CORRELATES OF THE SCALES OF A MODIFIED SCREENING VERSION OF THE MULTIDIMENSIONAL PAIN INVENTORY WITH DEPRESSION AND ANXIETY ON A CHRONIC PAIN SAMPLE

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This correlational study investigated the relationship between changes in the psychosocial scales of the MPI Screener Patient Report Card (Clark, 1996) with changes in depression and anxiety with a sample of chronic pain patients who completed a 4-week outpatient interdisciplinary treatment program located in a large regional medical center. Race, gender, and primary pain diagnosis were additional predictors. Data analyzed came from an existing patient outcome database (N = 203).

Five research assumptions were examined using ten separate (five pre and five post-treatment) hierarchical multiple regression analyses. Statistical significance was found in pre and post-treatment analyses with predictors BDI-II (Beck, Steer, & Brown, 1996) and BAI (Beck & Steer, 1993) on criterions Pain Interference, Emotional Distress, and Life Control, and Total Function.

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CHAPTER 1

INTRODUCTION

Physical pain can be defined as an injury signal exhibiting some physical manifestation of actual or potential tissue damage and its noxious sensory experience (IASP, 2007b). Counselors who work with individuals living with chronic pain can find that the clinician may not be very well equipped with brief self-report measures, other than instruments that measure depression and anxiety, to help the counselor, psychologist, or other mental health clinician quickly track psychosocial progress as they work with the patient or client. It is important for the mental health clinician to have on hand brief measures of psychosocial functioning without further subjecting their patients to continual rounds of long and tedious self-report instruments. This study investigated the utility of one such instrument, an unpublished modified screening version of the Multidimensional Pain Inventory (MPI Screener; Kerns, Turk, & Rudy, n.d.) developed by Clark (1996; see Appendix H) and its applicability to interdisciplinary treatment settings.

Physical pain can be quite complex in nature and, when it becomes a chronic condition (whether it is persistent, recurrent, or intractable in nature), is almost inevitably interdependent on some affective response to such pain. Counselors who work with chronic pain patients, whether in the private practice setting, outpatient clinic, or hospital environment, need to understand that the way an individual responds to pain not only depends on the severity of the pain signals, but also how the individual perceives the pain. This investigator, as counselor for the Comprehensive Outpatient Program (COP) at Baylor University Medical Center in Dallas, Texas for the past seven years, has been privileged to work with patients and help them learn

how to reconceptualize their pain and improve the quality of their life not only through physical health conditioning, but through mental health conditioning as well.

As noted by Fernandez, Clark, and Rudick-Davis (1999), negative affect may exacerbate the experience of pain, even if it is not the cause of it. Therefore, the experience of pain is not only of actual physical symptomatology, but how one deals with and manages their pain through coping techniques which may be maladaptive in nature. The authors also state that, when pain becomes a chronic condition, it is not only physical in nature, but also becomes compounded by one's thoughts, beliefs, and attitudes related to the pain experience and one's emotional reaction to the pain which can then precipitate or perpetuate the perception of physical and emotional suffering.

According to the *Merck Manual*, a medical reference text for healthcare professionals and consumers published by Merck & Company, one of the world's largest pharmaceutical companies, pain is the most frequent reason why patients seek medical treatment (Beers & Porter, 2006). Gureje, Von Korff, Simon, and Gater (1998), in a review of survey data collected at 15 primary care clinics, reported that 22% of the respondents reported persistent pain (defined as being consistently present for a minimum of 6 months during the past year). Robbins, Gatchel, Noe, Gajraj, Polatin, Deschner, et al. (2003) estimated that, in the United States, 80% of all office visits per year are related to pain. In a 1995 study conducted by Marketdata Enterprises (as cited in Okifuji, Turk, & Kalauokalani, 1999), over 90 million people in the United States suffer from persistent or recurrent physical pain which is one of the most commonly reported condition in Western cultures. Turk (2001), in a review of research conducted by peers in the field on chronic pain treatment outcomes, reports that more than 60 million Americans suffer from some type of chronic pain, which they state, has a significant and negative impact in their lives.

It has been this investigator's experience working with individuals living with chronic pain, that patients, in a sometimes desperate, but thorough and exhaustive search for symptom relief, spend an enormous amount of time and money on treatment hoping that it will "fix" their pain. Available research estimates that between $1.5 billion to $125 billion is either spent or is lost annually in the United States with regard to the treatment of or the societal impact of pain. Turk (2001) extrapolated from his review of data available that over $1.5 billion is spent yearly on the treatment of chronic pain and "costs billions of dollars in lost productivity, health care expenditures, disability compensation, and tax revenues" (2001, p. 36). Additionally, with regard to utilization of interdisciplinary pain management treatment, Turk estimates that $20 million could be saved in interdisciplinary treatment as compared to conventional modalities. Robbins et al. (2003) reported that, despite the effectiveness of interdisciplinary pain management programs, managed care companies "carve out" important aspects of interdisciplinary care, such as physical therapy. However, they found that this carve out reduced the overall effectiveness of treatment at post-treatment.

Robbins and colleagues (2003) also estimate that pain costs the United States about $70 billion a year not only in medical treatment, but also in days missed at work or changes in work status, disability payments, and litigation costs. In fact, in a collaborated national telephone survey conducted by ABC News, USA Today, and the Stanford University Medical Center (2005), using a random sample of 1,204 adults, 50% of the respondents reported that they had lost their job due to chronic pain and, of those still working, almost 70% reported that pain had impacted their work greatly. In a 2006 national survey conducted by Ortho-McNeil (2008) entitled *Pain in the Workforce*, 46% of the respondents noted that chronic pain either sometimes or very often affected their ability to perform their occupational duties. The National Institutes of

Health (NIH, 1998) raised that monetary estimate even higher and found the average annual cost of chronic pain to be $100 billion annually. This figure accounted for healthcare expenses, lost wages, and lost productivity in the United States due to chronic pain. Additionally, Okifuji et al. (1999) estimate that over $125 billion, including cost of hospitalizations, is spent annually on the treatment of chronic pain. Okifuji and colleagues further state that health care expenditures and indirect costs associated with disability claims and loss of work due to absenteeism resulting from chronic pain costs society greatly as a whole.

Statement of the Problem

It is astonishing to think, as stated in the American Pain Foundation (APF, 2007b) review of reports from the National Centers for Health Statistics (NCHS), the American Diabetes Association, the American Heart Association, and the American Cancer Society, that pain actually affects more people in the United States as compared to diabetes, cancer, and heart disease combined. According to one NCHS (2006) annual report, 1 in 10 Americans reported they have experienced pain lasting more than a year. NCHS (2006) reported that, between 1988 to 1994 and 1999 to 2002, the percentage of adults taking narcotics to reduce pain symptoms rose from 3.2% to 4.2%.

Regardless of the range of dollars spent and lost due to pain, the available literature referenced herein illustrates that chronic pain in the United States is a huge epidemic in desperate need of treatment that is cost-effective and efficacious to the recipient of such care. Interdisciplinary treatment for the management of chronic pain symptoms is very much needed and is demonstrated throughout the following literature review. However, despite the need for interdisciplinary services, and as previously stated, it is important for the mental health clinician to have on hand brief measures of psychosocial functioning without further subjecting their

patients to continual rounds of long and tedious self-report instruments. Particularly as it relates to interdisciplinary treatment settings, this study investigated the utility of one instrument that this investigator believes to be a clinically useful tool working with patients who participate in the COP program.

Goals and Purpose of the Study

From the perspective of this investigator in her work as a counselor at the Center for Pain Management, one thing that is important for mental health clinicians to remember in working with individuals with chronic pain is to help them overcome their fear that increased activity and exercise will cause further injury. When pain is perceived to be something that is too challenging or threatening, the individual will tend to avoid the activities that he or she believes will trigger or exacerbate their pain. Such avoidance may further lead to feelings of suffering and learned helplessness and the individual may begin to view him or herself as disabled or crippled (Asmundson & Norton, 1995; Asmundson, Norton, & Veloso, 1999; Asmundson & Taylor, 1996). Furthermore, Pruitt and Von Korff (2002) suggest that such pain fear-avoidance beliefs lead to individuals living with chronic pain to become more inactive and more disabled. Therefore, it is reasonable for the reader to assume that, because of disuse, inactivity, and extended rest, once the individual initiates any activity that involves movement and mobility, it may produce increased pain and the individual ultimately may get stuck in a pain cycle of extended rest following initiating activity perceived to aggravate his or her pain symptoms.

Through her work with participants of COP at Baylor University Medical Center in Dallas, Texas, this investigator concludes that the patient's psychological state (including pain perception, anxiety, depression, readiness for change, perceived disability, and perceived self-efficacy) is very important in determining their course of recovery. Self-efficacy, a term coined

by Bandura (1977; 1982) in social learning theory, is a concept reinforced repeatedly in all treatment modalities of the COP program. According to Prochaska and Marcus (1994), it involves understanding that one has choice, can expend great effort to reach one's goals, thoughts, the emotional reaction to the particular situation faced, and performance. Furthermore, according to Bandura (1977), "not only can perceived self-efficacy have directive influence on choice of activities and settings, but, through expectations of eventual success, it can affect coping efforts once they are initiated.

Efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. According to Bandura (1977), "the stronger the perceived self-efficacy, the more active the efforts" (p. 194). Therefore, persistence and perseverance are also key ingredients in greater self-efficacy. Furthermore, self-efficacy involves motivation and confidence that they can refrain from engaging in maladaptive behaviors when faced with a variety of perceived life stressors. This investigator has found that, in working as a counselor in the COP program, when patients begin to believe in their ability to cope with illness and disease, especially as it relates to pain, they tend to do better physically and emotionally by the end of the program.

When programs help patients refocus their efforts on increasing internal motivation and confidence while decreasing maladaptive thinking, one's sense of personal control (i.e., self-efficacy) may improve and, consequently, long-term changes may be achieved and maintained. This is further supported by the work of Levin, Lofland, Cassisi, Poreh, and Blonsky (1996) in which patients with higher levels of self-efficacy also had lower levels of pain severity, presented with less pain behavior, had lower levels of emotional distress, worked more hours, and engaged in higher levels of physical activity. In addition, in a sample of headache patients (N

= 329), individuals who endorsed greater self-efficacy beliefs have greater levels of internal locus of control and were more likely to engage in more adaptive coping techniques as compared to headache experiencers with lower levels of self-efficacy. Furthermore, individuals with lower levels of self-efficacy were less likely to engage in more adaptive coping as they lack confidence in being able to manage their headache symptoms (French, Holroyd, Pinell, Malinoscki, O'Donnell, & Hill, 2000).

In a review of outcome data collected with a group of graduates who completed COP at the Center for Pain Management at Baylor University Medical Center in Dallas, Texas (N = 500), the following results were discovered at discharge (Clark, 2008): hours being active increased by 85%, pain intensity decreased by 16%, depression decreased by 49%, and activities of daily living (ADLs) improved by 43%. Because patients are often inundated with assessments they have to complete prior to beginning any type of treatment or therapy program, it is evident that there is a need for brief measures using a biopsychosocial approach which addresses how the individual patient feels physically and emotionally regarding the pain experience, and how he or she has been functioning within their social context related to their pain.

The COP program, whose treatment modalities are rooted in the biopsychosocial wellness model, is an interdisciplinary treatment program where patients referred to the program participate 8 hours a day, 5 days per week, for 4 weeks in group-oriented psychoeducational pain management, physical therapy, occupational therapy, aquatic therapy, and individual pain management counseling and biofeedback. Patients learn while in the program how to reconceptualize their pain and come to understand that pain can just be a part of their life and not all of their life. Furthermore, program participants learn that they can reengage in meaningful life activities.

This study investigated the relationship between changes in the scores for the various scales on the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) with changes in the Beck Depression Inventory—Second Edition (BDI-II; Beck, Steer, & Brown, 1996) and the Beck Anxiety Inventory (BAI; Beck & Steer, 1993) with a group of chronic pain patients who have completed COP. Employing a multiple regression design, demographic variables (gender, race, and primary pain diagnosis) were also considered as predictor variables. The MPI Screener Patient Report Card developed by Clark utilizes the unpublished screening version (MPI Screener; Kerns, Turk, & Rudy, n.d.; as detailed by Rudy to Von Korff, 1992) of Kern, Turk, and Rudy's West-Haven Yale Multidimensional Pain Inventory (MPI; 1985). Construct validity of the scales of the MPI Screener Patient Report Card was investigated to assess the utility of the scales of the instrument which can serve as a quick snap-shot of psychosocial functioning for counselors who work with patients living with chronic pain. Its applicability in this study, however, pertains only to patients who have completed a 4-week intensive interdisciplinary treatment program and may not be generalizable to chronic pain patients who are not participating in interdisciplinary care.

Literature Review

Regardless of types of pain reported, and differences in gender, racial classification, and age, pain can negatively impact one's emotional state and quality of life. Counselors who work with chronic pain patients can appreciate the need for treatment in which patients develop greater self-efficacy in managing their symptoms, as previously described, as they improve physically and mentally. The reader will discover in this review of available research that interdisciplinary treatment, as opposed to more conventional treatment modalities (e.g., medication, procedures,

surgery), can help patients achieve greater self-efficacy, feel better equipped to manage their symptoms, and return to important life activities.

In the experience of this investigator working with patients who participate in the COP program, when patients perceive themselves as being incapable of managing their pain, they tend to report higher levels of pain intensity, report resting much during the day, and are less apt to engage in activities in which they perceive the activity may precipitate or exacerbate their pain. In a study designed to investigate perceived pain helplessness in sample of 94 chronic pain patients participating in a 4-week, 5 days a week interdisciplinary treatment program designed to improve physical and mental health conditioning, Burns, Johnson, Mahoney, Devine, and Pawl (1998) found an inter-relational effect across treatment modalities. Burns et al. discovered a correlational effect between decreases in perceived pain helplessness and reported improvements in pain severity, increased physical activity, and limited hours of rest. Furthermore, the results predicted outcome 3 and 6 months post-treatment. However, due to the interdisciplinary nature of treatment, it could not be shown that any particular individual treatment modality effected change in mental health or physical health conditioning. The interdisciplinary program in the Burns and colleagues' study (1998), which included a combination of physical therapy, occupational therapy, individual and group cognitive behavioral training (CBT), biofeedback, a patient education group about pain, and treatment by a physician, consisted of similar treatment modalities compared to the sample that was investigated in this study.

In the subjective experience of this investigator as a counselor for COP, chronic pain patients frequently report at program admission, in an exhaustive search for symptom relief, feelings of loss of control over their pain and feel helpless in managing their pain symptoms. At program completion, many patients report feeling better not only physically and emotionally, but

also in more control of how they relate to their pain and in more control of their lives. In a study consisting of a 4-week outpatient interdisciplinary treatment with a sample of chronic nonmalignant pain patients (chronicity of at least 6 months; $N = 73$), it was discovered that, at post-treatment, patients' internal locus of control increased (i.e., perceived personal control over pain) and external locus of control (e.g., pain due to chance or caused by the power of others) decreased as compared to pre-treatment (Coughlin, Badura, Fleischer, and Guck, 2000). The *Life Control* scale of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) can also help the counselor and patient quickly gauge changes in the patient's self-report with respect to perceived locus of control.

Types of Pain Commonly Reported

Forty-two percent of the respondents of the NCHS 2006 study reported pain lasting more than 1 year. As for specific experiences of pain, the NCHS study found that low back pain was the most commonly reported at 27%, with severe headaches and migraines following at 15%, neck pain also at 15%, and facial pain at 4%. Furthermore (as noted by APF, 2007b), Edwards, Doleys, Fillingim, and Lowery's 2001 study reported that, for Americans under the age of 45, back pain is the leading cause of disability and more than 26 million Americans between 20 and 64 years old experience recurrent back pain. The ABC News poll (2005) also found that back pain was reported as the most experienced across most demographic groups.

Gender, Racial, and Age Differences

In the NCHS report (2006), more females than males reported being in pain. From a report by the International Association for the Study of Pain (IASP, 2007a), in a review of published pain studies, similar results were found with the incidence of pain being reported by more females than males. Furthermore, the IASP study noted that the female group generally

reported experiencing more persistent pain, pain that is more intense in nature and lasting longer than their male counterparts. Severeijns, Vlaeyen, van den Hout, and Weber (2001) found similar results. According to the IASP study, this may also be due to females having lower pain thresholds and lower tolerance to pain as compared to males. However, an interesting finding reported by Marcus (2001) investigating gender differences in chronic headache sufferers that, although there were no differences between the two groups ($N = 63$ males; $N = 195$ females) with respect to headache symptomatology, intensity, rate of recurrence, and duration, rates of impaired functioning and disability were rated higher in the male group. Forty-six percent of the participants in the male group were more limited in activities of daily living over 3 days per week due to headache compared to 29% of the female group.

In a random telephone survey conducted by Roper Public Affairs & Media (2004) with a sample of 800 adult respondents, 61% females compared to 39% males reported chronic pain. However, there were greater incidences of particular painful conditions reported by both genders according to the IASP (2007a) review. For example, in females, there seemed to be a greater prevalence of fibromyalgia, migraine headaches, arthritis (rheumatoid and osteoarthritis), temporomandibular disorder, and irritable bowel syndrome. In males, there was a greater incidence of coronary artery disease, gout, cluster headaches, ankylosing spondylitis, duodenal ulcer, and pancreatic cancer. In an article written for the January 1993 newsletter of the IASP (as cited in Helme & Gibson, 1999) Berkeley reported similar results with respect to gender differences in chronic painful conditions and reported that older females have greater incidences of rheumatoid arthritis, osteoarthritis, headaches, and fibromyalgia while males have greater incidences of gout, ankylosing spondylitis, and coronary heart disease. The IASP study (2007a)

also found that gender differences in the experience of pain can vary across the lifespan, across cultures, and in non-pharmacological chronic pain treatment as well.

