pain during the past week, amount of suffering experienced because of the pain and their present pain level. Internal consistency coefficients for WHYMPI Pain Severity scales have been reported ranging from .72 to .90 and test-retest reliability ratings from .68 to .86 (Kerns et al, 1985).

Activity Level

Functional capacity was assessed by using the Activity Scale of the WHYMPI. The Activity Scale is a 30 item checklist listing common domestic, household, social and recreational activities (Activities Away From Home, Household Chores, Outdoor Work and Social Activity). Subjects indicate how often they engage in each activity on a 6 point Likert scale. These scales have internal consistencies ranging from .70 to .86 with test retest reliability coefficients from .83 to .91 (Kerns et al, 1985)

Procedure

Those subjects who met inclusion criteria were asked to participate in the study as they arrived for their regular clinic visit. Potential participants were approached by the experimenter at the Pain Clinic at the University of Chicago Medical Center and by the intake clinic coordinator at Sports Medicine of Chicago. All subjects were given identical information as to the nature and purpose of the study which was read to each potential volunteer (see Appendix B). Subjects agreeing to participate were then given the assessment materials and asked to fill them out. All completed materials were placed in an envelope provided to each person and left in a predesignated area of the clinic for later collection. Subjects were informed that once the study was completed, a brief summary of the findings and recommendations would be sent to them by the primary investigator.

Once the data were collected, subjects were divided into two groups depending on the duration of their pain complaint. Those with pain of less than four weeks were labeled Recent Onset subjects while individuals with pain of greater than six months were included in the Chronic pain group. Based on the responses to the Coping Scale (Billings & Moos, 1981), participants within each condition (Chronic or Recent Onset pain) were classified as primarily Attentional or primarily Avoidant copers. In order to clarify the relationship between coping and adjustment, extreme groups were drawn from each condition. This was accomplished by rank ordering subjects on the basis of coping scores within each group (Chronic and Recent Onset) based on the difference between their Attentional and Avoidant coping score. Thus, within the Attentional category, the subject with the greatest difference score between Attentional and Avoidance coping was ranked first while the subject with the smallest difference between these scores was ranked last. This was done for both Attentional and Avoidant coping for the Recent Onset and the Chronic groups. From a pool of 140 (Recent Onset=70, Chronic=70) the 15 most Avoidant and the 15 most Attentional subjects were used from each category for data analysis (n=60).

RESULTS

Separate t tests were conducted on the demographic variables of age, income, education and number of prior surgeries) in order to determine if these variables were differentially distributed between Chronic and Recent Onset patients. The results indicated that the groups differed significantly on one variable. Chronic pain patients reported more surgeries than did Recent Onset patients (RO=1.2, C=3) t (60)=6.38, p <.001). Chi square tests of independence conducted on sex, marital status and occupational status showed no significant differences for any of these variables for the the two groups.

All subjects reported using both attentional and avoidance coping strategies. Within the Attentional category, subjects used attentional coping from 58 to 91% of the time ($\overline{X}$ = 79%; SD = 7.63). For the Avoidance category of coping, subjects employed avoidance techniques from 53 to 91% of the time ($\overline{X}$ = 70%; SD = 8.87).

The following predictions regarding the dependent measures of Anxiety, Depression, Activity Level, Somatization and Pain Severity were made: Holding coping style constant, Chronic and Recent Onset patients would report similar levels of these measures. Hence, no main effects for duration were predicted.

Holding duration of pain constant, Attentional and Avoidant strategy patients would report similar levels of Anxiety, Depression, Activity Level, Somatization and Pain Severity. Hence, no main effects for coping style were predicted.

Patients in the Chronic condition were expected to demonstrate greater positive adaptation when they used Attentional rather than Avoidant coping strategies. In other words, they were predicted to report being less depressed and anxious, have fewer somatic complaints, a higher level of activity and show lower pain severity ratings. On the other hand, Recent Onset subjects were predicted to demonstrate greater positive adaptation when they used Avoidant rather than Attentional coping. Hence, an interaction between coping style and pain duration was expected for each of the five dependent measures.

In order to test these predictions, a multivariate analysis of covariance (MANCOVA) was performed on the five outcome measures (Depression, Anxiety, Somatization, Activity Level and Pain Severity). Previous researchers have found history variables of disability status (i.e. litigation) and number of prior surgeries to be related to adaptational outcome (Rosenstiel & Keefe, 1983). These variables were used as covariates in the analyses.

Coping

The results of the MANCOVA test indicated that there was no significant overall effect for coping style F (8,46)=1.33, p =.26. An inspection of the univariate analyses also indicated the same pattern of nonsignificant differences for each of the dependent measures.

Duration

As with coping the results of the MANCOVA test indicated that there was no significant overall effect for duration F (8,46)=1.19, p =.33. An inspection of the univariate analyses also indicated the same pattern of nonsignificant differences for each of the dependent measures.

Coping x Duration

It was hypothesized that Attentional coping would have a greater positive impact on adjustment over the long run while Avoidant coping would produce greater short term gains. The results of the MANCOVA supported this prediction. Table 1 shows the interaction effects of coping by duration on the various outcome measures. In particular, significant interaction effects were noted on measures of Depression F =(1,53)=26.4, p =<.001, Anxiety F (1,53)=7.48, p <.01 and Social Activity F (1,53)=4.30, p =<.05.