Keogh, McCracken, and Eccleston (2005) found in a sample of graduates of an outpatient interdisciplinary pain management program (33 males, 65 females), males and females showed similar improvements in the reduction of reported pain, emotional distress, decreases in scores reported on the older version of the BDI, decreased medication usage, and decreased hours of rest during the day at completion of the program. However, at 3 months post-treatment, although depression scores on the BDI fell between pre-treatment and post-treatment scores for the male group, only the males showed having maintained the gains they made while attending the program with regard to pain intensity and emotional distress and even showed additional improvements at 3 months for medication usage and hours of rest during the day (5.66 hours at pre-treatment, 3.11 hours at post-treatment, 2.65 hours at the 3-month follow-up). The female group had slightly elevated levels of pain intensity and emotional distress at 3 months as compared to the pre-treatment baseline. BDI scores increased for the female group and, similar to the male group, fell between pre and post-treatment numbers. At the 3-month follow-up, participants from the female group had maintained the reduction in the usage of pain medication but were resting 3.56 hours per day compared to 4.75 hours at pre-treatment and 1.46 hours at post-treatment.

With regard to racial differences, more Caucasian adults than African Americans and Hispanics report being in pain (NCHS, 2006). For African-American and Caucasian females with rheumatoid arthritis (48 African-American and 52 Caucasian), no significant differences in pain intensity or emotional distress was noted (Jordan, Lumley, & Leisen, 1998). However, both groups differed overall socially and with regard to household chores. African American females

were less physically active and coped more by diverting their attention from pain through prayer. Caucasian females coped more by ignoring their pain. As a whole, female participants in both groups who believed more in their ability to control pain tended to report lower levels of pain intensity, reported better emotional health, were more active, and were, thus, more adaptive in their management of pain.

In an earlier study investigating the differences between African Americans and Caucasians seeking treatment for chronic pain (McCracken, Matthews, Tang, & Cuba, 2001), the two groups did not differ with regard to age, educational background, gender, chronicity of pain, location of pain, employment status, history of surgeries, medical diagnosis, medication usage, employment disability status, or litigation status (described only by the authors as being involved in litigation at the time the study was conducted). Health care utilization and levels of depressive symptoms were similar as well for both groups. However, African Americans showed greater difficulty adjusting to pain and were more likely to avoid and fear their pain, reported greater pain severity, had lower levels of physical and psychosocial functioning, and experienced greater levels of overall disability.

Older and younger patients may also have different experiences with regard to the experience of chronic pain. In the Roper (2004) survey, 53% of the chronic pain respondents were 51 years of age or older. According to Helme and Gibson (1999), elderly patients (the authors not stating at what age this begins), often experience chronic joint, leg, and foot pain while younger patients tend to experience more headache and visceral pain. In addition, the authors state that older individuals experience chronic pain more often than younger people (a relatively safe assumption even by the lay reader), but the increase plateaus at the seventh decade.

It was discovered in one study that more physically-impaired patients tended to rate greater pain intensity and pain interference, but that the older chronic pain patients tend to experience less pain interference, felt more in control of their pain, and were less emotionally distressed compared to younger chronic pain patients (Severeijns, Vlaeyen, van den Hout, & Weber, 2001). Similar results were found in a cross-sectional study conducted by with a large sample of 6,147 patients from three regions of the United States who participated in a multidisciplinary treatment program for chronic pain (Wittink, Turk, Carr, Sukiennik, & Rogers, 2004). Wittink and colleagues found that, despite similar levels of pain intensity, older patients (≥60 years of age) reported better mental health conditioning, less fear and avoidance of pain, less use of passive coping strategies, and greater perceptions of pain control compared to their younger counterparts.

It has been demonstrated in the aforementioned review of literature that, not only do male and female chronic pain patients differ in reported rates of primary pain diagnosis, intensity level, and duration of pain, they also seem to exhibit differences in perceived impairment and disability levels. Furthermore there seem to be reported differences in perceptions of pain and coping ability across racial classification and age. Therefore, it is important for the researcher and clinician to consider not only the particular type of pain being treated, but also consider gender, race, and age in the treatment of chronic pain. It is further paramount to consider the individual's psychological status when treating pain. However, age was only considered for demographic purposes in this particular study, which is preliminary in nature in order to investigate the clinical utility of a self-report screening instrument proposed by Kerns, Turk, and Rudy (1985) and referenced in Von Korff (1992).

Impact on the Individual Living with Chronic Pain

It would seem reasonable for the reader to expect that individuals with chronic pain might differ from individuals with acute pain. Individuals who experience acute pain can typically expect the pain to eventually go away either on its own or through medical treatment and that the person can return to previous levels of functioning. However, when pain persists, it can significantly impair quality of life and cause the individual to behave and cope with it in maladaptive ways. According to Clark (2008), the following are characteristics of the chronic pain syndrome: high levels of pain behavior, heavy users of medical attention and medication, inactive, failure to carry out social and vocational roles, acceptance of disability role, high levels of psychological distress, and poor coping skills. Therefore, due to its complex and subjective nature, it is reasonable to expect that the individual who experiences pain may have significant emotional reactions to it (depression, anxiety, anger, feelings of helplessness and hopelessness, guilt, loss of control, etc.) and, ultimately, experience its potential negative consequences (e.g., loss of wages and/or job, relationship conflict with loved ones, leisure activities, etc.).

As discovered by Okifuji et al. (1999), chronic pain not only affects the individual physically, but it affects his or her functioning within the family, emotionally, socially, and vocationally. According to the 2005 ABC News poll, approximately 4 in 10 Americans felt that pain interfered with their emotional status, daily activities, quality of sleep, ability to work, and life satisfaction. The 2006 study by the NCHS also found that adults with low back pain are 3 times more likely to be in fair to poor health, as well as greater than 4 times more likely to have significant emotional distress compared to adults who do not have low back pain.

Patients with chronic headaches (tension and migraine) attending an outpatient headache treatment clinic (N = 180) were found to have significantly higher levels of psychopathology

scores and general social impairment as compared to those with only episodic headaches (Cassidy, Tomkins, Hardiman, & O'Keane, 2003). Furthermore, those with chronic migraines in the sample (N = 140) were shown to be the most impaired and had the greatest number of days missed at work. These findings are further supported by Stewart, Ricci, Chee, Morganstein, and Lipton (2003), in their review of data collected from a telephone survey (N = 28,902), with headaches being the most common pain condition reportedly contributing to loss of productivity in the United States workforce, followed by back pain and arthritis pain. It is interesting to discover from the study that 76.6% of lost productivity accounted for decreased worker performance as opposed to absence from work. Such findings illustrated the fact that not only can chronic pain affect the individual's psyche, it can be significantly physically, socially, and vocationally disabling as well.

In a 2006 survey conducted by International Communications Research for APF via the Internet (APF, 2007a) with chronic pain patients who were currently taking opiates for their pain, more than half of the respondents reported that they felt they had either a modest or no control over reducing their pain symptoms. Almost two-thirds of the sample reported that pain negatively affected their satisfaction in life, and more than three quarters reported symptoms of depression. The 2005 ABC News survey and an Internet survey of 303 chronic pain patients also taking opiate medication (David Michaelson & Company, 2006) found similar results. More specifically, more than half of the respondents (51%) in the David Michaelson & Company survey reported little or no control over their pain, 59% reported a negative impact on their quality of life, 77% reported depression, and 86% reported that it negatively impacted their quality of sleep. In the same survey, 52% reported a negative impact on their relationships with

family and friends, almost 70% reported significant impact on their ability to work, and 50% reported that they had lost their job due to chronic pain.

As previously mentioned, individuals with acute pain tend to differ from individuals who live with chronic pain. In a study by Ackerman and Stevens (1989), with a sample of 110 patients with acute low-back pain (redefined in the study as 1 month or less; $N = 26$) and chronic low-back pain (redefined as 5 years or longer; $N = 52$), acute participants reported significantly more sensory pain and essentially a non-affective response to the pain experience, while chronic participants reported more significant negative affect with regard to depression and state anxiety. These findings further support theories of the neurophysiological basis of acute pain as compared to chronic pain that tends to be more complex in nature (i.e., from a biopsychosocial perspective) and seems to be more resistant to medical interventions such as pain medication, procedures, and surgeries, thereby reinforcing the importance of increasing greater self-efficacy in patients who live with chronic pain. In one study with a sample of chronic low back pain patients ($N = 85$) it was found that those who perceive themselves as being able to cope with pain were found to have less pain severity and less interference in their daily lives (Lin & Ward, 1996).

Such a statement can be further supported by the results from a nationwide random telephone survey conducted by Peter D. Hart Research Associates in 2003 for Research America. Among a sample of 1,004 adult respondents, 76% of respondents reported either experiencing recurrent or chronic pain themselves or having a close family member or friend who had suffered from recurrent or chronic pain within the past year. Sixty-two percent of the respondents who experienced pain themselves reported pain duration of more than a year. Back pain was the leading site of pain with arthritis and joint pain, tension and migraine headaches, knee pain, and shoulder pain following in that order.

In the Roper (2004) national telephone survey, 47% of the respondents reported that their pain was not under control, 51% reported that their pain adversely affected their work productivity, and one-fourth said that it negatively impacted the quality of their relationships with their spouse/partner, children/grandchildren, or close friends. Seventy-eight percent reported that pain prevented them from getting restful sleep, 67% reported that they could not do household chores, and 51% reported that they could not participate in social activities due to pain. As it relates to psychosocial stressors, 68% reported irritability, 66% reported feeling stressed, 52% reported lack of desire or motivation, 46% reported depression as well as anxiety, 35% noted feeling unable to cope with their pain, 33% reported loss of libido, 32% experienced a loss of self-esteem, 32% stated they felt insecure, and 31% reported fear related to their pain.

Depression, Anxiety, Perceived Disability, and the Chronic Pain Experience

One might be able to ask the age old question, "Which comes first, the chicken or the egg?" as it relates to the impact of negative affective states on the pain experience versus whether or not the longer one lives with pain may, in and of itself, lead to more significant emotional distress. Robinson, Gatchel, and Whitfill (2005) ask it in this way, "Which comes first, the pain or psychopathology?" (p. 155). Regardless of which comes first, there is evidence in the literature that suggests some interdependent relationship between negative affect, depression and anxiety in particular, and the chronic pain experience. This investigator, as counselor for the COP program, can subjectively assert this to be often the case with regard to patient reports of severe pain with some negative affective response to their pain. Additionally, individuals with mood and anxiety disorders may present with a negative prognosis in the treatment of their conditions. Robinson and colleagues further stated that, while chronic pain patients who also experience depressive symptoms tend to amplify their pain symptoms and

experience more activity fear-avoidance, they also tend to "benefit less from treatment and engage in more self-blaming behaviors" (p. 154).

Baskin, Lipchik, and Smitherman (2006), in a review of available research investigating chronic headache experiencers (migraine, tension-related, and chronic daily headaches), investigated whether the psychiatric diagnosis is primary or secondary to pain, and implicated the importance of assessing such psychiatric disorders prior to the treatment of pain and educating the patient about the role of psychological and behavioral factors associated with chronic headaches. Furthermore, they suggest that headache sufferers are at higher risk for mood and anxiety disorders as compared to the general population and that psychiatric comorbidity may cause headache patients to be more resistant to treatment unless treated accordingly with more interventional therapies such as psychological treatment (e.g., cognitive-behavioral therapy, relaxation training, etc.) instead of with psychopharmacologic therapies alone.

Poor sleep and anxiety also seem to have a significant role in the impact of pain with sleep disturbance having the strongest association with headache occurrence. Therefore, it is necessary to treat the sleep disturbance concurrently with headache symptoms (Boardman, Thomas, Millson, & Croft, 2005). It is important to note, however, that a majority of the responders included females and people over the age of 65. After the investigators made adjustments for age and gender, they discovered that headache sufferers, along with increased anxiety scores, also had increased depression as compared to non-sufferers in the general population, with headache sufferers being twice as likely as non-sufferers to have depression. Furthermore, headache sufferers reported stress as being a key factor in their headaches.

Duration of pain can also have a significant impact on depression levels. In a study conducted by Averill, Novy, Nelson, and Berry (1996), with a sample of 254 chronic pain

patients, it was found that younger females and older males reported more depression on the older version of BDI as compared to their respective counterparts in the sample and that, unlike prior studies cited by the authors, pain duration was found to be significantly related to depression scores. However, Averill et al. found that, just as prior research had also discovered, there was no significant relationship between depression and self-reported pain intensity, number of surgeries, and number of pain medications.

As it relates to pain duration, once an individual's experience of acute pain or injury persists beyond a reasonable time for healing, the more likely perceived disability and emotional distress also become a part of the experience for the chronic pain sufferer. In a sample of males with low back pain ($N = 78$) who were evaluated 2, 6, and 12 months after the inception of pain, (Epping-Jordan, Wahlgreen, Williams, Pruitt, Slater, Patterson, et al., 1998), it was discovered that, 2 months after onset, long-term prognosis was poor as it relates to the resolution of pain. In addition, Epping-Jordan and colleagues found that disability predicted subsequent depression and, after 6 months post onset, high disability predicted unremitting pain intensity and significant depressive symptoms predicted persistent disability.

In a sample of 211 chronic pain patients (in this study chronicity was defined as being a minimum of 3 months) who participated in a multidisciplinary pain management program, Geisser, Roth, Theisen, Robinson, and Riley (2000) found a significant relationship between depression on the BDI-II (Beck et al., 1996) with perceived disability and negative beliefs about pain. In a separate study, using the earlier version of the BDI with a sample of depressed ($N = 37$; "mildly depressed" responders having a minimum score of 11 on the BDI) and non-depressed ($N = 32$) chronic pain patients at a Veterans Affairs Medical Center with a largely male representation (84% male; 16% female), Haythornthwaite, Sieber, and Kerns (1991) found

greater reports of pain intensity, greater pain interference, and more pain behaviors in the depressed group. Furthermore, they found that the depressed group tended to be younger in age in comparison to the non-depressed group. Interestingly enough, there were no differences found between the two groups in the types of pain experienced, medication usage, or disability status. However, Haythornthwaite and colleagues noted the potential limits of generalizability of their findings as their sample was predominantly male and the patients were being seen at a Veterans Affairs Medical Center. Therefore, the sample is not necessarily representative of the general chronic pain patient population. Despite such limitations, the authors were able to illustrate how depression can impact the pain experience of the patient living with chronic pain.

Fibromyalgia, as noted previously, is a condition reported more commonly in females (IASP, 2007a) in which the individual frequently complains of muscular aching and tenderness, sleep disturbance, and fatigue. Çeliker, Borman, Öktem, Gökçe-Kutsal, and Başgöze (1997) found a significant difference in psychological status in fibromyalgia patients compared to a healthy control group with the fibromyalgia patients reporting a higher mean score ($N = 39$; 13.2 ± 7.5) on the BDI-II (Beck et al., 1996) compared to the control group ($N = 36$; 4.6 ± 4.9). In addition, pain severity correlated with anxiety scores on the Spielberger State and Trait Anxiety Inventory (STAI).

Patients living with chronic pain can experience quite a bit of anxiety when it comes to their pain and, out of fear, avoid activities perceived to cause or exacerbate pain. In a study by Asmundson and Norton (1995) and in Asmundson and Taylor's (1996) follow-up study on chronic low-back pain patients, the authors found that patients with high anxiety sensitivity, which Asmundson and Taylor define as "the fear of anxiety-related bodily sensations arising from beliefs that the sensations have harmful consequences" (1996, p. 577), reported greater

pain-related fear and avoidance of negative consequences related to the pain experience. Avoidance of pain, the authors suggest, is a common behavioral reaction of the chronic pain sufferer and psychological distress and fear of pain are significantly influenced by anxiety sensitivity. Such findings in both studies were independent of pain severity within low and high anxiety sensitivity comparatively. Therefore, the authors postulate that interventions designed to reduce anxiety sensitivity will also reduce pain-related fear and avoidance.

In another similar study with a sample of low back pain patients, all of the pain patients were declared occupationally disabled and 52.6% of them had at least one previous surgery for their pain (Vowles, Zvolensky, Gross, & Sperry, 2004). Pain anxiety scores on the Pain Anxiety Symptoms Scale (PASS) predicted emotional distress, perceived loss of control, and increased pain intensity. Vowles et al. also found that pain escape and avoidance on the PASS predicted pain interference. It is the assumption and experience of this investigator working on a daily basis with chronic pain patients that beliefs and attitudes have some influence on our actions and are, therefore, determinants of physical activity. Furthermore, Asmundson et al. (1999), investigating the role of anxiety sensitivity and fear of pain in recurring headache patients, found similar results in participants with high anxiety sensitivity as well as greater levels of depression.

The results in all of the aforementioned studies support the theory that individuals who live with chronic pain, regardless of the type of pain experienced, and who also experience depression and/or anxiety associated with their pain, tend to retreat from previously enjoyable activities and responsibilities, including work, in order to avoid the expected negative experience of pain, regardless of the severity of pain. This ultimately affects and diminishes the individual's quality of life.

The Role of Catastrophizing on the Chronic Pain Experience

It has been this investigator experience as counselor for the COP program that many patients, upon admission to the program, often talk initially about feeling out of control with their pain. Furthermore, they describe themselves as suffering with their pain, report resting many hours a day, have pulled away from important life activities, view their pain as being awful, and do not feel they have the capacity to learn to cope with their pain. The various scales of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) may help counselors and psychologists alike who work with chronic pain patients in interdisciplinary treatment settings quickly gauge how the patient is relating to their pain differently at treatment outcome. For the individual who catastrophizes about their pain, which can have a snowball effect on an individual's psyche, focusing on and making negative appraisals about one's ability to manage the pain and their ability to deal with it becomes acute as well. Patients with high degrees of pain catastrophizing tend to resort to maladaptive coping strategies and it negatively compounds the individual's perception of physical, social, and occupational disability. In turn, this can lead to extended rest and activity avoidance that may lead further to physical deconditioning and failure to return to work.

Furthermore, pain catastrophizing may lead to additional problems such as increased pain from disuse and inactivity, depression, and other potentially negative complications, consequences, and reactions. In a review of current research on the role of pain catastrophizing, Turner and Aaron (2001) state that catastrophizing beliefs, which relate to anxiety, is marked by the tendency for one to exaggerate the perceived likelihood of a disastrous outcome and its potential negative consequences. In an earlier study by Turner, Jensen, and Romano (2000), patients who initiated treatment in an interdisciplinary pain management program and initially

believed that they had little or no control over their pain, viewed pain as causing further physical injury, viewed themselves as being physically disabled, and had greater depression scores.