TABLE 1

Means and Standard Deviations of Dependent Measures For Coping by Duration

	Recent Onset		Chronic			
	Attention	Avoidance	Attention	Avoidance	F	P
Depression	67.9	58.4	57.9	63.8	26.4	.000**
Anxiety	59.4	51.9	53.1	57.3	7.48	.008**
Somatization	62.7	60.7	56.3	69.2	3.59	.064
Pain Severity	3.2	3.5	3.4	4.3	.05	.81
Activity Subscales:						
Away Fr Home	2.3	2.6	3.0	3.0	2.65	.109
Household	3.2	4.0	3.7	3.4	.89	.34
Outdoorwk	.8	1.9	.9	.8	3.35	.073
Socactivity	2.0	2.5	2.4	1.4	4.30	.043*

*$p<.05$ **$p<.01$

All df=1,53

These results indicate that the Chronic subjects who employed primarily Attentional coping showed lower Depression and Anxiety ratings

and higher levels of Social Activity compared to Chronic subjects who predominantly relied on Avoidant coping, as predicted. Further, the Avoidant copers of the Recent Onset pain group showed a similar pattern of adjustment with lower Depression and Anxiety ratings and higher levels of Social Activity compared to Attentional Recent Onset patients, a finding consistent with the main hypotheses of the study. These relationships are presented in Figures 1 through 4.

Psychological Adjustment

Depression and Anxiety.

Figures 1 and 2 display mean Anxiety and Depression ratings on the SCL 90R for each of the 4 conditions. As can be seen, the Depression subscale shows lower average ratings for the Chronic-Attentional coping group and the Recent Onset-Avoidant group as was predicted. This difference was statistically significant F (1,53)=2.64, p <.01. Also as predicted, the same pattern was displayed on Anxiety ratings for these groups F =(1,53)=7.48, p <.01.

Somatic Adjustment

Somatization.

Figure 3 shows mean Somatization ratings from the SCL 90R. As with Anxiety and Depression, a trend was found showing lower Somati-

zation ratings for Chronic-Attentional and Recent Onset-Avoidant subjects. While this did not reach a level of significance $\underline{F}$ (1,53)=3.59, $\underline{p}$ =<.06 it was in the direction of the stated hypothesis.

Pain Severity.

No differential effects for coping by duration were found on ratings of Pain Severity. It was expected that a differential pattern would emerge for Pain Severity ratings showing higher scores for the Recent Onset- Attentional and Chronic-Avoidant groups. Mean Pain Severity ratings however, indicated slightly higher pain scores for subjects employing primarily Avoidant coping regardless of the duration of their pain. This did not reach a level of significance $\underline{F}$ (1,58)=2.66, $\underline{p}$ <.10.

Behavioral Adjustment

Activity Level.

Figure 4 shows degree of functional capacity reflected by Activity Level ratings. As noted, the WHYMPI Activity Scale is comprised of four subscales (Activity Away From Home, Household Chores, Outdoor Work and Social Activity). Statistically significant differences were observed on one of the subscales only F (1,53)=4.30, p <.05. On ratings of Social Activity the Chronic-Attentional and Recent Onset-Avoidant subjects reported higher levels of Social Activity than did Chronic-Avoidant or Recent Onset-Attentional subjects as predicted. Subject ratings on Household Chores F (1,53)=6.98, p =<.01 and Outdoor Work F (1,58)=13.3, p =<.001 were strongly correlated with the gender of the respondent indicating that subject sex rather than coping style or pain duration was a better predictor for engaging in specific tasks (e.g. car repair, meal preparation, etc.).

Considered overall, the results indicate that subjects showed differential adjustment on both psychological and behavioral indices as a function of the temporal relationship between coping strategy and pain duration. This finding supported the predicted interaction effect of strategy x time.

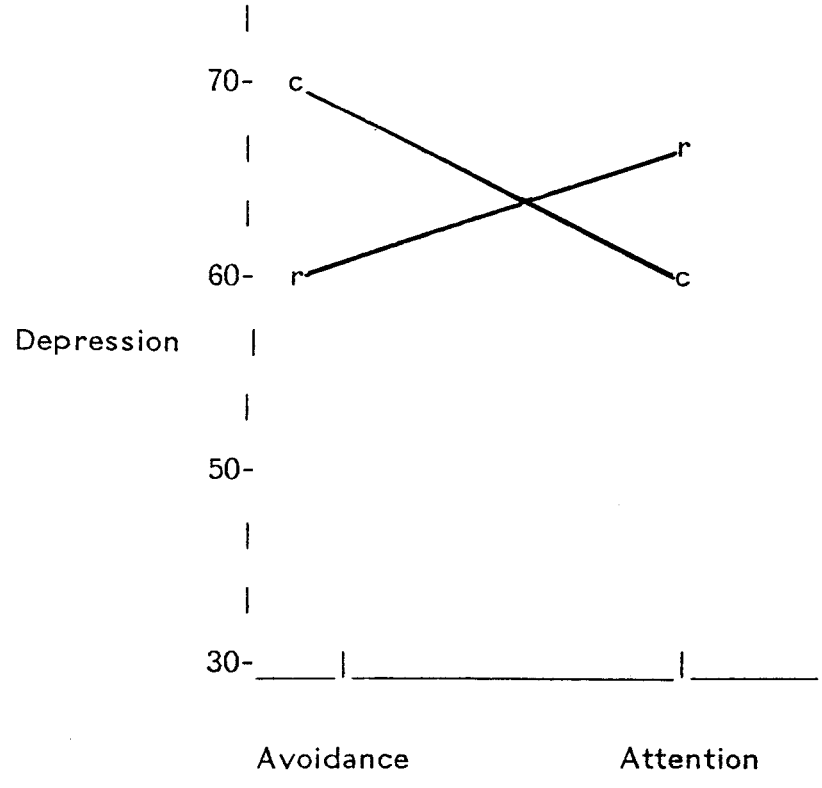

Figure 1: Mean SCL 90R Depression ratings for Coping x Duration

*SCL 90R scales use T scores with a mean of 50 and SD of 10.

c=chronic, r=recent onset

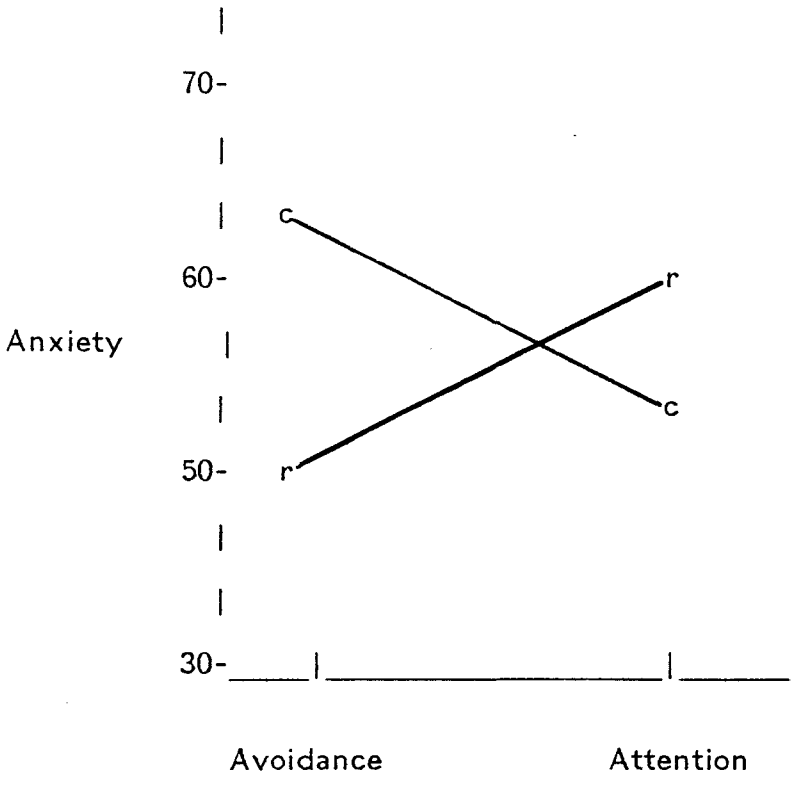

Figure 2: Mean SCL 90R Anxiety ratings for coping by pain duration

*SCL 90R scales use T scores with a mean of 50 and SD of 10.

c=chronic, r=recent onset

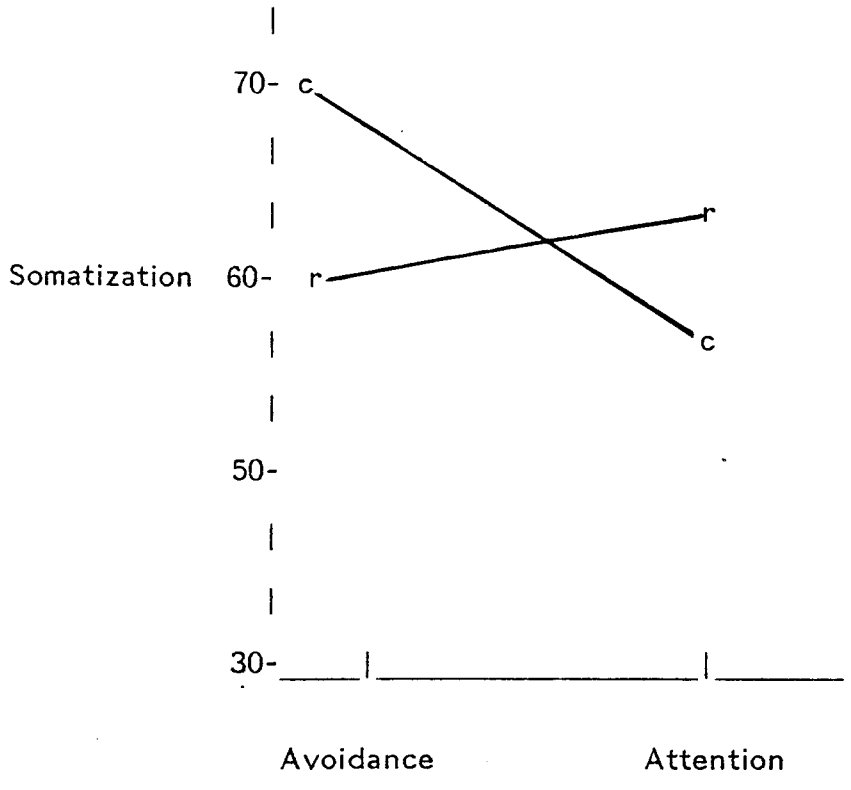

Figure 3: Mean SCL 90R Somatization ratings for coping by pain duration

*SCL 90R scales use T scores with a mean of 50 and SD of 10.