In a sample of chronic pain patients participating in a 4-week multidisciplinary pain management program ($N = 90$) (Burns, Kubilus, Bruehl, Harden, & Lofland, 2003), changes in catastrophizing and pain helplessness early in treatment predicted late treatment outcome. Additionally, changes early in treatment for depression predicted changes in activity level late in treatment. Similar findings were found in a replicated study by Burns, Glenn, Bruehl, Harden, and Lofland (2003) with a sample of 65 participants in a 4-week multidisciplinary pain management program. In the follow-up study, investigators found that changes in pain helplessness early in treatment predicted late-treatment decreases in pain and interference. Furthermore, reductions in catastrophizing and pain-related anxiety early in treatment predicted late-treatment improvements in pain severity. Both findings support the importance of managing and treating, at the outset, such symptoms as pain catastrophizing, perceived helplessness, depression, and interference of pain, especially for those patients with significant levels of emotional distress related to their experience of pain.

Sullivan, Lynch, and Clark (2005) also found that pain catastrophizing, especially perceived helplessness, correlated positively with greater ratings of pain and disability. In another review of two studies with inpatient pain management samples for musculoskeletal pain, decreased pain behavior and pain catastrophizing were related to increased activity level in one study (Johansson, Dahl, Jannert, Melin, & Andersson, 1998). In the other study conducted by and referenced in the same journal article by Johansson et al., decreased pain intensity, pain interference, perceived life control, affective distress, and activity level on the MPI (Kerns et al., 1985) were all shown to have improved at post-treatment.

Sullivan, Stanish, Waite, Sullivan, and Tripp (1998) found in a group of patients with cervical spine, shoulder, and lumbar soft-tissue injuries resulting from a work-related or motor vehicle accident, catastrophizing correlated significantly with reported pain levels and perceived occupational disability and patients were more likely to be unemployed. The study suggests that patients with soft-tissues injuries resulting from a work-related or motor vehicle accident are more likely not to return to work due to their catastrophizing beliefs. Furthermore, as levels of catastrophizing, depression, anxiety, and pain increased, perceived levels of functional status in all domains (home, social, recreational, occupational, sexual life, self-care, and life support) of the Pain Disability Index (PDI) increased. This further points to the need for interdisciplinary treatment for chronic pain in order to help patients address maladaptive thinking pattern, develop adaptive living techniques, increase physical strength and conditioning, improve quality of life, work on communication with others and reduce pain behavior, and develop a plan to return to work. In a similar study, Severeijns, Vlaeyen, van den Hout, and Weber (2001) found in their study with chronic pain patients ($N = 211$), despite the type of reported pain (e.g., chronic low back pain, chronic musculoskeletal pain not related to low back pain, and other types of pain syndromes), pain catastrophizing significantly predicted pain intensity, pain interference, perceived life control, and emotional distress.

Acceptance and the Readiness to Adopt Self-Management Techniques

It can be imagined that the acceptance of pain is a difficult notion and decision for the chronic pain patient. However, through acceptance of its presence, while understanding that one has a choice in how they cope with their pain, the individual living with chronic pain can begin to take responsibility for improving his or her quality of their life and move from merely existing to living life despite pain being present. Esteve, Ramírez-Maestre, and López-Martinez (2007)

found in a sample of 117 chronic pain patients that acceptance of pain influenced functional status and functional impairment while catastrophizing beliefs, because of the individual's acute focus on the negative experience of pain, influenced perceived pain intensity and anxiety. They also discovered that, although there was no relationship between acceptance and its influence on pain intensity, catastrophizing did influence reported pain intensity and pain intensity, in turn, had an indirect effect on depression and functional impairment. McCracken (1998), in his study of individuals living with chronic pain ($N = 16$), found individuals who had greater levels of pain acceptance also had lower reported pain intensity, less anxiety and avoidance associated with the pain experience, less depressive symptoms, less physical and psychosocial disability, increased activity during the day, and better work status compared to those with lower levels of pain acceptance. Therefore, when patients take a more active role in management of their pain by becoming an active participant in previously enjoyable activities and daily responsibilities despite pain being present, they become more adaptive. In a way, it is vital in the sense of physical and psychological well-being, for patients to learn how to manage their pain rather than allowing their pain to manage them.

Moss-Morris, Humphrey, Johnson, and Petrie (2007) found that, in their sample of 76 patients who completed a 4-week pain management treatment program, patients reported greater mental health and physical health conditioning with the greatest gains being reported at the end of treatment. Despite a small decrease in treatment gains at their 6-month follow-up, patients reported that they were still functioning considerably better as compared to their pre-treatment baseline. Furthermore, patients reported a significant reduction in pain catastrophizing, negative appraisals of pain, and emotional distress. Again, such positive changes were maintained at 6 months post-treatment. Walsh and Radcliffe (2002) found that, in their survey of low back pain

patients who completed one of eight pain management programs, when patients changed their maladaptive beliefs that the experience of chronic pain is only organic in nature, there was a reduction in reported perceived disability. If a patient can reduce the level of emotional distress associated with the chronic pain experience and his or her associated catastrophizing beliefs, Walsh and Radcliffe suggest that pain is less apt to get in the way of the patient's ability to be social with others and his or her overall sense of well-being.

It has been this investigator experience as counselor for the COP program that, when patients first begin the program, they arrive at various levels of readiness for change. Patients who are not ready and are not interested in interdisciplinary treatment care tend not to have positive treatment outcomes. Those who do, however, tend to report improving physically and mentally. Counselors who work with chronic pain patients may find some patients not ready to expend effort in order to get better physically and emotionally, and therefore, may not be ready to learn more adaptive ways of managing and relating to their pain. Patients who, just as described earlier regarding self-efficacy (Bandura, 1977; 1982; Prochaska & Marcus, 1994) need to understand that they have the choice to either continue to turn to maladaptive coping techniques or they can get better physically and emotionally by expending the effort needed in order to reach their goals.

Prochaska and DiClemente's (1983) transtheoretical model of change first used for smoking cessation, has been well adapted to pain management. The stages of this model include *precontemplation*, *contemplation*, *preparation*, *action*, *maintenance*, and *termination*. Robinson, Gatchel, and Whitfill (2005) described each of the stages in the transtheoretical model and its applicability to the treatment of pain. When patients are in the *precontemplation* stage, they are not at the point of even considering seeking treatment or changing maladaptive coping strategies.

They may even actively resist such changes as suggested by others, especially from family members. In the *contemplation* stage, patients have already begun considering whether or not change may be beneficial to them and are beginning to make decisions to effect change in their lives. In the *preparation* stage, patients have already made the decision to change and have begun taking steps to get ready for it. When patients reach the *action* stage they are already engaged in change behaviors (e.g., physical therapy, biofeedback training, pain management psychotherapy, etc.). Patients who are in the *maintenance* stage, which the authors note is not necessarily the last stage of the transtheoretical model as patients may cycle through the stages again, the patient is engaged in adaptive coping techniques that may help them continue with the changes they have made in treatment.

Using the Pain Stages of Change Questionnaire (PSOCQ) created by Kerns, Rosenberg, Jamison, Caudill, and Haythornthwaite (1997) which adapted Prochaska and DiClemente's transtheoretical model of change first used for smoking cessation, Burns, Glenn, Lofland, Bruehl, and Harden (2005) showed in a sample of chronic pain patients participating in a 4-week multidisciplinary treatment program that individuals in the *action* stage orientation at pre-treatment, had greater late-treatment changes regarding pain severity, interference, and activity level on the MPI (Kerns et al., 1985) compared to *precontemplative* participants who showed no late-treatment improvements.

Although there is a potential for the patient to relapse during any stage, according to Prochaska and Marcus (1994) regarding exercise adherence, individuals in the *action* stage of the model are more at risk for relapse. This may due, in part, to the fact that it is the stage with the greatest number of changes put into effect by the individual and is, therefore, the least stable, yet most productive, of all the stages. However, individuals in the *precontemplative* stage, just as

Robinson, Gatchel, and Whitfill (2005) also report, do not even have the plan or intent of changing any of their maladaptive coping skills in the near future, which Prochaska and Marcus state usually occurs within the following 6 months. The individual being unaware of his or her maladaptive behavior may further complicate one's condition long-term. In addition, they note that either the individual in this stage have no sense of internal motivation and feel he or she is unable to change or improve, as in the case of chronic pain patients, or may be getting social pressure from others to change and therefore resist it, also found to be true for chronic pain patients.

Referencing Kerns et al. (1997), Burns and colleagues (2005) describe *precontemplative* patients as those individuals who hold onto the belief that chronic pain is only a medical condition and that medical professionals should work to relieve their pain. However, *action* stage patients are those individuals who "accept the need to self-manage chronic pain, actively seek new skills and enrich existing ones . . . and have attitudes consistent with the self-management orientation promoted by multidisciplinary pain programs, and so benefit from participation" (p. 322). Therefore change in the patient's behavior seems dependent on their readiness for change to occur. Furthermore, according to Prochaska and Marcus (1994), in a review of a study Prochaska et al. conducted earlier, the costs of changing maladaptive behaviors outweigh the potential benefits of changing if the individual is in the *precontemplative* stage. However, for individuals in the *action* stage, the benefits of adapting healthier behaviors outweigh the cons of changing.

According to Prochaska and Marcus (1994), once it can be determined which stage an individual is in, the "interventionalist" will have a better chance of helping the individual progress to the next stage of the model. Robinson, Gatchel, and Whitfill (2005) also echo this in

their review of the stages of change literature and reemphasize the importance of tailoring treatment to the individual patient. This would certainly seem a necessity in working with patients living with chronic pain, and is supported by the literature referenced throughout this proposal, as patients are often fearful that they may cause themselves further pain and injury if they were to become active. Therefore, because they pull away from loved ones and from previously enjoyable activities, decrease or stop caring for everyday responsibilities, become inactive physically, lose their sense of confidence and perception of control, individuals living with chronic pain may ultimately see themselves as victims of circumstance and find themselves in an existence and suffering mode rather than seeing that they have choice and responsibility for learning how to manage their discomfort without relying solely, as previously mentioned, on some physician to "fix" their pain.

Although the stages of change model was not used for purposes of this study, this investigator can assert that, as a counselor and member of the COP treatment team, treatment team members who actively work together to "intervene" with the patients individually and collectively as a cohort can help them develop more adaptive ways of living, get more involved in a more structured routine, regain greater mobility and strength, and change maladaptive thinking to help them become more active in their own healthcare and take more responsibility for their emotional and physical well-being. This was investigated in this study with regard to changes in self-report measures investigating correlates of the scales (*Pain Intensity*, *Pain Interference*, *Emotional Distress*, *Life Control*, and *Total Function*) reported on the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) to the BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993).

The Need for Multidimensional Treatment

Unfortunately, the biomedical model of pain is still very much in practice in the United States. Such a model still views pain as an injury signal to the body and is the direct result of tissue damage or the potential for tissue damage. It rejects and ignores other factors such as the individual's affective response to pain, and, therefore, does not seek to understand the direct impact on the way the individual comes to view him or herself related to pain and how he or she interacts socially with the world around them. In addition, in Western societies, there is significant over-reliance on prescription medication with the goal to alleviate pain symptoms. In a review by Curatolo and Bogduk (2001) of available literature regarding clinical effectiveness of musculoskeletal analgesics, many of the medications currently prescribed are found to be ineffective and the effects of medications prescribed have been found to have no impact on reducing disability and improving quality of life.

Turk and Monarch (2002) state that, along with the individual's biology, prior experiences, current emotional state, expectations, cognitive appraisals, and sociocultural variables influence the experience and perception of pain. Therefore, it is essential, in order to treat the individual more effectively, to not ignore the biopsychosocial aspects of the pain experience on the part of the pain practitioner. This is where interdisciplinary treatment programs can serve physicians, their patients, third-party payers, employers, loved ones, and society as a whole by helping the individual to improve functioning and return to a better quality of life and be more productive members of their family and society.

Okifuji et al. (1999) stated that there is a significant amount of research that indicates that referrals made to multidisciplinary pain centers (MPCs) are not necessarily representative of chronic pain patients as a whole. This may be due, in part, to skepticism regarding treatment

efficacy and cost-effectiveness by third-party payers and their refusal to reimburse the expense of such interdisciplinary programs. Furthermore, patients may seek other treatment modalities (e.g., alternative medicine techniques such as chiropractic care, herbal remedies, acupuncture, massage, etc.) rather from physicians who specialize in the treatment of pain. Okifuji and colleagues further state that MPCs are "often the treatment of last resort for a very challenging sample of chronic pain patients whose options have been exhausted" (p. 79).

Patients suffering from chronic pain often seek out or are referred to interdisciplinary treatment when other treatment options (pain medication, procedures, and surgeries) have failed to give them relief for which they are hoping. Crook, Tunks, Rideout, and Browne (1986) and Crook, Weir, and Tunks (1989) found that those patients referred to MPCs tend to have work-related injuries, take more opiates for their pain, have undergone more treatments and surgeries, and report higher levels of emotional distress and, therefore, are more complex to treat.

Lynch, Agre, Powers, and Sherman (1996) investigated the difference of graduates (N = 30) and non-graduates (N=34) of a 5-day a week, highly-structured, intensive, 6-week interdisciplinary treatment program. All study participants had chronic non-malignant pain of at least 6 months in duration and were referred initially to the program. In their study, program graduates reported greater self-efficacy with regard to managing their pain symptoms, were more optimistic about the future, had less perceived interference of pain, and used more adaptive coping strategies as compared to non-graduates. In contrast, although pain intensity did not differ from program graduates, non-graduates were more pessimistic about the future and perceived pain as interfering more with their ability to work, mood, relationships with others, and overall enjoyment in life.

In a meta-analysis examining the effectiveness of interdisciplinary pain management programs (N = 3,089), the average pain reduction equaled 37% and patients decreased their usage of pain medication by 63% on average (Flor, Fydrich, & Turk, 1992). In another study, Hubbard, Tracy, Morgan, and McKinney (1996) found, at the end of treatment in an interdisciplinary treatment program, that patients decreased their overall use of medication (including antidepressants, anxiolytics, and pain medication) by 72% and none of the participants were taking opiate medication at the end of treatment. They also discovered that, in addition to a decrease in emotional distress, overall pain intensity improved by 33% upon program completion. On the Personal Concerns and Goals Assessment (PCGA), recreation and social activities increased by 27%, emotional distress and discomfort improved by 31%, anger improved by 31%, perception of general health improved by 34%, home life (e.g., family problems, marital problems, sexual dysfunction) improved by 33%, and acceptance and adjustment to pain improved by 46%. Robbins et al. (2003) found that, in their 1-year follow-up study of participants of an interdisciplinary pain management program, program graduates had better levels of physical and psychosocial functioning, were better able to work, and reduced the overall amount of opiate medication they were taking at program end as compared to program drop-outs. Furthermore, they had greater gains from pre to post-treatment on all variables assessed, maintained those gains at the 1-year follow-up, and sought less medical attention during the year following treatment as compared to the non-completers.

Additional research points to the effectiveness of interdisciplinary treatment for pain management. Dysvik, Vinsnes, and Eikeland (2004) reported pre/post decreases in pain intensity on the 10-point Visual Analog Scale (a standard, simple, and universal self-report measure of pain severity where 0 equals “no pain” and 10 equals “severe pain”) following participation in an

interdisciplinary treatment program. Dysvik and colleagues also found that physical activity had increased significantly and that patients had increased adaptive coping skills and were less avoidant of their pain by the end of the program.

Although behavioral coping strategies (increases in cardiovascular activity, stretching and strengthening exercises, remaining active, practicing relaxation techniques, decreased rest and opiate medication usage) were not associated with improvement in a sample of 94 chronic pain patients participating in an inpatient multidisciplinary program, improvements were found to be influenced by pain-related beliefs and cognitive coping strategies (Jensen, Turner, & Romano, 1994). Flor et al. also found that patients who participated in an interdisciplinary treatment program showed greater overall functioning than 75% of patients who sought either no treatment or other forms of treatment such as more conventional, stand-alone modalities.

As previously noted, Moss-Morris et al. (2007) found that, following completion of a 4-week interdisciplinary treatment program, patients reported feeling better mentally and physically compared to when they initiated the program and were able to maintain significant gains at 6 months following treatment. Turk, Okifuji, Sinclair, and Starz (1998) found in their sample of fibromyalgia patients who completed a 4-week outpatient interdisciplinary treatment program, patients at post-treatment reported reductions in pain intensity, perceived interference of pain, loss of control over their pain, emotional distress, depression, anxiety, perceived physical disability, and exhaustion. Furthermore, they found that patients had maintained gains made in treatment with respect to pain intensity, pain interference, perceived control, emotional distress, and depression. However, perceived physical disability and anxiety worsened at 6 months post-treatment. Despite some relapse in treatment gains made at the 6-month follow-up in Turk et al., there is impressive evidence in the aforementioned literature, as well as throughout

this proposal, to support the need for a biopsychosocial approach in pain management and the need for chronic pain patients to be referred to interdisciplinary care to learn more adaptive techniques and self-management skills for their pain.

In their meta-analytic review, Flor and colleagues (1992) found an average improvement of 60% was reported at short-term follow-up and 55% at long-term follow-up compared to the control group. Although there was no uniform measurement of improvement found in the meta-analysis, such improvements included decreased utilization of health care resources and patients returning to work. Furthermore, it was discovered in the meta-analytic review that chronic pain patients who participated in interdisciplinary care were almost twice as likely to return to work as those who had no treatment or who had participated in just one treatment modality. In Hubbard et al. (1996), for those who were still working, participants increased their work productivity on average by 15.47 hours per week. For those who were not working at pre-treatment, 50% returned to work and 35% had full-time jobs by the end of the program. Another impressive finding was the fact that 64% of the patients with a work-related injury who were not working at the beginning of treatment returned to work by the end of the program. Such findings additionally illustrate the quintessential need for interdisciplinary treatment care and support from referring physicians, better patient education and preparation in advance, and greater support from third-party payers.

Summary of Literature

When pain becomes a more chronic condition, treating the physical symptoms as well as its psychological impact becomes a complex, but necessary matter. Psychosocial factors, such as emotional distress, feelings of helplessness and hopelessness, low internal motivation, low social support, inactivity, and activity avoidance have an important impact in how one perceives and

relates to their pain. It has been demonstrated in the literature that such factors can either perpetuate or exacerbate pain. Support from others; self-motivation; learning how to self-regulate through biofeedback, relaxation skills, diaphragmatic breathing, and awareness training; physical and occupational therapy; and interventions like cognitive-behavioral training and relapse prevention seem necessary to resume and maintain an active physical and social lifestyle and, therefore, have been shown in the literature referenced above to be essential to the treatment of chronic pain.