c=chronic, r=recent onset

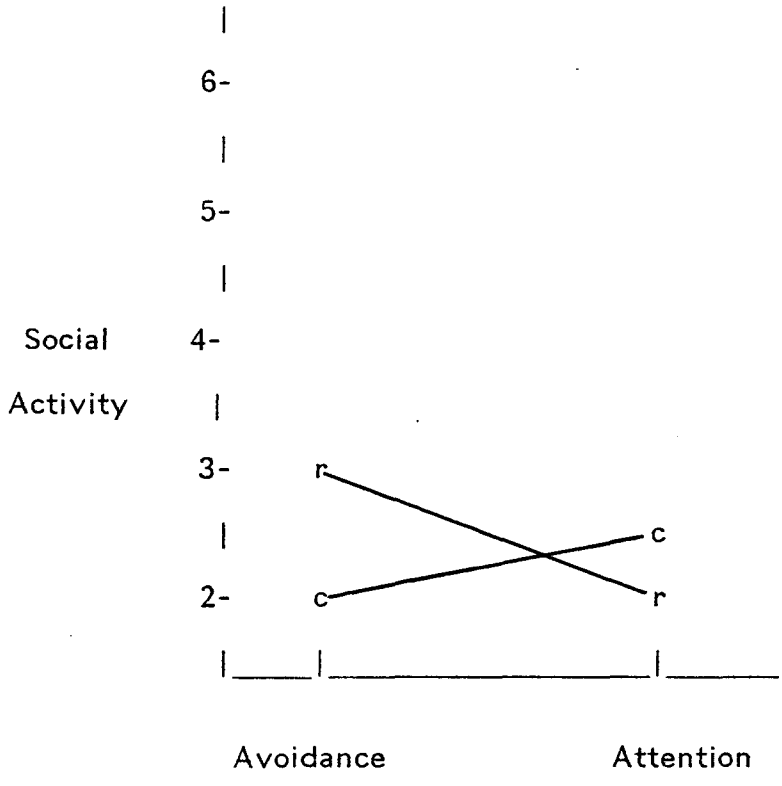

Figure 4: Mean WHYMPI Social Activity ratings for coping by pain duration

*WHYMPI scales are scored from 0 (low magnitude) to 6 (high magnitude of behavior)

c=chronic, r=recent onset

DISCUSSION

The most significant aspect of this study is the finding that a coping by duration interaction influences the process of adaptation. These results are consistent with the observations of Mullen and Suls (1982) and Suls and Fletcher (1985). Neither Attentional nor Avoidant coping were themselves effective in aiding adaptation to pain. When the duration of the pain complaint and the primary coping strategy were matched however, a differential pattern of coping effectiveness emerged.

Consistent with the findings of Wolff et al (1964) and the view of Lazarus (1983) Avoidant coping had greater beneficial effects on adaptation to stress early on. Lazarus (1983) posited that this may be so in the short run because the individual's resources are not yet sufficient enough to cope with the stress of the situation more directly.

In contrast, attentional coping was associated with greater gains over the long term. This may be due to the tendency for self-control strategies such as avoidance to break down over time as suggested by behavior theorists. Kanfer & Goldfoot (1966) argue that self-control techniques are most effective early on with stressors such as pain. A decreased effectiveness occurs over time however, as such tactics are eventually replaced by environmental controls (i.e. reinforcement for

pain behaviors) which then maintain behavior. Further, the amount of effort required to maintain avoidance strategies becomes debilitating to the individual's physical and psychological resources over time.

Suls and Fletcher (1985) suggest that the duration of a stressor may have direct bearing on the efficacy of the strategy employed due to differences in task demands in short term and long term stress. That is, if a stressor is of short duration, is temporary, and has no major negative consequences, distraction or avoidance may be an adequate method of temporarily coping. Stressors of long duration however (particularly health stressors) may be of greater seriousness calling for significant adaptational efforts to meet the demands of the situation. Such circumstances may require active, attentional coping in order to effect the necessary changes and facilitated adjustment. In contrast, continued avoidance may impede the individual's efforts to change negative circumstances and improve the situation.

A second purpose of this study was to compare the impact of coping on adjustment for two clinical populations with varying pain durations. Previous reviews have typically compared clinical (i.e. chronic pain patients) with analogue subjects (i.e. laboratory pain). The extent to which coping effected adaptation for both short and long term clinical pain groups remained unclear. This study served as a direct comparison of these two groups. The findings indicate that for both recent onset and chronic pain, coping has a clear impact on several dimensions of adaptation.

Psychological Adjustment.

For both groups, psychological adaptation (i.e. Depression and Anxiety) was clearly related to coping efforts. Based on these results it would appear that one may be able to improve their psychological adjustment to pain through the use of appropriate coping strategies. This may well be because those who use successful coping experience less stress and consequently less depression and anxiety than those whose coping efforts are less successful in either raising their pain threshold or pain tolerance.

Behavioral Adjustment.

Coping was also related to behavioral adjustment in the form of higher scores on the Social Activity subscale. Both Recent Onset and Chronic patients who successfully managed their pain were significantly more socially active.

Results on the remaining WHYMPI subscales were unexpected however. Of the four measures, only Social Activity was positively related to coping strategy. Subject ratings of Household Chores, Outdoor Work and Activities Away From Home did not support the predicted relationship between coping and duration. A review of these scales show the Household Chores and Outdoor Work subscales contain mainly items reflective of traditional gender roles (e.g. Household Chores: prepare a meal, do laundry; Outdoor Work: work on car, mow the lawn, etc.). It was found that participation in these activities was significantly correlated with gender rather than coping style.

No clear pattern of subject ratings was displayed on the WHYMPI Activities Away From Home subscale. Given the significant interaction effect found between coping and duration for ratings of Social Activity this was somewhat unexpected. An item analysis however, shows that the Activities Away From Home scale is comprised of items that one might engage in alone (e.g. go for a drive, take a ride in the car, take a trip, go out to eat). In contrast, the Social Activity Scale contains items reflective of one's tendency to socialize with others (e.g. play cards or a game, visit friends, visit relatives). It may be that coping and Social Activity effect one another in a way unlike activities done alone such that they amplify each other's effect. That is, not only may adequate coping predict for higher levels of Social Activity, but socializing may improve coping efforts. This may happen in several ways. First, Coping in a social setting may expand one's coping skills repertoire by exposing one to a wider range of strategies and to mastery coping models. Further, the social environment may also provide opportunities for both positive social comparison (i.e. comparing self with others under greater stress or coping poorly) and reinforcement for positive coping. In contrast, poorly adjusted copers displaying low levels of Social Activity miss such opportunities for modeling, reinforcement and positive social comparison.

Somatic Adjustment.

While the overall results of the study generally supported the predictions, findings on the Somatization indices were mixed. Ratings on the SCL 90R Somatization subscale suggest that coping and duration may bear a relationship to somatic adjustment. While not reaching a level of statistical significance, a strong trend was found indicating that those employing successful coping within the context of pain duration had fewer physical complaints.

It was also predicted that Chronic-Avoidant and Recent Onset-Attentional subjects would show the highest ratings on the WHYMPI Pain Severity subscale. The analyses indicated a trend however, for Avoidance coping to be a better predictor of high Pain Severity scores than was coping by duration. It may be that while Avoidant copers experience some relief by distracting their attention from pain, this relief is temporary (i.e. proofreading exercise is completed, autogenic phrases rehearsed, etc.) When attention is refocused on pain or when the distraction technique stops, the subject may then reappraise pain as more severe. This may be a function of the contrast between the temporary relief gained by distraction and the reality of pain when reattended to. As posited by Philips (1987) this may be so because avoidance reduces one's sense of control over pain and increases one's expectation that exposure will lead to greater pain. This method thus leads to an increased sensitivity to pain on subsequent exposures.

Limitations.

One limitation of this study is the focus on either short term or long term pain at a fixed point in time. Longitudinal studies examining the use of coping strategies over time may define more clearly the relationship between coping and adaptation at various stages of stress.

A second limitation is the exclusive focus on benign intractable pain. Future research could include the exploration of coping and duration on other main pain populations (e.g. burn patients, malignant pain, headache pain, phantom pain etc.). It may be of value to determine if the present findings generalize to other pain groups including those with episodic (e.g. headache) or progressive pain (e.g. cancer pain). Given the complexities of adaptive tasks produced by such conditions a different pattern of adjustment might be expected. Factors such as pain intensity, location and severity may impact on several areas of functioning including social, sexual and career roles. The nature of these changes and demands may well effect coping and adaptational requirements. Such factors play a role in defining the nature of the adaptive tasks confronting the pain patient. For example, an adolescent burn patient with facial disfigurement will likely have different concerns than a geriatric oncology patient or a middle aged male unable to work due to severe back pain. Each has the task of managing not only the pain but other tasks as well including the specific treatment interventions, maintaining their emotional balance, dealing with the impact of

their health status on interpersonal relationships, changes in self-concept and preparing for the future (Moos, 1977). Clearly, the specific demands engendered in each of these categories will vary with both the type of pain and the needs of the individual. The efficacy of coping responses on adaptation would likely vary as a function of the specific requirements of these pain conditions. Subsequent research might examine variations in adaptation and coping as a function of pain type. It is reasonable to expect a differential pattern of coping efficacy to emerge across pain categories due to the unique requirements of each situation.

A further limitation of the present study relates to the use of self-report measures and survey methodology. While self-report captures the individual's experience of pain and coping, this method may miss coping behaviors not specifically addressed in questionnaire form. Further, several weaknesses were noted in the WHYMPI regarding its validity for use with lower SES and urban populations. In particular, the number and type of items were were fairly restricted and appeared to assume a middle class socioeconomic status. For example, many items on the activity subscales referred to activites related to being a homeowner (mow lawn, make a household repair) or an automobile owner (fix the car, wash the car, etc.). As a consequence, subjects who do not own homes or automobiles (such as inner city dwellers)and those who do not engage in these "typical" activities may not report a level of activi-

ty reflective of their true level of functioning. It should be noted that many chronically ill patients may be of a lower SES group due to limited financial resourses from medical expenditures and an inability to work secondary to their health status. Such patients may not have the lifestyle that seems to be assumed on the WHYMPI and may be more accurately assessed by other means.

An additional limitation of the study is its focus on general musculoskeletal pain irrespective of location. As noted previously, the location of pain may have important implications for psychological adjustment. Future research might compare groups with differing pain locations (e.g. head, leg, back, face pain, etc.) to investigate the impact of pain location on adjustment.

Despite these weaknesses in the assessment measure employed, several dimensions of adjustment were assessed in this study thereby expanding the assessment of adjustment to several areas affected by coping. Future studies might include other methods of assessment such as direct observation, physiological and objective somatic indices that do not rely exclusively on patient report.