It has been the experience of this investigator, in working with chronic pain patients in the COP program, that feeling better physically and emotionally for the chronic pain patient involves different factors, including understanding that one has choice in how they deal with certain stressors, including pain, taking responsibility for one's actions and reactions, seeing oneself as being accountable for his or her behaviors, living more in the present moment, maintaining a good attitude, and being persistent in maintaining a healthy lifestyle. The patient's will to make a difference in their own lives does indeed influence whether or not they get better mentally and physically and that suffering is very much a mental construct as it is a physical one. Therefore, it is a matter of patients ultimately and metaphorically coming to the conclusion that they are "sick and tired of being sick and tired" and make the decision to become an active participant in their own healthcare rather than becoming or remaining a victim to their condition.

Due to patients often being expected or required to complete long forms and assessments prior to initiating treatment, brief self-report instruments measuring psychosocial functioning are essential in helping the clinician and patient assess progress throughout the course of treatment. To further the utility of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) for counselors who work with individuals living with chronic pain, this study primarily evaluated the

construct validity of the unpublished instrument's scales. In this study, this investigator examined the relationship between changes in the scales of the MPI Screener Patient Report Card with changes in the BDI-II (Beck et al., 1996) and the BAI (Beck & Steer, 1993) with a group of chronic pain patients who have completed COP from the years 2003 to 2008. Patient demographics are also reported.

CHAPTER 2

METHODS AND PROCEDURES

Despite the demonstrated need for interdisciplinary services referenced throughout this investigator's review of available research, it is important for clinicians (counselors and psychologists alike) to have at their utility brief measures of psychosocial functioning without further subjecting their patients to continual rounds of long and tedious self-report instruments. As previously mentioned, because patients are often expected or required to complete long forms and assessments prior to initiating treatment, brief self-report instruments measuring psychosocial functioning are essential in helping the clinician and patient quickly assess progress throughout the course of treatment. This study investigated the utility of the MPI Screener Patient Report Card developed by Clark (1996; see Appendix H) with a group of chronic pain patients who have completed COP from the years 2003 to 2008. As previously mentioned, however, its potential applicability only focused on patients who had completed a 4-week intensive interdisciplinary treatment program and may not be generalizable to chronic pain patients who are not participating in interdisciplinary care.

Definition of Terms

Biomedical model of pain: As suggested by Schultz, Joy, Crook, and Fraser (2005), the biomedical model of pain is still very much in use by physicians and other professionals in the medical community. Its central tenet hinges on the mind and body being separate entities and that the illness or medical condition, such as pain, is due only to biological pathology. Furthermore, with regard to pain, the authors state that it significantly impacts the course of action taken by the clinician for its treatment due to its cure-oriented approach that is deeply

rooted in medical diagnostics, pharmacological measures, medical procedures, and surgeries to "correct" or "fix" the symptom.

Biopsychosocial model of pain: This model, which operates from the premise that the mind and body are an integrated whole, views the response to injury as being one that is multidimensional in nature (Schultz, Joy, Crook, & Fraser, 2005). In addition, psychosocial factors (e.g., depression, anxiety, etc.) influence directly the individual patient's response to pain, not the pain signal itself. Furthermore, patient outcome is contingent upon improved functioning for the patient and focuses on the patient taking responsibility for their own well-being and management of their reactions to pain.

Interdisciplinary, *multidisciplinary*, and *comprehensive*: It is to be assumed by the reader, for purposes of this study, that the terms "interdisciplinary," "multidisciplinary," and "comprehensive" in relation to pain management programs are used interchangeably and describe a combination of various treatment modalities (e.g., physical therapy, occupational therapy, aquatic therapy, vocational counseling, psychotherapy, relaxation training and / or biofeedback, psychoeducational groups, and patient education groups) in which the patient participates as a cohort over a 3 to 4-week period of time. In the case of this study, it includes all of the aforementioned modalities in a 5-day a week, intensive, group-oriented structure over 4 consecutive weeks.

Counselor, *psychologist*, and *mental health clinician*: It is to be assumed by the reader, for purposes of this study, that the terms "counselor," "psychologist," and "mental health clinician" encompasses the differing mental health disciplines by whom chronic pain patients are served in a private practice setting, outpatient clinic, or hospital environment.

Patient and *program participant*: It is to be assumed by the reader, for purposes of this study, that the terms "patient" and "program participant" are used interchangeably and such language is used due to the individual being treated for chronic physical pain in an outpatient or hospital environment. "Program participant," in particular, refers to individuals living with chronic physical pain who participated in an interdisciplinary treatment program for the management of their pain symptoms.

Research Questions and Assumptions

The primary research question asked in this study was "Do changes on the scales on the MPI Screener Patient Report Card (pre and post) correlate with pre and post changes on the BDI-II and BAI? A secondary question was asked in order to examine the relationships between the predictor/independent variables (BDI-II, BAI, gender, race, and primary pain diagnosis) and the criterion/dependent variables (scales of the MPI Screener Patient Report Card). Specifically, the following research assumptions were investigated:

1. *Pain Intensity*: BDI-II scores, BAI scores, gender (male, female), race (Caucasian, African-American, Hispanic, Asian, Other), and primary pain diagnosis (cervical, thoracic, lumbar, headache, fibromyalgia) will predict changes on the *Pain Intensity* scale of the MPI Screener Patient Report Card.
2. *Pain Interference*: BDI-II scores, BAI scores, gender (male, female), race (Caucasian, African-American, Hispanic, Asian, Other), and primary pain diagnosis (cervical, thoracic, lumbar, headache, fibromyalgia) will predict changes on the *Pain Interference* scale of the MPI Screener Patient Report Card.
3. *Emotional Distress*: BDI-II scores, BAI scores, gender (male, female), race (Caucasian, African-American, Hispanic, Asian, Other), and primary pain diagnosis

(cervical, thoracic, lumbar, headache, fibromyalgia) will predict changes on the *Emotional Distress* scale of the MPI Screener Patient Report Card.

4. *Life Control*: BDI-II scores, BAI scores, gender (male, female), race (Caucasian, African-American, Hispanic, Asian, Other), and primary pain diagnosis (cervical, thoracic, lumbar, headache, fibromyalgia) will predict changes on the *Life Control* scale of the MPI Screener Patient Report Card.
5. *Total Function*: BDI-II scores, BAI scores, gender (male, female), race (Caucasian, African-American, Hispanic, Asian, Other), and primary pain diagnosis (cervical, thoracic, lumbar, headache, fibromyalgia) will predict changes on the *Total Function* scale of the MPI Screener Patient Report Card.

Data Source

All data investigated for purposes of this research study came from an existing available database located at the Center for Pain Management at Baylor University Medical Center in Dallas, Texas. The Center for Pain Management is an outpatient clinic located in a large, regional medical center and serves patients through single treatment services (e.g., medication management, minimally invasive medical procedures, physical therapy, pain management counseling, biofeedback, and occupational therapy) as well as through interdisciplinary services such as the COP program. Only historical data were examined and no new or additional data were collected for this research study. The sample size for this study was 203 adult graduates of the COP program at Baylor University Medical Center between the years 2003 to 2008. Program duration and structure has remained relatively stable over the 5-year period. The sample group was reasonably homogeneous in that all of the data being used for this study were from a group of patients whose pain was reported to be at least 3 months in duration, despite primary pain

diagnosis at the time of referral to the program, and all of whom have graduated from COP. However, some heterogeneity existed related to gender, race, age, primary pain diagnosis, and MPI classification assessed at the team evaluation.

Patient Description

Patients are referred by their treating physician or are self-referred and are evaluated by a staff psychologist to develop a complete psychosocial assessment including patient history, health, and level of functioning prior to being recommended to the comprehensive outpatient treatment program (referred to as COP). This initial meeting between the psychologist and the patient is referred to as the "team evaluation." Treatment recommendations and appropriate referrals are made (e.g., psychiatry, detoxification, neuropsychological evaluation, etc.) following this meeting. The program director and treatment team communicate with the patient's treating and referring physicians via written and verbal communication reporting treatment goals, progress made, and additional treatment needs recommended by the treatment team.

COP is a comprehensive interdisciplinary outpatient pain management program located in a hospital clinic setting at Baylor University Medical Center in Dallas, Texas. The program is nationally-recognized and is accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF) for pain management. The program's purpose is to help individuals achieve significant improvements in increasing physical strength and endurance as well as improve their ability to perform important life functions, enhance their coping skills, and improve their mood.

The treatment team is under the supervision of an anesthesiologist/pain management specialist and a psychologist. Medication management, if appropriate, is provided by the treating physician who may also be the patient's referring physician to the program. Program care is also supervised by the clinic's anesthesiologist/pain management specialist who may only serve in

overseeing the care of the patient while attending COP without necessarily prescribing pain medication to the patient. Patients may also be referred to a psychiatrist for detoxification if the patient is over-medicated or for management of depression, anxiety, or poor sleep when appropriate.

The treatment team has a treatment plan with unified goals and each program clinician (physical therapist, occupational therapist, and licensed professional counselor) also establishes an individual treatment plan with the patient focusing on their needs for their particular modality they are working on with the patient. The treatment team works with patients in identifying treatment goals and works with them to minimize physical and emotional discomfort related to living with chronic pain.

The program is group-oriented and patients attend the program approximately 8 hours a day, 5 days a week, for 4 consecutive weeks. Patients participate in group didactic education, group physical therapy (general conditioning, strength, and flexibility), individual cognitive-behavioral oriented psychotherapy (emphasizing restructuring maladaptive thinking) and biofeedback training (emphasizing awareness, diaphragmatic breathing, and self-regulation exercises for stress and pain management), group relaxation training (for additional exposure to relaxation techniques), group and individual occupational therapy (emphasizing adaptive living techniques, body mechanics, energy conservation, nutrition, and ergonomics), group aquatic therapy, and are provided with vocational resources as needed. Patient education classes taught by this investigator, who is a licensed professional counselor (LPC), or by a staff psychologist focus on general wellness, stress and pain management, sleep hygiene, support and communication, and cognitive reappraisal skills.

Instrumentation

All patients complete the following self-report measures at various points once referred to the pain clinic and are detailed below.

Multidimensional Pain Inventory (MPI)

The MPI (Kerns et al., 1985), the most widely used instrument with the chronic pain population, which has been shown to correlate well with completion of a chronic pain program, is a 52-item self-report instrument assessing the chronic pain experience. The MPI is administered only once when patients are referred to a team evaluation with the staff psychologist before being referred for any program services. The MPI measures individuals on nine scales and classifies them into one of five clusters (*Dysfunctional*, *Interpersonally Distressed*, *Hybrid*, *Adaptive Coper*, and *Passive Coper*). Psychosocial Scales assessed include *Pain Severity*, *Interference*, *Life Control*, *Affective Distress*, and *Support*. Behavioral Scales assessed on the self-report measure include *Punishing Responses*, *Solicitous Responses*, *Distracting Responses*, *General Activity Level*, *Household Chores*, and *Outdoor Work*. Test-retest reliability indices after a 2-week delay, using Pearson product-moment correlation coefficients, range between .62 and .91 for all scales while internal consistency reliability for all scales provided a range using Cronbach's coefficient alpha between .70 and .90. Furthermore, the utility of the instrument has been found to be generally supported by available literature for various pain conditions (Bernstein, Jaremko, & Hinkley, 1995; Turk, Okifuji, Sinclair, & Starz, 1996; Walter & Brannon, 1991).

Patient Background Information Form

The Patient Background Information Form was originally created by Timothy Clark, PhD (n.d.; see Appendix F), psychologist and program director of interdisciplinary treatment services

for the Center for Pain Management at Baylor University Medical Center in Dallas, Texas, to assess patient demographics, such as age and pain duration as well as number of hospitalizations due to pain, pain-related procedures and surgeries, visits to the ER for pain, physician appointments for the treatment of their pain symptoms, and sessions with a licensed mental health practitioner the patient may have had in the 12 months prior to being admitted to COP. In addition, employment and disability status is asked on the background information form. Patients complete this form only at admission to COP. Racial classification and primary pain diagnosis are determined prior to being admitted into COP by the pain clinic's anesthesiologist at their first office visit or by staff psychologist when they are referred for a team evaluation.

MPI Screener and MPI Screener Patient Report Card

The MPI Screener, which is an unpublished instrument developed by Kerns, Turk, and Rudy (n.d.) and referenced in Von Korff (1992), is an eight-item self-report instrument developed by the authors and is based on the psychosocial scales of the full version of the MPI (1985). Kerns et al.'s purpose was to use a brief measure, essentially a significantly shortened form of the full MPI with similar psychosocial scales, to quickly identify "dysfunctional" chronic pain. The questions on the screening version of the MPI were based on an analysis of 1,000 clinical chronic pain cases classified as *dysfunctional* on the full version of the MPI. In a personal communication to Von Korff (1992), Rudy suggests each answer be classified as *dysfunctional* when the following criteria are met: *Pain Intensity* ≥ 9, *Pain Interference* ≥ 10, *Emotional Distress* ≥ 8, and *Life Control* ≤ 6. The MPI Screener is administered at three separate intervals (pre-treatment, midpoint, and post-treatment) while patients participate in the COP program.

The scoring system and four classification scales (*Pain Intensity*, *Pain Interference*, *Emotional Distress*, and *Life Control*) for the MPI Screener suggested by Rudy to Von Korff (1992) are also used on the MPI Screener Patient Report Card, an unpublished instrument developed by Timothy Clark, PhD (1996; see Appendix H), psychologist and program director of interdisciplinary treatment services for the Center for Pain Management at Baylor University Medical Center in Dallas, Texas. The primary purpose of the "report card" is to track patient progress while attending COP and for it to be a useful, brief, and easily understandable tool for the clinician and patient whereby patients are given feedback regarding their level of functioning at program admission, midpoint, and discharge. Additionally, the MPI Screener Patient Report Card includes a fifth scale, *Total Function*, also developed by Clark and is used to summarize the other four scales suggested by Rudy. A detailed description of the development of the MPI Screener Patient Report Card provided by Clark (2008) can be found in Appendix G.

Beck Depression Inventory—Second Edition (BDI-II)

The BDI-II (Beck et al., 1996) is a 21-item, 4-choice self-report instrument to measure the degree of depression in individuals of 13 years of age and older and corresponds with criteria set forth in the *Diagnostic and Statistical Manual of Mental Disorders—Forth Edition* (DSM-IV; American Psychiatric Association, 1994) for diagnosing depressive disorders. More intensive statements are scored higher indicating more significant severity of the depressive symptom with each answer rated from 0 to 3 depending on severity reported. Total score ranges for symptom severity are *minimal* (0-13), *mild* (14-19), *moderate* (20-28), and *severe* (29-63). The BDI-II has good reliability and validity indices: Internal consistency reliability have provided Cronbach's coefficient alphas at .92 for an outpatient group and .93 for a college student group, test-retest reliability .93 ($p < .001$) for a group of outpatient responders who took the BDI-II again

approximately 1 week later, and construct validity .93 ($p < .001$) for outpatient responders who took both the BDI-II and the older version of the instrument during their initial evaluation. Furthermore, content validity has also been found to be adequate since Beck, Steer, and Brown closely aligned the revised the questions on the updated BDI-II with the criteria set for in the DSM-IV.

Beck Anxiety Inventory (BAI)

The BAI (Beck & Steer, 1993) is also a 21-item self-report instrument that measures severity of anxiety symptoms based on criteria for anxiety disorders found in the third revised edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987). Each answer is also rated from 0 to 3 depending on the severity reported with higher items scores indicating increased severity of the anxiety symptom endorsed. Score ranges for symptom severity are *minimal* (0-7), *mild* (8-15), *moderate* (16-25), and *severe* (26-63). Reliability and validity indices are also good for the BAI. Internal consistency reliability yields a high Cronbach's coefficient alpha of .92 in a mixed sample of outpatient responders and .94 in a group of patients diagnosed with a DSM-III-R anxiety disorder. Test-retest reliability for a group of outpatient responders is adequate and is reported at .75 ($p < .001$) after a delay of a week post initial evaluation. In addition, the BAI has been found to have adequate construct validity compared to other similar self-report measures. Furthermore, since construction of the questions is closely aligned with the criteria set forth for anxiety symptoms in the DSM-III-R, content validity has also been found to be adequate.

Procedures

Archival data for COP graduates who attended the program from the years 2003 to 2008 were examined in this study. The COP program, whose treatment modalities are rooted in the

biopsychosocial wellness model, is a interdisciplinary treatment program where patients referred to the program participate 8 hours a day, 5 days per week, for 4 consecutive weeks in group-oriented psychoeducational wellness classes, physical therapy, individual and group-oriented occupational therapy classes, group relaxation training, aquatic therapy, individual pain management counseling and biofeedback, and vocational counseling when appropriate. The sample of chronic pain patients as a whole, as well as various demographics represented within the sample (gender, racial background, primary pain diagnosis, and MPI classification), was also analyzed.

An Informed Consent for Treatment (Clark, n.d.; see Appendix D) and a Treatment Agreement (Clark, n.d.; see Appendix E) are given when each patient start COP. Demographic information is collected from patients at initiation of the program (pre-treatment). Furthermore, patients complete the MPI Screener (Kerns et al., n.d.), BDI-II (Beck et al., 1996), and BAI (Beck & Steer, 1993) at program initiation, midpoint during the patient's second week in the program, and at completion of the program at the end of 4 weeks (post-treatment). Patients are not considered to have "graduated" from the program unless they complete all treatment modalities over the course of the 4-consecutive week period. Pre, mid, and post MPI Screener as well as scores from the BDI-II and BAI have been collected for the years between 2001 and 2008 and continue to be collected for program outcome purposes.

Only pre and post archival data were examined. Therefore, no new or additional data were collected for this research study. All data investigated for purposes of this research study came from an existing available database. Physical, psychological, and functional measures were collected on each patient at pre-treatment and post-treatment. Therefore, the data analyzed in this study is considered retrospective in nature. No identifying information was used in this research

study. University of North Texas and Baylor University Medical Center Institutional Review Board (IRB) guidelines were followed. Data entered initially in Microsoft Access were imported into a Microsoft Excel spreadsheet. SPSS 10.0 Standard Graduate Version for Windows was used to analyze the data. Pre and post scores on the individual scales of the MPI Screener Patient Report Card (Clark, 1996), BDI-II (Beck et al., 1996), and BAI (Beck & Steer, 1993) were analyzed.