A major implication of the present findings is that an unqualified recommendation for either attentional or avoidant coping appears unwarranted as noted by Mullen and Suls (1982). Instead, it would seem more efficacious to devise an individualized treatment plan for pain patients based on the longevity of pain and coping style. Further, these

results have important implications for the treatment and rehabilitation of chronic pain patients. For instance, while psychological factors are recognized as important in pain treatment, attention diversion strategies constitute a large portion of current treatment programs. In view of these findings however, chronic patients may benefit more from strategies that deal directly with the pain such as reinterpretive cognitive strategies. As reasoned by Rybstein-Blinchik (1979) ones pain tolerance and pain threshold may be improved by increasing their perception of pain control. Thus, reinterpretive strategies that fosters a perception of control may provide some analgesic benefit. Using a self-control, stress inoculation model, Turk and Meichenbaum (1981) have developed a program for pain management including education as to the meaning of symptoms, instruction in coping strategies and training on how to apply this information as well as self-reinforcement to successfully deal with stress (in this instance pain). This model has received some preliminary research support for use with chronic pain patients (Rybstein-Blinchik, 1979). Additional research examining the utility of this model for various pain populations may provide important treatment outcome information for pain management.

REFERENCE NOTES

Rosenstiel, A.K. (1982). The effect of coping strategies in the relief of pain following a laminectomy procedure. Paper presented at the meeting of the Society of Behavioral Medicine, Chicago, Illinois.

REFERENCES

Ahles, T.A., Blanchard, E.B., & Leventhal, H. (1983). Cognitive control of pain: Attention to the sensory aspects of cold pressor stimulus. Cognitive Therapy and Research, 7, 159-177.

Averill, J.R. & Rosenn, M. (1972) Vigilant and non-vigilant coping strategies and psychophysiological stress reactions during the anticipation of electrical shock. Journal of Personality and Social Psychology, 23, 128-141.

Billings, A.G., & Moos, R.H. (1981) The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4 (2), 139-157.

Bonica, J.J. (1980). Pain research and therapy: Past and current status and future needs. In L. Ng. & J. J. Bonica (Eds.), Pain discomfort and humanitarian care. NY: Elsever.

Byrne, D.G. (1982). Psychological response to illness and outcome after survived myocardial infarction: A long-term follow up. Journal of Psychosomatic Research, 26, 105-112.

Byrne, D.G., Whyte, H.M., & Butler, K.L. (1981). Illness behavior and outcome following survived myocardial infarction: A prospective study. Journal of Psychosomatic Research, 25, 97-107.

Cohen, F., & Lazarus, R.S. (1973). Active coping processes, coping disposition and recovery from surgery. Psychosomatic Medicine, 35, 375-389.

Cohen, F., & Lazarus, R.S. (1979). coping with the stresses of illness, In G.C. Stone, F. Cohen, & N.E. Adler (Eds.), Health psychology: A handbook. San Francisco: Jossey-Bass.

Coyne, J.C., & Holroyd, K. (1982). Stress, coping and illness. A transactional perspective. In T. Millon, C. Green & R. Meagher (Eds.), Handbook of clinical health psychology, (pp. 103-122). NY: Plenum Press.

Copp, L.A. (1974). The spectrum of suffering. American Journal of Nursing, 74, 491-495.

Crook, J., Tunks, E., Kalaher, S. & Roberts, J. (1988). Coping with persistent pain: A comparison of persistent pain sufferers in a specialty pain clinic and in a family practice clinic. Pain, 34, 175-184.

Derogatis, L.R. (1977). SCL-90R Manual, I. Clinical Psychometrics Research, Baltimore, MD.

Epstein, S., Rosenthal, S., & Szpiler, J. (1978). The influence of attention upon anticipatory arousal habituation and reactivity to noxious stimulus. Journal of Research in Personality, 12, 30-40.

Felton, B.J., & Revenson, T.A. (1984). Coping with chronic illness: A study of illness controlability and the influence of coping strategies on psychological adjustment. Journal of Consulting and Clinical Psychology, 52(3), 343-352.

Felton, B.J., Revenson, T.A., & Hinrichsen, G.A. (1984). Stress and coping in the explanation of psychological adjustment among chronically ill adults. Social Science in Medicine, 18 (10), 889-898.

Fernandez, E. (1986). A classification system of cognitive coping strategies for pain. Pain, 26, 141-151.

Folkman, S., & Lazarus, R.S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21, 219-239.

Gentry, W.D. (1975). Preadmission behavior. In W.D. Gentry & R.B. Williams (Eds.), Psychological aspects of myocardial infarction and coronary care St Louis: Mosby Press.

George, J., Scott, D., Turner, S.P., & Gregg, J.M. (1980). The effects of psychological factors and physical trauma on recovery from oral surgery. Journal of Behavioral Medicine, 3, 291-310.

Hackett, T., Cassem, N.H., & Wishnie, H.A. (1968). The coronary care unit: An appraisal of its psychological hazards. New England Journal of Medicine, 279, 1365-1370.

Hackett, G. & Horan, J.J. (1980). Stress inoculation for pain: Whats really going on? Journal of Consulting Psychology, 27, 107-116.

International Association for the Study of Pain Subcommittee on Taxonomy. (1979). Pain terms: A list with definitions and notes on usage, Pain, 6, 249-252.

Hofer, M.A., Wolff, C.T., Friedman, S.B., & Mason, J.W. (1972). A psychoendocrine study of bereavement, Psychosomatic Medicine, 34 (6), 481-491.

Johnson, J.E. (1973). Effects of accurate expectations about sensations on the sensory and distress components of pain. Journal of Personality and Social Psychology, 27, 261-275.

Kaloupek, D.G., White, H., & Wong, M. (1984). Multiple assessment of coping strategies used by volunteer blood donors: Implications for preparatory training. Journal of Behavioral Medicine, 7 (1), 35-61.

Kanfer, F.H., & Goldfoot, D.A. (1966). Self-control and tolerance of noxious stimulation, Psychological Reports, 18, 79-85.

Keefe, F.J., & Dolan, E. (1986). Pain behavior and pain coping strategies in low back pain and myofascial pain dysfunction syndrome patients. Pain, 24, 49-56.

Kerns, R.D., Turk, D.C., & Rudy, T.E. (1985). The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). Pain, 345-356.

Knox, V.J. (1973). Cognitive strategies for coping with pain: Ignoring vs. acknowledging. Dissertation Abstracts International, 34 (5-B), 2308.

Lazarus, R.S. (1966). Psychological stress and the coping process. NY: McGraw Hill.

Lazarus, R.S. (1983). The cost and benefits of denial. In. S. Breznitz (Ed.), Denial of stress, (pp. 1-30). NY: International Universities Press.

Lazarus, R.S., & Folkman, S. (1984). Coping and adaptation. In W.D. Gentry (Ed.), Handbook of behavioral medicine (pp. 282-325). NY: Guilford Press.

Leventhal, H. (1982). The integration of emotion and cognition: A view from the Perceptual Motor Theory of Emotion. In M.S. Clark & S.T. Fiske (Eds.), Affect and cognition (pp. 121-156). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Leventhal, H., Brown, D., Shacham, S., & Engquist, G. (1979). Effect of prepatory information about sensations, threat of pain and attention on cold pressor distress. Journal of Personality and Social Psychology, 37, 688-714.

Levy, S.M. (1985). Behavior and cancer. San Francisco: Jossey-Bass Publishers.

Linton, S.J., Melin, L., & Gotestam, K.G. (1984). Behavior analysis of chronic pain and its management. In M. Hersen, R. Eisler & P.M. Miller (Eds.), Progress in behavior modification, (Vol. 18, pp. 1-42).

McCaul, K.D., & Haugvedt, C. (1882). Attention, distraction and cold-pressor pain. Journal of Personality and Social Psychology, 43, 154-162.

McCaul, K.D., & Malott, J.M. (1984). Distraction and coping with pain. Psychological Bulletin, 95 (3), 516-533.

Miller, S.M., & Mangan, C.E. (1983). Interacting effects of information and coping style in adapting to gynecological stress: Should the doctor tell all? Journal of Personality and Social Psychology, 45, 223-236.

Mills, R.T., & Krantz, D.S. (1979) Information, choice and reactions to stress: A field Experiment in a blood bank with laboratory analogue. Journal of Personality and Social Psychology, 37, 608-620.

Meyerowitz, B.E. (1983). Post-Mastectomy coping strategies and quality of life. Health Psychology, 2, 117-132.

Moos, R.H. (1977). Coping with physical illness. NY: Plenum Press.

Moos, R.H. & Billings, A.G. (1982). Conceptualizing and measuring coping resources and processes. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 212-230). NY: The Free Press.

Moos, R.H., & Tsu, V.D. (1977). The crisis of physical illness: An overview. In R.H. Moos (Ed.). Coping with physical illness (pp. 3-21). NY: Plenum Press.

Mullen, B., & Suls, J. (1982). The effectiveness of attention and rejection as coping styles: A meta-analysis of temporal differences. Journal of Psychosomatic Research, 26, 43-49.

Pearlin, L.I., & Schooler, C. (1978). The structure of coping. Journal of Health and Social Behavior, 19 (2), 2-21.

Pennebaker, J.W. (1982). The psychology of physical symptoms. NY: Springer-Verlag Press.

Pennebaker, J.W., & Lightner, J.M. (1980). Competition of internal and external information in an exercise setting. Journal of Personality and Social Psychology, 39, 165-174.

Philips, H.C. (1987). Avoidance behaviour and its role in sustaining chronic pain. Behaviour Research and Therapy, 25, (4), 273-279.

Philips, C. & Jahanshahi, M. (1985). The effects of persistent pain: The chronic headache sufferer. Pain, 21, 100-110.

Roberts, A.H. (1981). The behavior treatment of pain. In J. Ferguson & C.B. Taylor (Eds.), The comprehensive handbook of behavioral medicine. NY: SP Medical and Scientific Books.

Rosenstiel, A.K., & Keefe, F.J. (1983). The use of coping strategies in chronic low back pain patients: Relationship to patient characteristics and current adjustment. Pain, 17, 33-44.

Roth S.J., & Cohen, L.F. (1986). Approach, avoidance and coping with stress. American Psychologist, 41, 813-819.

Rybstein-Blinchick, E. (1979). Effects of different cognitive strategies in the chronic pain experience. Journal of Behavioral Medicine, 2, 93-102.

Rybstein-Blinchick, E., & Grzesiak, R.C. (1979). Reinterpretive cognitive strategies in chronic pain management. Archives of Physical Medicine and Rehabilitation, 60, 609-612.

Seligman, M.P. (1975). Helplessness: On depression, development and death. San Francisco: Freeman Press.

Shontz, F.C. (1975). The psychological aspects of physical illness and disability. NY: MacMillian Press.

Shontz, F.C. (1982). Adaptation to chronic illness. In T. Millon C. Green & R Meagher (Eds.), Handbook of clinical health psychology, (pp. 153-172). NY: Plenum Press.