Study Design

Data to be analyzed for this study were archival only and, therefore, no additional data were collected for this research study other than the data already available. The historical data analyzed for this research came from this existing database. No identifying information was used in this study. Patient participants were not recruited or compensated.

This study, due to its primary focus being on the investigation of the relationship between changes on the scales on the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) with the BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993), was correlational in nature. Two major purposes of the correlational research method include its ability to explore relationships between variables and its usefulness in predicting scores on one variable (MPI Screener Patient Report Card scales individually) from subjects' scores on other variables (BDI-II and BAI).

The correlational method has several distinct advantages. It is highly useful in studying problems in the social sciences as it looks at the degrees of relationship between variables under study simultaneously. One principal advantage over the experimental method is that it permits analysis of relationships among a large number of variables in a single study. Furthermore, it provides information about the degree of relationship between variables being studied. The

sample is also intact and fairly homogenous which helps in controlling extraneous variables better. However, the correlational method also has its potential disadvantages which are discussed in the limitations section of this study.

Statistical Analyses

This study specifically examined the relationship among and between the predictor/independent variables (BDI-II, BAI, gender, race, and primary pain diagnosis) with changes on the various dependent/criterion variables (the individual MPI Screener Patient Report Card scales). The following patient descriptive statistics/demographics are reported:

Patient Demographics

1. Mean age of subjects and age range;
2. Sample size and percentage represented by gender (male and female);
3. Sample size and percentage represented by race (Caucasian, African-American, Hispanic, Asian, and Other);
4. Sample size and percentage represented by primary pain diagnosis (cervical, thoracic, lumbar, headache, fibromyalgia, etc.);
5. Sample size and percentage represented by MPI classification (*Dysfunctional*, *Interpersonally Distressed*, *Hybrid*, *Adaptive Coper*, and *Passive Coper*); and
6. Sample size and percentage reported overall Improvement Rating at program completion (*Very Much Improved*, *Much improved*, *Minimally Improved*, *No Change*, *Minimally Worse*, and *Much Worse*).

Statistical Analyses

Since a number of variables were considered, the multivariate analyses selected was a hierarchal multiple regression design in order to examine among and between the multiple

predictor/independent variables under investigation. Taking into account multiple predictor/independent variables increases the predictive accuracy of analyses of the individual criterion/predictor variables. The rationale for a hierarchical regression analysis was due to this investigator's suspicion that primary pain diagnosis may not influence changes in the criterion and, therefore, were loaded last in the regression model. Separate multiple regression analyses were conducted to examine the effects of the predictor variables (pre and post BDI-II and BAI scores, gender, race, and primary pain diagnosis) on the criterion variables (pre and post individual scales of the MPI Screener Patient Report Card). Analyses of data were separated into two groups (pre-test scores and post-test scores) with five analyses per group investigating the relationship of the predictor variables on the individual criterion variables (the five scales of the MPI Screener Patient Report Card). In order to control for demographic characteristics, predictor variables were added in the following order: Block 1 (BDI-II and BAI), Block 2 (gender and race), and Block 3 (primary pain diagnosis) to the hierarchical multiple regression model. Prior to analysis, all data entered were checked for accuracy, participant scores with missing data and outliers were removed from the sample.

CHAPTER 3

RESULTS AND DISCUSSION

This chapter includes demographic findings from the existing outcome database of chronic pain patients who graduated from the COP program at Baylor University Medical Center in Dallas, Texas between the years 2003 and 2008. Furthermore, results from statistical analyses conducted, implications of research findings, limitations of the research, and recommendations for future research are discussed herein.

Description of Patients from Existing Patient Database

As previously mentioned, all data investigated for purposes of this research study came from the existing available database. Therefore, only historical data was examined and no new or additional data was collected for this research study. Originally, the existing patient database included all patients who started and/or completed the various treatment programs offered through the Center for Pain Management at Baylor University Medical Center in Dallas, Texas. For purposes of this study, data was carefully reviewed and entries which did not pertain to this study were immediately disregarded. For example, if a database entry was for a patient who started COP but did not complete the program, their data was not included in this study's dataset. If a database entry was for an individual who attended another one of the programs offered, it was excluded from analysis in this study as well.

After saving the Microsoft Access database into a Microsoft Excel spreadsheet, data entries with missing variables (e.g., missing primary pain diagnosis, missing race/ethnicity, and missing or unanalyzable MPI classification), as well as program participants from other pain programs provided through the Center for Pain Management and non-graduates of the Dallas COP program, were removed from the dataset prior to any analyses. Furthermore, if the COP

patient graduated from the program but attended less than 17 days out of the 20 program treatment days, they were also excluded in order to keep the dataset as homogenous as possible with respect to program days attended. The sample was checked again for accuracy in SPSS when analyzing variable frequencies and the descriptive statistics. Data with invalid entries beyond normal ranges for the various scales of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) as well as the allowable ranges for the BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) were also checked for accuracy and corrected. Data that could not be corrected was disregarded and removed from the dataset.

The ending sample size for this study consisted only of adult graduates of the COP program at Baylor University Medical Center in Dallas, Texas ($N = 203$) between the years 2003 to 2008. The years 2000 through 2003 were excluded from this study's dataset due to discovering that MPI classification (Kerns et al., 1985) was not a required outcome database entry for program patients until January 2002. Furthermore, it is important to note that overall improvement ratings, a patient demographic reported herein, were not required as database entries until January 2003. The ending sample size meets the sample size requirement originally suggested in this study's proposal which was at minimum a sample size of 200 subjects.

Program duration and structure has remained relatively stable over the 5-year period. The sample group is reasonably homogeneous in that all of the data analyzed in this study came from a group of COP program graduates whose pain is of at least 3 months duration, despite primary pain diagnosis at the time of referral to the program. Some heterogeneity exists related to gender, race, age, primary pain diagnosis, and MPI classification assessed at the team evaluation. However, although data analyzed for this study did not come from a sample that was randomly selected and there was no control group, results of this study should be considered at least

generalizable to chronic pain patients who complete a group-oriented interdisciplinary pain management treatment program approximately 8 hours a day, 5 days a week, for 4 consecutive weeks at a regional medical center in a major metropolitan are.

The sample included 59 males (29.1%) and 144 females (70.9%) with a mean age of 50.71 years (*SD* = 11.74) and a range of 18 to 74 years of age. One hundred seventy-three (85.2%) COP graduates identified themselves as Caucasian. The remaining 30 COP graduates (14.8%) who identified themselves other than Caucasian, with 21 (10.3%) identified themselves as African American, 8 (3.9%) identified themselves as Hispanic, and 1 (0.5%) identified as Asian (see Table 1). Pain diagnosis of COP graduates were varied with 109 program graduates (53.7%) having lumbar (i.e., low back pain) as their primary pain diagnosis. Thirty-two individuals (15.8%) were admitted to the program with the primary pain diagnosis of cervical pain and 62 individuals (30.5%) had other types of reported primary pain diagnoses (see Table 2).

Table 1

Descriptive Statistics for Race/Ethnicity

	Number	Percent
Caucasian	173	85.2
African-American	21	10.3
Hispanic	8	3.9
Asian	1	0.5
Other	0	0
Total	203	100

Table 2

Descriptive Statistics for Primary Pain Diagnosis

	Number	Percent
Lumbar Pain	109	53.7
Thoracic Pain	7	3.4
Cervical Pain	32	15.8
Headaches	9	4.4
Facial Pain	1	0.5
Sympathetic Upper Extremity	3	1.5
Sympathetic Lower Extremity	1	0.5
Peripheral Neuropathy	5	2.5
Neuropathy	1	0.5
Pelvic Pain	2	1.0
Abdominal Pain	7	3.4
Myofascial Pain	2	1.0
Fibromyalgia	7	3.4
Miscellaneous	17	8.4
Total	203	100

Prior to being admitted into the COP program, patients completed the full version of the MPI (Kerns et al., 1985). One hundred two (50.2%) were classified as *Dysfunctional*, 40 (19.7%) were classified as *Interpersonally Distressed*, 34 (16.7%) were classified as an *Adaptive Coper*, 25 (12.3%) were classified as *Hybrid*, and 2 (1%) were classified as *Passive Copers* (see Table 3). Patients completed the BDI-II (Beck et al., 1996), BAI (Beck & Steer, 1993), and MPI Screener (Kerns et al., n.d.) at the beginning of the COP program and then completed them again at midpoint and at the end of the program. Patients are also required to rate their perceived

overall physical improvement at the end of the program. At program completion, 176 patients (86.7%) reported at least being *much improved* after having completed the program.

Table 3

Descriptive Statistics for MPI Classification

	Number	Percent
Dysfunctional	102	50.2
Interpersonally Distressed	40	19.7
Hybrid	25	12.3
Adaptive Coper	34	16.7
Passive Coper	2	1.0
Total	203	100

Table 4

Descriptive Statistics for Overall Improvement Rating at Program Completion

	Number	Percent
Very Much Improved	81	39.9
Much Improved	95	46.8
Minimally Improved	24	11.8
No Change	1	0.5
Minimally Worse	1	0.5
Much Worse	1	0.5
Total	203	100

Results

Since a number of variables were considered, a hierarchal multiple regression design was selected in order to examine among and between the multiple predictor/independent variables

under investigation. The rationale for a hierarchical regression analysis is due to the suspicion that race and gender (Block 2) as well as primary pain diagnosis (Block 3) may not influence changes in the criterion and, therefore, were loaded second and third respectively in the regression model. Separate multiple regression analyses were run to examine the effects of the predictor variables (pre and post BDI-II and BAI scores, gender, race, and primary pain diagnosis) on the criterion variables (pre and post individual scales of the MPI Screener Patient Report Card). Analyses of data were separated into two groups (pre-test scores and post-test scores) with five analyses per group investigating the relationship of the predictor variables on the individual criterion variables (the five scales of the MPI Screener Patient Report Card). In order to control for demographic characteristics, predictor variables were added in the following order: Block 1 (BDI-II and BAI), Block 2 (gender and race), and Block 3 (primary pain diagnosis) to the hierarchical multiple regression model.

Prior to analysis, all data entered was checked for accuracy, and participant scores with missing data and invalid entries were removed from the sample in order to meet the assumptions for normality. Frequencies and means were examined to see if there were any imbalances in gender, race, or primary pain diagnosis. This investigator discovered initially that gender, race, and primary pain diagnosis were not normally distributed and were skewed for females, Caucasians, and lumbar pain patients (see Table 5).

Table 5

Descriptive Statistics—Skewness and Kurtosis for Patient Demographics

	N	*Mode*	*Skewness*	*Kurtosis*
Gender	203	Dummy Code 1 (Female)	-.929	-1.148
Race	203	Dummy Code 0 (Caucasian)	2.829	7.985
Pain Diagnosis	203	Dummy Code 0 (Lumbar Pain)	1.436	0.485

Gender, although demonstrating negative skewness and kurtosis, obviously can not be collapsed into a single category as male and female is considered to be dichotomous. After reviewing the significant amount of skewness and kurtosis in the race category, this investigator decided to collapse the 30 non-Caucasians into one category in order to correct the imbalance in the non-normal distribution in an attempt to force a more normal distribution. After collapsing all non-Caucasians into one category and rechecking the descriptive statistics of the race predictor, although still somewhat positively skewed at 2.000 and kurtosed at 2.019. According to Allison (1999), if the value exceeds the critical value only a slight degree, it is not critical as long as the sample size is adequate. Miles and Shevlin (2001) suggest that, if skewness and kurtosis is greater than ±2.0 and the larger the sample size, the less it matters that it is non-normally distributed. Furthermore, Allison recommends a minimum of 200 subjects or 20 subjects per predictor used in the regression model which is the case of this study with a sample size of 203 graduates of the COP program and 5 independent/predictor variables (BDI-II, BAI, race, gender, and primary pain diagnosis).

Additionally, because primary pain diagnosis as a predictor met the assumption of normality, it was decided by this investigator that collapsing all other non-lumbar pain diagnosis into one category would also not necessarily serve as useful and therefore, each of the pain

diagnoses categories were kept separate. The review of literature referenced herein with regard to more lumbar pain patients being the most reported of other pain diagnoses, further helped this investigator to come to the decision to not collapse the various categories, other than race, in order to keep the data as intact as possible.

Gender, because it is nominal or categorical in nature, and because male and female is considered dichotomous, was coded as 0 for male and 1 for female as suggested by Miles and Shevlin (2001). Caucasians were coded as 0 and non-Caucasians were coded as 1. Primary pain diagnosis, since it is also considered to be categorical, was also treated as a dummy variable with the individual pain diagnoses being assigned their own individual code from 0 to 13). Such consideration was given to the categorical data due to this investigator ensuring that the sample dataset had no missing data entries prior to analyses.

Continuous variables for the other predictors such as BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores were examined to see if they met the univariate normality assumption and are normally distributed. After visually inspecting the histograms produced from SPSS output, as well as examining skewness and kurtosis values, it was determined that pre-treatment and post-treatment scores for each scale of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) as well as pre/post BDI-II and BAI scores, with the exception of *Pain Interference* on the MPI Screener Patient Report Card at pre-treatment and BDI-II at post-treatment, were normally distributed and did not exceed the critical value of ± 1.96 (.05 significance level) for skewness and kurtosis (Hair et al., 2006) and, therefore, were within acceptable limits (see Tables 6 and 7). Therefore, a data transformation such as log or inverse transformation in order to normalize the non-normal data was not needed.

Table 6

Descriptive Statistics—Skewness and Kurtosis for Instruments Scales at Pre-Treatment

	N	*M*	*SD*	*Skewness*	*Kurtosis*
MPI Screener Patient Report Card	N/A	N/A	N/A	N/A	N/A
Pain Intensity	203	8.84	1.88	-.633	.865
Pain Interference	203	10.37	2.05	-1.478	2.336
Emotional Distress	203	7.62	2.91	-.450	-.653
Life Control	203	6.06	2.48	.068	-.338
Total Function	203	20.34	6.45	-.415	-.302
BDI-II	203	22.61	9.64	.385	-.105
BAI	203	17.59	9.59	.662	.257

Table 7

Descriptive Statistics—Skewness and Kurtosis for Instruments Scales at Post-Treatment

	N	*M*	*SD*	*Skewness*	*Kurtosis*
MPI Screener Patient Report Card	N/A	N/A	N/A	N/A	N/A
Pain Intensity	203	6.52	2.18	-.299	.084
Pain Interference	203	7.34	3.00	-.315	-.484
Emotional Distress	203	4.36	2.62	.486	-.136
Life Control	203	8.94	2.23	-.738	.204
Total Function	203	10.11	6.54	.561	.377
BDI-II	203	10.23	8.69	1.355	2.199
BAI	203	10.84	8.38	1.202	1.084

An alpha level of .05 to test for statistical significance was initially chosen to avoid committing a Type I error (rejecting the null when the null is true, that is, that there is no relationship between the predictor variables and criterion variable). Furthermore, although none

was anticipated, data was examined for multicollinearity issues to make sure one predictor variable did not strongly correlate with another predictor variable. As expected, using Allison's (1999) suggestion for analyzing tolerance levels for each independent variable, analysis of the predictor variables revealed no multicollinearity issues. Results of the regression analyses are presented in the order of the research assumptions previously proposed herein.

In the first block of each individual regression model, pre and post depression and anxiety scores from the BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) were loaded in separate analyses sets (five pre and five post). The rationale for loading these two predictor variables first was due to the suspicion that they were have the greatest influence on changes in each individual criterion to be investigated. In the second block, gender and race were added as predictors to the regression equation to see how much remaining variance on the criterion can be accounted for by these two additional predictors. Primary pain diagnosis was added last in the third block as it was suspected by this investigator that it may have the least influence on the criterion and, therefore, was loaded last in the regression model.

For convenience and comparison, pre and post analyses, although run separately, are included in the same table by each individual criterion/dependent variable analyzed. Although Beta weights (β) can be considered in maximizing the predictive value of each variable on the criterion variable, they are included herein but are not discussed further as it has been suggested by Huck (2000) that researchers should be careful of Beta weights as they "do not provide a pure and absolute assessment of any independent variable's worth" (p. 583). Therefore, Beta weights are not addressed in the reporting of the results of this study and are only included in the following tables. However, the multiple correlation coefficients (*R*) for each block of the

following regression analyses as well as values for coefficient of determination (R^2) and adjusted R^2 for the overall regression model are reported and discussed herein.

The coefficient of determination (R^2), or the proportion of the variance explained, as well as the adjusted R^2 for the overall regression analyses on each criterion are reported herein. According to Huck (2000), reporting the adjusted R^2 removes any bias linked to R^2 by reducing its value and yields a better estimate of the R^2 for the total sample. Furthermore, according to Huck, reporting the adjusted R^2 (as opposed to the R^2) is more helpful as it anticipates the amount of "shrinkage" that might be found in a replicated study with a much larger sample size. That is, it attempts to estimate the value of R^2 in the population as opposed to in the sample. Therefore, although R^2 values are reported in the following tables, adjusted R^2 values are discussed further herein.

Results for Research Assumption 1 for Pain Intensity

In review of the overall model summary for pre-treatment *Pain Intensity*, it was found in the first block of the regression equation that F (2, 200) = 1.211, p = .300, indicating that BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) do not account for significant variance in predicting changes in the criterion (see Table 8). However, statistically significant results were found at post-treatment with BDI-II and BAI scores added as predictors in the first block of the regression model with F (2, 200) = 20.566, p = .000 (see Table 8). Furthermore, in examining Block 2 of the pre-treatment *Pain Intensity* analyses, it was found that F (2, 198) = 5.782, p = .004 thereby revealing statistically significant results when gender and race were added into the second block of the regression model since p = .004 falls below the preselected .05 alpha level (see Table 9). Contrary to statistically significant results in pre-treatment *Pain Intensity* with gender and race added as additional predictors, examination of post-treatment analyses revealed

no significant variance with F (2, 198) = .265, p = .768. When primary pain diagnosis was added to the pre-treatment regression equation last, F (1, 197) = .043, p = .836 also revealed non-statistically significant results and the same was true at post-treatment with F (1, 197 = .173, p = .678 (see Table 10).

Table 8

Block 1: Pre and Post Regression Coefficients and Beta Weights for Depression and Anxiety as Predictors of Pain Intensity (N = 203)

Predictor Variables	Pain Intensity β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.048	.532	.595	.109	.012	.002	.012	$F(2,200)=$ 1.211	.300
BAI	.072	.799	.425						
Post									
BDI-II	.299	3.692	.000	.413	.171	.162	.171	$F(2,200)=$ 20.566	.000*
BAI	.156	1.921	.056						

*p=.05

As the various predictor variables were added to the regression equation, the reader can see how each predictor explains some of the variance in pre and post *Pain Intensity*. Analysis of pre-treatment *Pain Intensity* scores revealed little variance in the criterion in all blocks of the regression model. However, more positive results were found when examining the results for post-treatment *Pain Intensity*. The adjusted R^2=.002 in this study's review indicates that only .2% of the variance for pre-treatment *Pain Intensity* can be attributed to pre-treatment BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores (see Table 8) and an additional 4.8% of the variance can be attributed to race and gender (see Table 9). When primary pain diagnosis was added to the third block of the regression equation, only an additional 4.3% of the variance in

pre-treatment *Pain Intensity* can be accounted for by this predictor. The small incremental changes in adjusted R^2 for all of the blocks of the pre-treatment *Pain Intensity* regression model demonstrate that none of the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are strong predictors of change in the criterion.

Table 9

Block 2: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, and Gender as Predictors of Pain Intensity (N = 203)

Predictor Variables	Pain Intensity β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.046	.515	.607						
BAI	.096	1.076	.283	.258	.066	.048	.055	*F*(2,198)= 5.782	.004*
Race	.229	3.320	.001						
Gender	-.036	-.524	.601						
Post									
BDI-II	.294	3.562	.000						
BAI	.162	1.978	.049	.416	.173	.156	.002	*F*(2,198)= .265	.768
Race	.034	.518	.605						
Gender	-.031	-.473	.637						

*p=.05

Post-treatment results with regard to adjusted R^2 reveal far more impressive results and demonstrate that the independent variables are good predictors of change in the criterion (*Pain Intensity*) compared to pre-treatment analyses. When each set of predictors is systematically added to the multiple regression equation for Blocks 1, 2, and 3, the variance increases by at least 15% with each grouping. When post BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores were added in Block 1, this predictor set explains 16.2% of the variance in post-treatment

Pain Intensity (see Table 8). When gender and race were added in Block 2, the variance increased an additional 15.6% (see Table 9) and it increased by another 15.3% when primary pain diagnosis was added last to the regression model (see Table 10). The larger changes in adjusted R^2 for all of the blocks of the post-treatment *Pain Intensity* regression model demonstrate that the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are better predictors of change at post-treatment as compared to examining the same predictors in the pre-treatment analyses.

Table 10

Block 3: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, Gender, and Pain Diagnosis as Predictors of Pain Intensity (N = 203)

Predictor Variables	Pain Intensity β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.044	.500	.618						
BAI	.098	1.092	.276	.258	.067	.043	.000	*F*(1,197)= .043	.836
Race	.230	3.318	.001						
Gender	-.034	-.489	.626						
Pain Dx	-.015	-.207	.836						
Post									
BDI-II	.293	3.549	.000						
BAI	.167	2.011	.046	.417	.174	.153	.001	*F*(1,197)= .173	.678
Race	.035	.537	.592						
Gender	-.027	-.406	.685						
Pain Dx	-.028	-.416	.678						

*p=.05

Results for Research Assumption 2 for Pain Interference

In review of the overall model summary for pre-treatment *Pain Interference*, it was discovered in the first block of the regression equation that F (2, 200) = 9.294, p = .000, indicating that BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) accounts for a significant amount of the variance in predicting changes in *Pain Interference* (see Table 11). Statistically significant results of F (2, 200) = 13.635, p = .000 were also found at post-treatment with BDI-II and BAI scores added as predictors in the first block of each regression model with (see Table 11). However, in examining Block 2 of the pre-treatment and post-treatment *Pain Interference* analyses, it was found that F (2, 198) = .689, p = .503 and F (2, 198) = .818, p = .443 respectively thereby revealing non-statistically significant results when gender and race were added into the second block of the regression model since p = .503 and .443 fall above the preselected .05 alpha level (see Table 12). Additionally, when primary pain diagnosis was added to the pre-treatment and post-treatment regression equations last, F (1, 197) = 1.999, p = .159 revealed non-statistically significant results and the same was true at post-treatment with F (1, 197) = 1.177, p = .279 (see Table 13).

As the various predictor variables are added to the regression equation, each predictor explains an additional amount of the variance in pre and post *Pain Interference*. The adjusted R^2=.076 indicates that 7.6% of the variance for pre-treatment *Pain Interference* can be attributed to pre-treatment BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores (see Table 11) and an additional 7.3% of the variance can be attributed to race and gender (see Table 12). When primary pain diagnosis was added to the third block of the regression equation, an additional 7.8% of the variance in pre-treatment *Pain Interference* can be accounted for by this predictor (see Table 13).

Table 11

Block 1: Pre and Post Regression Coefficients and Beta Weights for Depression and Anxiety as Predictors of Pain Interference (N = 203)

Predictor Variables	Pain Interference β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.366	4.201	.000	.292	.085	.076	.085	*F*(2,200)= 9.294	.000*
BAI	-.165	-1.896	.059						
Post									
BDI-II	.320	3.831	.000	.346	.120	.111	.120	*F*(2,200)= 13.635	.000*
BAI	.041	.489	.625						

*p=.05

Post-treatment results with regard to adjusted R^2 reveal even higher degrees of estimates and demonstrate that the independent variables are even better predictors of change in the criterion (*Pain Interference*) compared to pre-treatment analyses. When each predictor set is added to the multiple regression equation for Blocks 1, 2, and 3, the variance increases by a minimum of 11% with each grouping. When post BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores are added in Block 1, this predictor set explains 11.1% of the variance in post-treatment *Pain Interference* (see Table 11). When gender and race were added in Block 2 (see Table 12), the variance increased an additional 11.0% and it increased by another 11.0% when primary pain diagnosis was added last to the regression model (see Table 13). The larger changes in adjusted R^2 for all of the blocks of the post-treatment *Pain Interference* regression model demonstrate that the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are better predictors of change as compared to examining the same predictors in the pre-treatment analyses.

Table 12

Block 2: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, and Gender as Predictors of Pain Interference (N = 203)

Predictor Variables	Pain Interference β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.364	4.164	.000						
BAI	-.155	-1.769	.078	.302	.091	.073	.006	*F*(2,198)= .689	.503
Race	.070	1.021	.309						
Gender	-.035	-.513	.608						
Post									
BDI-II	.325	3.837	.000						
BAI	.043	.511	.610	.357	.127	.110	.007	*F*(2,198)= .818	.443
Race	.085	1.268	.206						
Gender	.017	.253	.801						

*p=.05

Table 13

Block 3: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, Gender, and Pain Diagnosis as Predictors of Pain Interference (N = 203)

Predictor Variables	Pain Interference β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.372	4.255	.000						
BAI	-.173	-1.956	.052	.317	.100	.078	.009	*F*(1,197)= 1.999	.159
Race	.065	.951	.343						
Gender	-.049	-.708	.480						
Pain Dx	.098	1.414	.159						
Post									
BDI-II	.324	3.823	.000						
BAI	.055	.650	.517	.364	.132	.110	.005	*F*(1,197)= 1.177	.279
Race	.088	1.321	.188						
Gender	.028	.409	.683						
Pain Dx	-.074	-1.085	.279						

*p=.05

Results for Research Assumption 3 for Emotional Distress

In review of the overall model summary for pre-treatment *Emotional Distress*, it was discovered in the first block of the regression equation that F (2, 200) = 27.501, p = .000, indicating that BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) accounts for a significant amount of the variance in predicting changes in *Emotional Distress* (see Table 14). Statistically significant results of F (2, 200) = 69.039, p = .000 were also found at post-treatment with BDI-II and BAI scores added as predictors in the first block of each regression model with (see Table 14). However, in examining Block 2 of the pre-treatment and post-treatment *Emotional Distress* analyses, it was found that F (2, 198) = .543, p = .582 and F (2, 198) = .169,

p = .845 respectively thereby revealing non-statistically significant results when gender and race were added into the second block of the regression model since p = .582 and .845 fall above the pre-selected .05 alpha level (see Table 15). Additionally, when primary pain diagnosis was added to the pre-treatment and post-treatment regression equations last, F (1, 197) = .569, p = .452 revealed non-statistically significant results and the same was true at post-treatment with F (1, 197) = .069, p = .793 (see Table 16).

Table 14

Block 1: Pre and Post Regression Coefficients and Beta Weights for Depression and Anxiety as Predictors of Emotional Distress (N = 203)

Predictor Variables	Emotional Distress β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.318	3.947	.000	.464	.216	.208	.216	$F(2,200)=$ 27.501	.000*
BAI	.192	2.384	.018						
Post									
BDI-II	.373	5.443	.000	.639	.408	.403	.408	$F(2,200)=$ 69.039	.000*
BAI	.340	4.962	.000						

*p=.05

As the various predictor variables are added to the regression equation, each predictor explains an additional amount of the variance in pre and post *Emotional Distress*. The adjusted R^2=.208 indicates that 20.8% of the variance for pre-treatment *Emotional Distress* can be attributed to pre-treatment BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores (see Table 14) and an additional 20.4% of the variance can be attributed to race and gender (see Table 15). When primary pain diagnosis was added to the third block of the regression equation, an

additional 20.2% of the variance in pre-treatment *Emotional Distress* can be accounted for by this predictor (see Table 16).

Table 15

Block 2: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, and Gender as Predictors of Emotional Distress (N = 203)

Predictor Variables	Emotional Distress β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.319	3.944	.000						
BAI	.196	2.408	.017	.469	.220	.204	.004	*F*(2,198)= .543	.582
Race	.065	1.026	.306						
Gender	.016	.250	.803						
Post									
BDI-II	.379	5.443	.000						
BAI	.336	4.845	.000	.640	.409	.397	.001	*F*(2,198)= .169	.845
Race	.009	.156	.876						
Gender	.032	.570	.569						

*p=.05

Post-treatment results with regard to adjusted R^2 reveal even higher degrees of estimates and demonstrate that the independent variables are even better predictors of change in the criterion (*Emotional Distress*) compared to pre-treatment analyses. When each predictor set is added to the multiple regression equation for Blocks 1, 2, and 3, the variance increases by at least 39% with each grouping. When post BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores are added in Block 1, this predictor set explains 40.3% of the variance in post-treatment *Emotional Distress* (see Table 14). When gender and race were added in Block 2, the variance increased an additional 39.7% (see Table 15) and it increased by another 39.5% when primary

pain diagnosis was added last to the regression model (see Table 16). The larger changes in adjusted R^2 for all of the blocks of the post-treatment *Emotional Distress* regression model demonstrate that the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are better predictors of change as compared to examining the same predictors in the pre-treatment analyses.

Table 16

Block 3: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, Gender, and Pain Diagnosis as Predictors of Emotional Distress (N = 203)

Predictor Variables	Emotional Distress β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.323	3.979	.000						
BAI	.187	2.274	.024	.471	.222	.202	.002	*F*(1,197)= .569	.452
Race	.062	.985	.326						
Gender	.009	.141	.888						
Pain Dx	.048	.754	.452						
Post									
BDI-II	.380	5.433	.000						
BAI	.333	4.757	.000	.640	.410	.395	.000	F(1,197)= .069	.793
Race	.008	.143	.887						
Gender	.029	.524	.601						
Pain Dx	.015	.263	.793						

*p=.05

Results for Research Assumption 4 for Life Control

In review of the overall model summary for pre-treatment *Life Control*, it was discovered in the first block of the regression equation that F (2, 200) = 15.846, p = .000, indicating that BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) accounts for a significant amount of the

variance in predicting changes in *Life Control* (see Table 17). Statistically significant results of F (2, 200) = 26.601, p = .000 were also found at post-treatment with BDI-II and BAI scores added as predictors in the first block of each regression model with (see Table 17). However, in examining Block 2 of the pre-treatment and post-treatment *Life Control* analyses, it was found that F (2, 198) = 1.041, p = .355 and F (2, 198) = 1.733, p = .179 respectively thereby revealing non-statistically significant results when gender and race were added into the second block of the regression model since p = .355 and .179 fall above the pre-selected .05 alpha level (see Table 18). Additionally, when primary pain diagnosis was added to the pre-treatment and post-treatment regression equations last, F (1, 197) = .387, p = .535 revealed non-statistically significant results and the same was true at post-treatment with F (1, 197) = .317, p = .574 (see Table 19).

Table 17

Block 1: Pre and Post Regression Coefficients and Beta Weights for Depression and Anxiety as Predictors of Life Control (N = 203)

Predictor Variables	Life Control β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	-.104	-1.232	.219	.370	.137	.128	.137	$F(2,200)=$ 15.846	.000*
BAI	-.295	-3.486	.001						
Post									
BDI-II	-.332	-4.197	.000	.458	.210	.202	.210	$F(2,200)=$ 26.601	.000*
BAI	-.173	-2.187	.030						

*p=.05

As the various predictor variables are added to the regression equation, each predictor explains an additional amount of the variance in pre and post *Life Control*. The adjusted R^2=.128

indicates that 12.8% of the variance for pre-treatment *Life Control* can be attributed to pre-treatment BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores (see Table 17) and an additional 12.9% of the variance can be attributed to race and gender (see Table 18). When primary pain diagnosis was added to the third block of the regression equation, an additional 12.6% of the variance in pre-treatment *Life Control* can be accounted for by this predictor (see Table 19).

Table 18

Block 2: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, and Gender as Predictors of Life Control (N = 203)

Predictor Variables	Life Control β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	-.100	-1.184	.238						
BAI	-.297	-3.488	.001	.382	.146	.129	.009	*F*(2,198)= 1.041	.355
Race	.072	1.087	.278						
Gender	.067	1.016	.311						
Post									
BDI-II	-.336	-4.201	.000						
BAI	-.163	-2.049	.042	.473	.224	.208	.014	*F*(2,198)= 1.733	.179
Race	.111	1.772	.078						
Gender	-.028	-.443	.658						

*p=.05

Post-treatment results with regard to adjusted R^2 reveal even higher degrees of estimates and demonstrate that the independent variables are even better predictors of change in the criterion (*Life Control*) compared to pre-treatment analyses. When each predictor set is added to the multiple regression equation for Blocks 1, 2, and 3, the variance increases by a minimum of

20% with each grouping. When post BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores are added in Block 1, this predictor set explains 20.2% of the variance in post-treatment *Life Control* (see Table 17). When gender and race were added in Block 2 (see Table 18), the variance increased an additional 20.8% and it increased by another 20.5% when primary pain diagnosis was added last to the regression model (see Table 19). The larger changes in adjusted R^2 for all of the blocks of the post-treatment *Life Control* regression model demonstrate that the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are better predictors of change as compared to examining the same predictors in the pre-treatment analyses.

Table 19

Block 3: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, Gender, and Pain Diagnosis as Predictors of Life Control (N = 203)

Predictor Variables	Life Control β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	-.097	-1.141	.255						
BAI	-.305	-3.536	.001	.384	.147	.126	.002	*F*(1,197)= .387	.535
Race	.070	1.053	.294						
Gender	.061	.917	.360						
Pain Dx	.042	.622	.535						
Post									
BDI-II	-.335	-4.185	.000						
BAI	-.169	-2.102	.037	.474	.225	.205	.001	*F*(1,197)= .317	.574
Race	.110	1.739	.084						
Gender	-.033	-.520	.604						
Pain Dx	.036	.563	.574						

*p=.05

Results for Research Assumption 5 for Total Function

In review of the overall model summary for pre-treatment *Total Function*, it was discovered in the first block of the regression equation that F (2, 200) = 25.280, p = .000, indicating that BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) accounts for a significant amount of the variance in predicting changes in *Total Function* (see Table 20). Statistically significant results of F (2, 200) = 67.846, p = .000 were also found at post-treatment with BDI-II and BAI scores added as predictors in the first block of each regression model with (see Table 21). However, in examining Block 2 of the pre-treatment and post-treatment *Total Function* analyses, it was found that F (2, 198) = 2.529, p = .082 and F (2, 198) = .017, p = .983 respectively thereby revealing non-statistically significant results when gender and race were added into the second block of the regression model since p = .082 and .983 fall above the pre-selected .05 alpha level (see Table 21). Additionally, when primary pain diagnosis was added to the pre-treatment and post-treatment regression equations last, F (1, 197) = .071, p = .790 revealed non-statistically significant results and the same was true at post-treatment with F (1, 197) = .739, p = .391 (see Table 22).

As the various predictor variables are added to the regression equation, each predictor explains an additional amount of the variance in pre and post *Total Function*. The adjusted R^2=.194 indicates that 19.4% of the variance for pre-treatment *Total Function* can be attributed to pre-treatment BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores (see Table 20) and an additional 20.6% of the variance can be attributed to race and gender (see Table 21). When primary pain diagnosis was added to the third block of the regression equation, an additional 20.2% of the variance in pre-treatment *Total Function* can be accounted for by this predictor (see Table 22).