Silver, R., & Wortman, C. (1980). Coping with undesireable life events. In J. Garber & M.E.P. Seligman (Eds.), Human helplessness (pp. 279-340). NY: Academic Press.

Suls, J., & Fletcher, B. (1985). The relative efficacy of avoidant and nonavoidant coping strategies: A meta-analysis. Health Psychology, 4 (3), 249-288.

Staudenmayer, H., Kinsman, R.A., Derks, J.F., Spector, S.L., & Wangard, C. (1979). Medical outcome in asthmatic patients: Effects of airway hyperreactivity and symptom focused anxiety. Psychosomatic Medicine, 41, 109-118.

Tunks, E., & Bellissimo, A. (1988). Coping with the coping concept: A brief comment. Pain, 34, 171-174.

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

Turner, J.A. (1979). Evaluation of two behavioral interventions for chronic low back pain. Unpublished doctoral dissertation, University of California at Los Angeles, Los Angeles, California.

Visintainer, M.A., & Casey, R. (1984). Adjustment and outcome in melanoma patients. Paper presented at meeting of the American Psychological Association, Toronto.

Watson, D., & Kendall, P.C. (1983). Methodological issues. In T.G. Burish & L.A. Bradley (Eds.). Coping with chronic disease: Research and application (pp. 39-81). NY: Academic Press.

Wolff, C.T., Friedman, S.B., Hofer, M.A., & Mason, J.W. (1964). The relationship between psychological defenses and mean urinary 17 hydroxycorticosteroids excretion rates, Psychosomatic Medicine, 26, 576-609.

Zarkowska, E., & Philips, H.C. (1986). Recent onset vs. persistent pain: Evidence for a distinction, Pain, 25, 365-372.

APPENDIX A

Appendix A

SUBJECT CONSENT FORM

Consent by Subject for Participation in Research Protocol

Protocol Number: 4956 Patient Name: _____ Research Protocol: Differential Effects of Coping Strategies on Adaptation to Chronic and Recent Onset Pain
Researchers: Paul Camic, Ph.D. and Judith A. Holmes, M.A.

You are being asked to participate in a clinical research study. The doctors at the University of Chicago Medical Center study the nature of disease and attempt to develop improved methods of diagnosis and treatment. This is called clinical research. In order to decide whether or not you should agree to be part of this research study, you should understand enough about its risks and benefits to make an informed judgement. This process is known as informed consent.

This consent form gives detailed information about the research study which the researcher will discuss with you. Once you understand the study, you will be asked to sign this form if you wish to participate. You will have a copy to keep as a record. If you have any questions concerning this research or your rights in connection with the research, contact the researcher(s) listed above or the office of the Clinical Investigation Committee at 702-1472.

I. NATURE AND DURATION OF PROCEDURE:
The purpose of the study is to investigate the relationship between coping strategies and adaptation to pain. Participants will be asked to complete one biographical data sheet and three questionnaires. These can be completed in approximately 30 minutes. All responses will be kept confidential and maintained in a file by the researcher(s).

II. POTENTIAL RISKS AND BENEFITS:
There are no risks involved for participants. Benefits include obtaining information helpful for the assessment and treatment of future pain patients.

III. POSSIBLE ALTERNATIVES:
None Applicable

The substance of the project and procedures associated with it have been fully explained to me and all experimental procedures have been identified. I have had the opportunity to ask questions concerning any and all aspects of the project and any procedures involved. I am aware that I may withdraw my consent at any time and such withdrawal will not restrict my access to health care services normally available to me. I acknowledge that no guarantee or assurance has been given by anyone as to the results to be obtained. Confidentiality of records concerning my involvement in this project will be maintained in an appropriate manner. When required by law, the records of this research may be reviewed on an anonymous basis by applicable governmental agencies.

I understand that in the event of physical injury resulting from this research, The University of Chicago Hospitals will provide me with free emergency care, if such care is necessary. I also understand that if I wish, the Hospital will provide non-emergency care, but the Hospital assumes no responsibility to pay for such care or to provide me with financial compensation.

I, the undersigned, hereby consent to participate as a subject in the above described research project.

Researcher: _____

Subject: _____

Date:_____ Time_____

APPENDIX B

Appendix B

SUBJECT ENLISTMENT REQUEST

The Pain Clinic at the University of Chicago Medical Center and Sports Medicine of Chicago is currently conducting a research project investigating the use of coping strategies and adaptation to pain. For this study we are seeking individuals who are currently experiencing pain due to accident or injury of either less than four weeks or longer than 6 months duration. Should you fit into this category, we would appreciate your involvement and your input. As a participant, you will be asked to complete some materials while you wait for your clinic appointment. The questionnaires will take approximately 30 minutes to complete. Should you be unable to fill them out by the time you are ready to leave, a stamped, addressed envelope will be provided to you for you to mail back later. The assessment packet consists of one biographical data sheet and three questionnaires which will be explained to you should you agree to participate. All of your responses will be treated confidentially and your answers will be available to the primary researcher only. Once the study has been completed, a summary of the findings will be sent to you.

APPROVAL SHEET

The dissertation submitted by Judith Holmes has been read and approved by the following committee:

Dr. Kevin Hartigan, Director
Assistant Professor, Counseling and Educational Psychology,
Loyola University of Chicago

Dr. Steven Brown
Associate Professor, Counseling and Educational Psychology,
Loyola University of Chicago

Dr. Paul Camic
Director, Behavioral Medicine Section,
University of Chicago Medical Center

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

11/15/88
Date

Kevin J. Hartigan
Director's Signature