Table 20

Block 1: Pre and Post Regression Coefficients and Beta Weights for Depression and Anxiety as Predictors of Total Function (N = 203)

Predictor Variables	Total Function β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.319	3.917	.000	.449	.202	.194	.202	*F*(2,200)= 25.280	.000*
BAI	.174	2.136	.034						
Post									
BDI-II	.452	6.584	.000	.636	.404	.398	.404	*F*(2,200)= 67.846	.000*
BAI	.249	3.630	.000						

*p=.05

Table 21

Block 2: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, and Gender as Predictors of Total Function (N = 203)

Predictor Variables	Total Function β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.314	3.878	.000						
BAI	.193	2.371	.019	.471	.222	.206	.020	*F*(2,198)= 2.529	.082
Race	.110	1.742	.083						
Gender	-.083	-1.309	.192						
Post									
BDI-II	.454	6.487	.000						
BAI	.249	3.578	.000	.636	.404	.392	.000	*F*(2,198)= .017	.983
Race	.008	.151	.880						
Gender	.007	.118	.906						

*p=.05

Post-treatment results with regard to adjusted R^2 reveal even higher degrees of estimates and demonstrate that the independent variables are even better predictors of change in the criterion (*Total Function*) compared to pre-treatment analyses. When each predictor set is added to the multiple regression equation for Blocks 1, 2, and 3, the variance increases by at least 39% with each grouping. When post BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) scores are added in Block 1, this predictor set explains 39.8% of the variance in post-treatment *Total Function* (see Table 20). When gender and race were added in Block 2 (see Table 21), the variance increased an additional 39.2% and it increased by another 39.1% when primary pain diagnosis was added last to the regression model (see Table 22). The larger changes in adjusted R^2 for all of the blocks of the post-treatment *Total Function* regression model demonstrate that the independent variables (BDI-II, BAI, race, gender, and primary pain diagnosis) are better predictors of change as compared to examining the same predictors in the pre-treatment analyses.

Table 22

Block 3: Pre and Post Regression Coefficients and Beta Weights for Depression, Anxiety, Race, Gender, and Pain Diagnosis as Predictors of Total Function (N = 203)

Predictor Variables	Total Function β	*t*	*p*	*R*	R^2	Adj. R^2	ΔR^2	*F*	Sig. *F* Δ
Pre									
BDI-II	.315	3.878	.000						
BAI	.190	2.304	.022	.471	.222	.202	.000	*F*(1,197)= .071	.790
Race	.109	1.722	.087						
Gender	-.085	-1.330	.185						
Pain Dx	.017	.267	.790						
Post									
BDI-II	.453	6.470	.000						
BAI	.257	3.658	.000	.638	.407	.391	.002	*F*(1,197)= .739	.391
Race	.011	.193	.847						
Gender	.014	.242	.809						
Pain Dx	-.048	-.860	.391						

*p=.05

Discussion

The primary purpose of this study was to investigate the relationship between changes in the scores for the various scales on the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) with changes in depression as measured by the BDI-II (Beck et al., 1996) and with changes in anxiety as measured by the BAI (Beck & Steer, 1993) in a sample of chronic pain patients who had completed COP. As previously stated, Von Korff (1992) is the only reference to the MPI Screener (Kerns et al., 1985) to date that this researcher found in available published research and literature. The construct validity of the scales of the MPI Screener Patient Report Card was investigated in this study to assess the utility of the scales of the instrument which can

serve as a brief assessment of psychosocial functioning for counselors who work with patients living with chronic pain. A multiple regression design was used with demographic variables such as gender, race, and primary pain diagnosis being considered as additional predictor variables.

Five research assumptions were examined using ten separate (five pre and five post-treatment) regression analyses. As initially predicted and suspected by this researcher, BDI-II and BAI would predict changes (pre and post) in the scales of the MPI Screener Patient Report Card. Additionally, it was suspected that race, gender, and pain diagnosis would not serve as good predictors when loaded into the regression model second and third. Results indicated that statistical significance was found in pre and post-treatment analyses with predictors BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993) compared to race, gender, and primary pain diagnosis for research assumptions two through five on criterions *Pain Interference*, *Emotional Distress*, and *Life Control*, and *Total Function.* Statistical significance was found only at post-treatment for the first research assumption on *Pain Intensity* with BDI-II and BAI as the predictors. Therefore, statistical significance was found on four out of the five criterions (*Pain Interference*, *Emotional Distress*, *Life Control*, and *Total Function*) with pre and post BDI-II and BAI as the best predictors. As suspected, race, gender, and primary pain diagnoses did not contribute significantly to results except that race and gender contributed to the statistical significance found at pre-treatment for *Pain Intensity*.

Additionally, as suspected and as demonstrated in the literature review provided herein, the sample in the present study was predominately female, Caucasian, and had the primary pain diagnosis of lumbar pain. As previously stated, similar results were found with the incidence of pain being reported by more females than males (IASP, 2007a; NCHS, 2006). With regard to racial differences, it was also discovered in this study's review of available research that more

Caucasian adults than African Americans and Hispanics report being in pain (NCHS, 2006). Furthermore, similar to the current study, low back pain was reported as the most experienced across most demographic groups (ABC News, 2005; NCHS, 2006).

Due to patients often being expected or required to complete long forms and assessments prior to initiating treatment, brief self-report instruments measuring psychosocial functioning are necessary in helping the clinician and patient assess progress throughout the course of treatment. To further the utility of the MPI Screener (Kerns et al., 1985) and MPI Screener Patient Report Card (Clark, 1996; see Appendix H) for counselors who work with individuals living with chronic pain, this study primarily examined the construct validity of the scales of the MPI Screener Patient Report Card with a group of chronic pain patients who have completed COP. Although some of the regression analyses were not found to be statistically significant, the MPI Screener Patient Report Card, along with the BDI-II (Beck et al., 1996) and BAI (Beck & Steer, 1993), can still be a clinically useful tool when used by counselors who work with chronic pain patients who participate in a 4-week interdisciplinary treatment program.

As previously stated, it is important for mental health professionals (counselors and psychologists alike) to have at their utility brief measures of psychosocial functioning without further subjecting their patients to continual rounds of long and tedious self-report instruments. Since patients are often expected or required to complete long forms and assessments prior to initiating treatment, brief self-report instruments measuring psychosocial functioning are essential in helping the clinician and patient quickly assess progress throughout the course of treatment. The various scales of the MPI Screener Patient Report Card (Clark, 1996; see Appendix H) can help counselors and psychologists alike who work with chronic pain patients in interdisciplinary treatment settings quickly gauge how the patient is relating to their pain

differently at treatment outcome. However, it is important to again note that its applicability can only be justified at this point when used with patients who have completed a 4-week intensive interdisciplinary treatment program. Therefore, it is important to remind the reader that the results reported herein may not be generalizable to chronic pain patients who are not participating in interdisciplinary care.

Implications for Counseling

Although not all changes in *F* on the pre and post criterion were found to be statistically significant when examining how the various predictor/independent variables explain the variance in the criterion/dependent variables, it is interesting to find larger adjusted R^2 at post-treatment on all criterion scales reported in this study. In the opinion of this investigator, this can be due to reported changes in the patients at post-treatment on the MPI Screener Patient Report Card (Clark, 1996; see Appendix H), BDI-II (Beck et al., 1996), and BAI (Beck & Steer, 1993) tend to be better at program end because patients learn better ways of adapting to their pain and feel better emotionally. Demonstrating the efficacy of COP, one might hope to find larger post-treatment adjusted R^2 such as those reported. Therefore, the reader can conclude that, although not all of the regression analyses were found to be statistically significant at pre and post (i.e., *Pain Intensity*), with predictors BDI-II and BAI alone, the MPI Screener Patient Report Card, along with the BDI-II and BAI, is still a clinically useful tool when used by counselors who work with chronic pain patients who participate in a 4-week interdisciplinary treatment program. The MPI Screener (Kerns et al., n.d.), along with the MPI Screener Patient Report developed by Clark, can still be considered a useful, brief, and easily understandable tool for the clinician and patient whereby patients can be given feedback regarding their level of functioning at program

admission, midpoint, and discharge and is helpful in tracking patient progress while attending an interdisciplinary pain management program such as COP.

Limitations of Study

A correlational design such as the one used herein obviously has its potential disadvantages, as controlling for extraneous variables, such as program participant maturation and attrition, is not possible since there is no control group. Therefore, results can be influenced by extraneous variables. However, since this study only looks at graduates of the 4-week COP program, subject maturation is limited only to physical and mental health conditioning related to program participation and attrition is controlled for because this study's sample is limited only to graduates of the COP program. However, additional potential limitations of the correlational method should be noted. Independent variables could not be manipulated and there was no power to randomize the sample because events in this study had already occurred. Furthermore, the results reported herein only investigated relationships between the variables and do not lead to strong conclusions about cause-and effect. It is also important to note that the COP program is interdisciplinary-focused when it comes to treatment modalities. Therefore, this investigator cannot make conclusions that any one particular treatment modality (e.g., physical therapy, occupational therapy, aquatic therapy, individual psychotherapy and biofeedback, or patient education classes) affects changes on the MPI Screener Patient Report Card (Clark, 1996), BDI-II (Beck et al., 1996), or BAI (Beck & Steer, 1993).

A correlational design also has its potential disadvantages. Controlling for extraneous variables is not possible since there is no control group. Therefore, results can be influenced by extraneous variables. Independent variables are also not manipulated and there is lack of power to randomize the sample because events in this study have already occurred. Furthermore, results

only examine relationships between the variables and do not lead to strong conclusions about cause-and effect. Additionally, because data analyzed for this study came from a regional medical center in a major metropolitan area for chronic pain patients who were referred to the Baylor Center for Pain Management for their pain symptoms and the data to be analyzed came from an existing patient database of graduates of an intensive interdisciplinary treatment program, generalizability of results for the general chronic pain population may be limited. Furthermore, as suggested by Okifuji et al. (1999) referrals made to MPCs do not necessarily represent the chronic pain population as a whole. Skepticism regarding treatment efficacy and cost-effectiveness by third-party payers and their refusal to reimburse the expense of such interdisciplinary programs may affect referrals as well as patients often seek other forms of treatment such as chiropractic care, herbal remedies, acupuncture, and massage rather treatment from chronic pain specialists. An additional limitation of generalizability may also be that participants in the COP program, in the experience of this investigator as primary counselor for the program, tend to be mostly females, Caucasians, and lumbar pain patients.

Since data analyzed came from a regional medical center in a major metropolitan area for chronic pain patients who were referred to the Baylor Center for Pain Management for their pain symptoms, generalizability of results for the general chronic pain population may be limited. Additionally, the data analyzed came from an existing patient database of graduates of an intensive interdisciplinary treatment program. Furthermore, as suggested by Okifuji et al. (1999) referrals made to MPCs do not necessarily represent the chronic pain population as a whole. As previously stated, skepticism regarding treatment efficacy and cost-effectiveness by third-party payers and their refusal to reimburse the expense of such interdisciplinary programs may affect referrals as well as patients often seek other forms of alternative treatment. An additional

limitation of generalizability may also be that, in the experience of this investigator as primary counselor for the program, and, as demonstrated in the results section of this study, participants in the COP program tend to be mostly females, Caucasians, and lumbar pain patients.

Recommendations for Future Research

Based on the results reported herein, only two recommendations are suggested for future research:

1. If this study were to be replicated, use a sample that includes a more normally distributed population based on patient demographics.
2. Having a larger sample size might yield stronger results in the statistical analyses.

APPENDIX A

BAYLOR UNIVERSITY MEDICAL CENTER IRB APPROVAL LETTER

BAYLOR
University Medical Center

3500 Gaston Avenue
Dallas, Texas 75246
(214) 820-0111

IRB APPROVAL

November 13, 2008

Katherine Walker, MS, NCC, LPC
Anesthesiology
3600 Gaston Avenue, Wadley Suite 360
Dallas, TX 75246

Re: Correlates of the Scales of a Modified Screening Version of the Multidimensional Pain Inventory with Depression and Anxiety on a Chronic Pain Sample
Project#: 008-283 Protocol#: N/A Protocol Dt:
EXEMPT Sponsor: Baylor Department

The following items were reviewed:

- Proposed Dissertation Project
- Data Collection Sheet
- Education Report (11/05/2008)
- IRB Form 18-Review Scientific/Scholarly Validity (11/04/2008)
- IRB Form 15-Existing Specimen/Record Review (11/04/2008)
- Projected Number of Subjects/Charts/Specimens - 200+

As Chair of the Institutional Review Board for Human Protection, I have reviewed the above referenced research project and find it to be exempt from review by the full Board. This exemption is warranted under the 45 CFR 46.101(b) criteria specified below.

45 CFR 46.101(b)(4):
(4) Research involving the collection or study of existing (i.e., on the shelf, already collected, and/or banked prior to the date the study is to start) data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

It is the policy of the Baylor Research Institute that all research protocols, even those that are exempt from full Board review, be reviewed approximately once per year. Based upon this requirement, your study has been scheduled for Continuing Review as specified below. You will be notified prior to this review date.

Federal regulations and institutional policies require that the IRB review any and all changes in your research

activity. This includes amendments, revisions, administrative changes, advertisements, or ANY other change in the information which was previously approved by the IRB. In other words, should your project change, another review by the Board is required.

Approval was granted 11/13/2008 for a period not to exceed 12 months and will expire on 11/12/2009. Your Continuing Review is scheduled for 11/05/2009.

Sincerely,

Jeffrey M. Schussler, MD, Vice Chair
Institutional Review Board ~ Blue

APPENDIX B

UNIVERSITY OF NORTH TEXAS IRB APPROVAL LETTER

UNT
UNIVERSITY OF
NORTH TEXAS
Discover the power of ideas.

OFFICE OF THE VICE PRESIDENT FOR RESEARCH AND ECONOMIC DEVELOPMENT
Office of Research Services

December 1, 2008

Katherine Walker
Department of Counseling and Higher Education
University of North Texas

RE: Human Subjects Application No. 08410

Dear Ms. Walker:

In accordance with 45 CFR Part 46 Section 46.101, your study titled "Correlates of the Scales of a modified Screening Version of the Multidimensional Pain Inventory with Depression and Anxiety on a Chronic Pain Sample" has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

No changes may be made to your study's procedures or forms without prior written approval from the UNT IRB. Please contact Shelia Bourns, Research Compliance Administrator, ext. 3940, if you wish to make any such changes.

Sincerely,

Kaminski, PhD

Patricia L. Kaminski, Ph.D.
Chair
Institutional Review Board

PK:sb

CC: Dr. Cynthia Chandler

1155 Union Circle #305250 | Denton, Texas 76203-5017 | TEL 940.565.3940 | FAX 940.565.4277
TTY 940.369.8652 | www.unt.edu

APPENDIX C

LETTER GRANTING PERMISSION TO INCLUDE INSTRUMENTS AND DOCUMENTS FROM TIMOTHY S. CLARK, PHD

BAYLOR CENTER FOR PAIN MANAGEMENT
3600 Gaston Ave, Wadley, Suite 360, Dallas, TX 75246
Phone: 214/820-7730 FAX: 214/820-8800

March 4, 2009

To Whom It May Concern:

I am delighted to hear that Ms. Walker had successfully defended her dissertation.

All aspects of the dissertation were done with my approval. Evidence of our use of the MPI Screener Patient Report Card that I developed for our quality improvement goes back to as early as 1996. This MPI Screener Patient Report Card was based on a screening version of the Multidisciplinary Pain Inventory (MPI) I had found briefly referenced in Von Korff (1992). Since that time I have had a private communication with one of the authors of the MPI who has indicated that he has used the screening items in other work but has not published them.

In the development of the MPI Screener Patient Report Card, I gathered internal norms, began to examine the relationship of these scores to other outcomes, and looked at their stability across time. This work was done internally for quality improvement and was never presented for publication. I then developed this instrument as a device to communicate with patients and referrals sources patient status and improvements relative to other chronic pain patients. Ms. Walker has permission to include the MPI Screener Patient Report Card in the appendix section of her dissertation.

Ms. Walker's research project was derived from archival data gathered in an Access database that I developed here at the Center for Pain Management at Baylor University Medical Center. Analysis of the data was completed after approval by the Baylor Institutional Review Board. Patients who participated in treatment had completed a Treatment Agreement which is standard form used to obtain consent at Baylor.

I provide my permission for Ms. Walker to include the following instruments and forms in the appendix section of her published dissertation: a) Informed Consent for Treatment, b) Treatment Agreement, c) Patient Information Background Form, d) MPI Screener Patient Report Card, and e) information on my development of the MPI Screener Patient Report Card which I provided to her on October 3, 2008.

Sincerely,

Timothy S. Clark, Ph.D.
Licensed Psychologist 2-4179
Program Director, Comprehensive Outpatient Program

APPENDIX D

INFORMED CONSENT FOR TREATMENT

BAYLOR CENTER FOR PAIN MANAGEMENT
3600 Gaston Avenue, Wadley Tower, Suite 360
Dallas, TX 75246
214-820-7730

INFORMED CONSENT FOR TREATMENT

Biofeedback and counseling services are provided by employees of the Baylor Center for Pain Management. All therapists are licensed by the state of Texas or are under supervision of a licensed mental health professional. The goal of treatment is for you to learn that can control pain, manage stress, and reduce emotional distress.

All information which you disclose is confidential and cannot be released without your written consent. Several limitations do exist to this confidentiality.

1. A summary of the treatment plan and progress is maintained in the medical record of the Center for Pain Management.
2. If you wish authorization of treatment by a third party payer (i.e., insurance company), a copy of the treatment plan and summary of progress may be required by the payer.
3. In accordance with state law, information may be disclosed if the therapist determines that you are a danger to yourself.
4. In accordance with state law, information may be disclosed to appropriate authorities regarding abuse, neglect, or exploitation of a child, elderly or disabled person.

I understand the services being provided as well as the limits of confidentiality.

_____ _____

Patient Signature Date

Clark, T. S. (n.d.). *Informed consent for treatment*. Unpublished document. Reproduced and used with permission.

APPENDIX E

TREATMENT AGREEMENT

BAYLOR CENTER FOR PAIN MANAGEMENT

3600 Gaston Avenue
Wadley Tower, Suite 360
Dallas, TX 75246
214/820-7730

TREATMENT AGREEMENT

Our goal is to provide you with the education, therapy, and support you need to learn to control your pain, set new goals for your life, and work to meet those goals. For a therapeutic relationship to work it is important that you understand the program and your responsibilities while in it. If a client is not carrying out all three of their responsibilities, their participation will be reviewed and they may be discharged early from the program.

PROGRAM SUMMARY

What is the Program?

The program is an interdisciplinary treatment program designed for persons with ongoing pain. The program has been in operation since 1994. Treatment consists of 5 major group activities: (1) stretching and strengthening both in the gym as well as in a swimming pool, (2) education and training in skills to accelerate recovery and cope with the emotional and mental stress that pain produces, (3) training in methods to reduce pain and tension produced by pain, (4) education about techniques and tools used to help in daily life activities, and (5) exploration of vocational needs and resources if appropriate. Also provided are counseling, biofeedback training, manual therapies if appropriate, and individual vocational counseling if appropriate.

Who Provides Treatment?

Professionals from various disciplines provide treatment and training. This will include a case manager (Mari Grazzini), licensed physical therapist (Becky Walker), licensed physical therapy assistant (Pamela Behnk), licensed occupational therapist (Micah Mahaney), and licensed professional counselor (Katie Walker). A neuropsychologist (Timothy Clark, Ph.D.) directs the program in collaboration with the medical director (Carl Noe, M.D). The interim administrative director for the Department of Anesthesiology and Pain Management is Ryan Seymour.

What Benefits Can Be Expected?

We collect information from clients before and after the program. Our data indicates that at graduation clients frequently feel much more in control of their lives, have less emotional distress, have some reduction in pain, are stronger and have more endurance, and have a plan to deal with their pain. Over 95% of clients indicate that they would recommend the program to a friend.

What Are the Possible Risks?

Most clients report soreness in the first week or two as a result of the increased activity and the new exercises. Some report that they feel some stress because of the changes they are trying to make in their lives. Both of these problems generally resolve as clients continue their program. If either creates a significant problem your therapists will work with you to make needed modifications. In addition, as with any medical care, your response to treatment can influence future medical plans or evaluation by third parties.

What Happens After the Program?

Clients will work with their therapists to set up a program to help them continue their progress. This will include a program that the client does independently as well as continued therapy (if warranted) with professionals in the program.

Clark, T. S. (n.d.). *Treatment agreement*. Unpublished document. Reproduced and used with permission.

KEY RESPONSIBILITIES

I. Set Goals

We cannot make progress unless we know where we are going. In order for us to work effectively we will need your help in setting goals. There will be an opportunity for you identify these later on this form.

II. Make Progress

Out of respect for you and the treatment team, we feel that we should only continue treatment if progress is being made. In the second week, the treatment team will meet with you to find out if you are making progress towards your objectives, long-term goals, and short-term goals. If not, we can problem solve ways to help you make the progress you desire, to modify your goals, or if needed to change the treatment plan.

III. Cooperate With the Program

We need help of all clients in 5 specific ways. We have found these elements essential both for clients to make progress and for the group to maintain positive morale.

1. **Attend Regularly:** All clients are expected to attend all days and all groups within the program. If a client must miss, they should discuss this with a therapist in advance and place a "post-it" note on the schedule board. If you miss more than two days, a meeting will be arranged with your assigned therapist or Dr. Clark to help devise a solution so that you can be successful.

2. **Be On Time and Stay for the Entire Session:** All clients are expected to arrive at 8:15 AM so they can be ready to start the group at 8:30. All clients are expected to start all groups on time and stay throughout the group. For example, if you finish some exercise early in the conditioning group, please ask the therapist what additional activity you could do. If you need a short break, please resume the group as soon as possible. We will provide you with designated breaks throughout the day. The program ends at 3:00 PM. It meets for 20 days (Monday through Friday, for four weeks). Should a patient be late regularly for any program activities they will be counseled. Should the problem not be resolved they may be discharged.

3. **Support other Group Members:** Over time, we have found that the most important part of the program is the understanding and support members give to each other. We expect all clients to treat other members with respect and to support each other. Please keep information shared by other group members private.

4. **Get Family Involved:** Your efforts to manage your pain more effectively and resume activities will require the support and understanding of your family. We require that your spouse, significant other, or another close adult family member meet with your assigned therapist and you at least once during the program. If you need help in asking them or if timing is a problem, we will be happy to work with you to arrange this. We can even call them if needed.

5. **Use Medication Appropriately:** Each client in the program will establish a plan for pain medication with his or her treating physician. This is the physician who may either already be prescribing your pain medications or a physician who has agreed to assume management of your pain medications. However, this physician may not necessarily be Dr. Noe, Dr. Vera, Dr. Haynsworth, or Dr. Brown, who may only be serving as your consulting physician while you attend the program. All clients are expected to take medications as prescribed. They are expected to bring their own medication and take appropriate action to protect it from theft or loss during the program. Sharing medication or requesting medication from other group members is illegal and can result in immediate discharge from the program.

KEY RIGHTS

To Professional and Ethical Treatment: All clients have a right to be treated with respect and dignity. You have a right to make decisions about your care and to get feedback from staff as needed. You have a right to discontinue treatment should you desire. Your rights as a client can be found in more detail in the pamphlet "Your Rights and Responsibilities" which can be found posted in the kitchen area. A copy of our Mission statement is also posted in the hall to let you know of our philosophy and values.

To Confidentiality: With the following specific exceptions, any information you disclose to members of the treatment team cannot be released without your written permission.

1. In order to continue preauthorizaation of the program, your insurance carrier will be provided updates on your progress.
2. A letter summarizing the goals set, progress made, and participation in the program will be provided both to the physician who sent you here to the Pain Center as well as your insurance carrier. This information can and will impact your future vocational and medical planning.
3. Your Pain Center physician and all members of the multidisciplinary team share information on a regular basis so as to coordinate your care.
4. In addition, under Texas law we are required to report to appropriate authorities information which leads us to suspect child abuse or if you are judged to be an immediate danger to yourself.
5. Data from questionnaires and testing is collected from all clients upon entry into the program, at discharge, and at follow-up dates. This information is recorded in your patient record and some it is reported in the summary provided to your referring physician and to your Worker's Compensation carrier (if this applies to you). This data is also used for ongoing research to document the effectiveness of this program. Group information is analyzed at regular staff reviews of the program's effectiveness, is summarized in our annual Quality Improvement Report, and may be distributed in marketing. In these reports, no information specific to any one client or information that contains identifiable information (e.g., name, date of birth, social security number, and address) will be included.

To Have Concerns Addressed: We make your satisfaction with treatment a primary concern. If you have a concern or complaint, we recommend that you first discuss it with the therapist involved. If not satisfied with this response we recommend that you discuss your concerns with the program director, your physician, or the case manager. They will work with you and the necessary staff to resolve this problem as appropriate. For general feedback regarding ideas for program improvement, please complete in detail the feedback form you are provided when you graduate.

To Treatment Free of Abuse, Neglect, Exploitation, or of Ethical Violations: Any occurrence of client abuse, neglect, or exploitation should be addressed to the program director or the administrator for the Center for Pain Management. Formal policies exist to rapidly evaluate and resolve any such problems. Questions or complaints of ethical violation can be addressed through contacting the professional state licensing board. Telephone numbers are available in the treatment areas. Any concerns about business ethics can be addressed through the posted telephone number for the Ethics Hotline.

To Focus the Program on Your Goals: Although most of the treatment is provided in groups, we will have you identify your individual goals for the program and the future. In addition to daily discussions with staff, we will review progress towards these goals in a formal meeting midway through the program. This will be a time to determine any additional resources that may be helpful. By the fourth week of the program we will be working with you to develop specific plans and resources for your continued progress after the program. These will be focused on the setting to which you return, your resources, and your goals.

SUGGESTIONS FROM THE PROGRAM DIRECTOR

Disability:

Research and our experience teach us that people with pain do better when they are active, productive, and have a full life. You will meet with a Vocational Counselor while in the program to development your return to work plan, explore options for training and/or job placement. People have better financial resources and quality of life while working than when receiving Social Security Disability. We are comfortable with the fact that some patients may be receiving disability when they enter the program. However, we will focus on increasing **ability** not documenting **disability**. We focus on finding ways to be productive and self-sufficient even with challenges or limitations.

This has several consequences:

- Our medical records seek to document your potential and increasing strength, conditioning, and abilities.
- We want to create an environment focused on rehabilitation and activity. Please, do not coach other patients on strategies to obtain disability or give resources about lawyers to help obtain disability.
- Although you can request copies of your records, Dr. Clark cannot help complete documentation for disability.

Medication:

It is our goal to help patients manage pain and live fully with the least amount of pain medication possible. Excessive medication can result in side effects such as increased depression, problems with concentration, sleepiness, low drive, and constipation. Most patients report feeling better when they minimize these medication side effects.

As a result, we request:

- Please ask physicians questions about your medications during your visits. It is difficult for them to appropriately answer these questions at other times.
- Treatment team members generally will not get involved (asking your doctor) in medication issues.
- For many patients, it will be appropriate to set as a goal taking less pain medication. Being active in the program does not mean that more medication should be taken.
- Please help other patients who are learning to manage pain without medication. These patients will find it unhelpful if group discussions revolve around taking pain medication. To help them, please do not offer advice about medications, or make a "production" of taking medication. Of course, it is illegal to offer others your medications or take the medications of others.

Timothy S. Clark, Ph.D.
COMPREHENSIVE OUTPATIENT PROGRAM
BAYLOR CENTER FOR PAIN MANAGEMENT

TO HELP COORDINATE YOUR TREATMENT, WE NEED YOUR HELP IN 4 WAYS

1. Please list any dates or appointment which you have that will cause you to be absent, arrive late, or leave early.

   _____

   _____

2. Please list your general goals for the program. Examples could include "cope with my pain better, become less depressed, sleep better, take less medicine."

   _____

   _____

3. Please list some practical activities you hope to resume after graduation. Examples could include "return to my job, start vocational retraining, do more of the housecleaning, resume working in the garden once a week, go dancing, make love more often."

   _____

   _____

4. To help us inform your family and friends, please select the adult who you feel is your primary emotional support. This could be a husband, wife, brother, sister, adult child, or close friend. We will give to you to share or send them a letter with information about how they can help your rehabilitation and pain management and invite them to visit us one day to learn more about the program.

   _____ _____
   Name Relationship to You

   _____
   Address

PLEASE SIGN THE FOLLOWING

_____
(Print Name)

I understand and agree with these rights and responsibilities as they are defined above. I realize that failure to honor this agreement will be considered as a voluntary withdrawal from the program.

_____
(Signature of Client) (Date)

_____
(Signature of Team Member) (Date)

You will be provided a copy of this form for your records.

APPENDIX F

PATIENT BACKGROUND INFORMATION FORM

Welcome to the Comprehensive Outpatient Program. We are delighted to have you join us in starting this rehabilitation program. To help us help you better we ask that you fill out the following questionnaires. You probably filled these out when during the evaluation to come into the program but we want to make sure that we have updated information.

Patient Background Information Form

Today's Date: **_____**

Name: _____
Last First Middle Initial

Sex: __ Male ___ Female Age: _____ Date of Birth: _____

When did your pain start? **_____**

Current Address: _____
No. Street

_____
City State Zip

Home Phone: _____ Cell Phone: _____
(area code) (number) (area code) (number)

Beeper: _____ Home Phone: _____
(area code) (number) (area code) (number)

Phone numbers of 4 people to contact in an emergency or for follow up. Please list in order the person we should try to reach first. This list can include spouses, significant other, parents, grandparents, adult children, or even close friends.

Name: _____

Relationship: _____ *Phone:* _____
(area code) (number)

Name: _____

Relationship: _____ *Phone:* _____
(area code) (number)

Name: _____

Relationship: _____ *Phone:* _____
(area code) (number)

Name: _____

Relationship: _____ *Phone:* _____
(area code) (number)

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What prescription medications do you currently take:

_____ _____

_____ _____

_____ _____

_____ _____

1. Are you getting all your pain medication from one physician? (e.g., Lortab, Lorcet, Ultram, does not include anti-inflammatory medication)
   ___Yes ___ No ___ Not taking any pain medicine

2. Do you take more pain medication than prescribed by your physician? (e.g., Lortab, Lorcet, Ultram, does not include anti-inflammatory medication)
   ___Yes ___ No ___ Not taking any pain medicine

In the last 12 months how many times have you gone to the following medical professionals <u>for your pain problem</u>? Circle the closest answer. If you can't recall, just put down your best guess.

3. Seen a physician or dentist for an office visit?
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

4. Seen a chiropractor?
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

5. Been to the emergency room because of bad pain?
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

6. Met with a mental health professional? (psychiatrist, counselor, psychologist)
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

In the last 12 months how many:

7. <u>Pain management procedures</u> have you had (e.g. trigger point injections, sympathetic nerve blocks, epidural steroid injections, facet blocks)
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

8. <u>Diagnostic tests</u> have you had for your pain (e.g., MRI, CT scan, myelogram, EMG nerve conduction study)?
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

9. <u>Surgeries</u> have you had for your pain (e.g., spine surgery such as laminectomy or fusion, carpal tunnel release, sympathectomy)?
   0 1 2 3 4 5 6 7 8 9 10 Please record how many if more than 10 (_____)

10. Have you had implantation of a <u>morphine pump</u>? Yes __ No___

11. Have you had implantation of a spinal cord stimulator? Yes __ No___

12. What is your current work status? (Please check one that best fits)
    ___ Working full time, regular duties
    ___ Working full time, light duty or different duties
    ___ Modified work (4-7 hours a day)
    ___ Part time (less than 4 hours a day)
    ___ Have a job but have not been released to work

___ Not employed but have activities which help make some money
___ Not working outside the home and do not have a job
___ In vocational retraining or working with the Texas Rehabilitation Commission

13. If you are not working full time, is this because of your pain problem? ___ Yes ___ No

14. Please check the following types of disability payments you receive due to your pain problem:
___ Workers Compensation
___ Social Security Disability
___ Private Disability

15. If you were injured on the job and received Workers Compensation, have you been placed at Maximal Medical Improvement and given an impairment rating? ____ Yes ____ No

16. Do you have a plan to self manage your pain? ____ Yes ____ No

In the <u>last 7 days</u> on how many days did you do the following to manage your pain?

17. Distract self by getting active in something else 1 2 3 4 5 6 7
18. Relaxation tapes, self hypnosis, biofeedback for at least 20 minutes 1 2 3 4 5 6 7
19. Stretching program (at least for 10 minutes) 1 2 3 4 5 6 7
20. Exercise (for at least 30 minutes, e.g., walking, back strengthening) 1 2 3 4 5 6 7

21. How helpful were these or other techniques (other than medicine) in managing your pain?

Not helpful							`		**Very helpful**
1	2	3	4	5	6	7	8	9	10

APPENDIX G

MPI SCREENER REPORT CARD DEVELOPMENT

MPI SCREENER PATIENT REPORT CARD DEVELOPMENT

(COURTESY OF TIMOTHY S. CLARK, PHD ON OCTOBER 3, 2008)

The MPI screener was developed based on the brief comment by Rudy (Von Korff, 1992). The goal was to develop a brief instrument that would be linked conceptually to a larger body of literature with a well-established instrument. Previously unpublished data at the Center for Pain Management at Baylor University Medical Center in Dallas, Texas had found that means and standard deviations of our population were similar to the ones for the normative database used for the MPI scoring.

Internal norms for the MPI screener were developed from 156 consecutive psychological evaluations conducted at the Center for Pain Management. These patients had been referred by a pain management physician because the physician thought the patient may need interdisciplinary services in addition to medical intervention A fifth scale labeled "Total Function" (TF) was developed to summarize the Pain Intensity (PS), Pain Interference (INT), Emotional Distress (DIS), and Life Control (LC) scales using the following formula, PS + INT + DIS – LC = TF. A patient "report card" was developed in which an individual patient's raw scores could be plotted on a graph. This was done by converting each score possible on a scale into a z score using the mean and standard deviation from the normative data set. These *z* scores were then converted to a percentile rank distribution. The percentile ranks were then plotted on a graph.

The goal of the patient report card was to create a tool to provide patients with feedback regarding their level of functioning. It could easily track patient progress.

Additional data was gathered from another site. A pain management physician administered the items to all new visits to the clinic. These were not patients selected specifically

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for psychological evaluations but rather had been referred for medical management of pain. The norms can be seen below in comparison to the original norms.

The physician sample appeared to have mildly lower pain severity, interference, distress and greater life control.

	Original norms (n = 156)		Physician norms (n = 586)	
	Mean	*SD*	Mean	*SD*
Pain Severity	8.8	2.3	8.3	2.4
Interference	9.0	3.1	8.2	3.5
Distress	7.5	2.8	6.2	3.2
Life Control	6.8	3.0	7.6	2.7
Total Function			15.2	8.1

Other research was conducted as part of an internal quality improvement process but was not published. It was found that scores did not change significantly between physician office visits if interdisciplinary treatment had not been initiated. It was also found that reliably scores did change in the expected direction after 4 weeks of treatment. A small sample was gathered in which scores were compared from three time periods: one month prior to the program, admission to the program, and discharge from the program. There was a greater change in scores from admission to discharge then from one month prior to admission. These findings suggested that the instrument might be measuring true treatment effects of the pain management program and not random fluctuation nor simply regression to a mean.

APPENDIX H

MPI SCREENER PATIENT REPORT CARD

Patient Name: _____ MD: N B V H MPI SCREENER PATIENT REPORT CARD

%ILE RANK	CLASSIFICATION	Pain Intensity (PS)	Pain Interference (INT)	Emotional Distress (DIS)	Life Control (LC)	Total Function (TF)	Hours Inactive	%ILE RANK
> 95	VERY POOR			12	< 4	> 28	> 10	> 95
		12		11	4	28	10	
90	WORSE THAN AVERAGE			10		26	9	90
		11	12		5	24	8	
80				9		22		80
			11		6		7	
70		10		8		20		70
60			10				6	60
		9				18		
50	AVERAGE	.....	.....	7	.....	.....	.....	50
			9		7		5	
40		8		6		16		40
			8				4	
30					8	14		30
		7	7	5				
20	BETTER THAN AVERAGE				9	12	3	20
				4				
10			6			10	2	10
< 5	SUPERIOR	6	5	3	10	8		< 5
		< 6	4	2, 1	11	6	1	
			< 3	0	12	< 6	0	
		(1+)=PS	(3+)=INT	(5+)=DIS	(7<)=LC	(P*INT+DIS+LC=TF)		

Interval	Date	Legend
Pre	/ /	
Mid	/ /	
Post	/ /	
6 month	/ /	
12 month	/ /	

Health Status Questionnaire	Pre	Mid	Post
PHC (Physical Health)			
MHC (Mental Health)			
BDI (Depression)			
BAI (Anxiety)			
Depression Items 9+10			

Post Meds: More Less Same None

Pre:	____ Helpfulness	
Post:	____ Helpfulness	

Post Status:
- Very much improved
- Much improved
- Minimally improved
- No change
- Minimally worse
- Much worse
- Very much worse

Stress / Anxiety	
Pre:	___ / 20
Post:	___ / 20
↑	___
↓	___
Ø	___

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