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Pain stages of change: Variations in pain acceptance, catastrophizing, and emotional distress across a model of readiness for behavior change

Melinda J. Collingwood
University of Northern Iowa

PAIN STAGES OF CHANGE:

VARIATIONS IN PAIN ACCEPTANCE, CATASTROPHIZING, AND EMOTIONAL DISTRESS ACROSS A MODEL OF READINESS FOR BEHAVIOR CHANGE

A Thesis

Submitted

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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Date	Dr. John Somervill, Chair, Thesis Committee
Date	Dr. M. Catherine DeSoto, Thesis Committee Member
Date	Dr. Andrew Gilpin, Thesis Committee Member
Date	Dr. Sue Joseph, Dean, Graduate College

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ABSTRACT

Pain often signals a problem that needs our attention, but after healing has occurred and pain persists, protective behaviors may become maladaptive to day-to-day functioning. Through education, therapy, and self-management, individuals can learn to function well on a daily basis even with some pain present, but not all pain patients are ready for this type of self-management. The transtheoretical model has been adapted to assess individuals with chronic pain. If individuals are not ready for behavior change, relapse chances increase; therefore it becomes beneficial to understand an individual's level of readiness to change when judging potential treatment success. The ability of current pain stages of change instruments to categorize individuals into distinct groups has been limited.

The first purpose of the current study was to analyze the relationship between chronic pain acceptance and cognitive and emotional distress related to pain. Results showed chronic pain acceptance did significantly correlate with both catastrophizing and emotional distress in a negative direction.

The second purpose was to explore the relationship between acceptance, cognitive distress, and emotional distress related to pain, and stages of behavior change. Groups formed by the Freiburg Questionnaire-Stages of Chronic Pain Management (FQ-STAPM) were expected to vary significantly on acceptance of pain. Results indicated that individuals in the maintenance stage had significantly higher acceptance scores compared to individuals in each of the other three stages, and individuals in the action stage scored significantly higher than those in the preparation stage. It was also

hypothesized that FQ-STAPM groups would vary significantly on measures of cognitive and emotional distress. The maintenance group did in fact have significantly lower levels of cognitive and emotional distress compared to the precontemplation and preparation groups. The action group also scored significantly lower on these measures compared to individuals in the preparation group.

Participants from this study seemed to endorse different emotional and cognitive qualities across the stages of behavior change readiness. Those who endorsed items within the precontemplation and preparation subscales report moderate to high levels of emotional and cognitive distress according to their responses on the PDI and PCS. They also reported a moderate level of unwillingness to experience pain.

These results offer significant theoretical and clinical implications. Individuals with chronic pain experience distinctly different types of emotional and cognitive distress as they deal with pain. Clinicians may also need to realize that even though lowering distress is important, a certain amount of distress may propel patients to take action toward self-management of pain symptoms. Acceptance of chronic pain also appears to be an important variable in successful self-maintenance of pain symptoms.

TABLE OF CONTENTS

PAGE

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

FIGURE PAGE

CHAPTER 1

INTRODUCTION

Prevalence and Impact of Chronic Pain

Pain creates protective behaviors in individuals—from avoiding use of an injured wrist to visiting the doctor to determine the cause of severe chest pain. Pain often signals a problem that needs our attention, but after healing has occurred and pain persists, protective behaviors may become maladaptive and hinder day-to-day functioning. An individual with chronic back pain, fearing re-injury, may choose not to return to work even after a recent injury has healed. Through education, therapy, and self-management, individuals can learn to function well on a day-to-day basis even with pain, but not all pain patients are ready for this type of self-management of their symptoms.

The reported prevalence of chronic pain in Western cultures ranges from 14% to 24% (Ohayon & Schatzberg, 2003; Rustøen, Wahl, Hanestad, Lerdal, Paul, & Miaskowski, 2004; Smith, Elliott, Chambers, Smith, Hannaford, & Penny, 2001; Van Den Kerkhof, Hopman, Towheed, Anastassiades, & Goldstein, 2003). Results in a cross-cultural World Health Organization study (Gureje, Von Korff, Simon, & Gater, 1998), showed 22% of primary care patients in Africa, Asia, Europe and North and South America experienced chronic pain. In this study, persistent or chronic pain was defined as "pain present most of the time for a period of six months or more during the prior year" (p. 147). Although there were cultural variations in self-rated health status and activity limitations between patients with and without chronic pain, all 15 sites reported statistically higher psychological distress (presence of depressive or anxiety disorders)

among patients with persistent pain compared to those without. Overall, in this study women and older individuals tended to report chronic pain more frequently.

The cost of chronic pain reaches beyond expenses of initial medical treatment; it extends to financial and psychological burdens for the individual and his or her family as well as to society—through time off from work, strain on interpersonal relationships, and rising health costs. At the individual level, chronic pain patients may be approximately four times more likely to meet the diagnostic criteria for anxiety or depressive disorders compared to individuals without chronic pain (Gureje et al., 1998). These results are from studies of primary care samples; therefore prevalence of these disorders may be elevated compared to a community population. Work-related pain interference affects at least 30% of individuals of working age (Gureje et al., 1998; Smith et al., 2001). In the United States, a large portion of health-care dollars are spent to treat individuals with chronic pain; this type of pain is also responsible for the largest portion of down-time from work (Gatchel & Epker, 1999). Increased pain levels also result in lower self-rated scores of physical, social, and emotional functioning as well as lower levels of energy and perceived general health (Smith et al., 2001).

Factors Influencing Pain-Related Functional Disability

Chronic pain may be present even when there is no medical indication of pathology in the body for which a physician can pinpoint as the specific cause. There are numerous factors that may contribute to functional disability associated with this type of pain (e.g., type of illness or injury, quality of initial medical care after injury, maladaptive attitudes about pain, and poor social support; Gatchel & Epker, 1999). These factors interact to

create a complex system of distress that affects day-to-day functioning and treatment outcomes.

By addressing factors that contribute to higher distress levels for individuals with chronic pain, chances are increased for successful treatment outcomes. In a study of primary care patients treated for low back pain, psychological status early in treatment was able to differentiate between successful and unsuccessful treatment groups compared to standard medical information (Burton, Tillotson, Main, & Hollis, 1995). Cognitive coping strategies appeared to be the strongest predictor of reported pain (as measured by two visual analog scales and a 6-point pain intensity scale) and disability (as measured by the Roland & Morris Disability Questionnaire) at a one-year follow-up of 186 osteopath patients reporting first-time experience of chronic low back pain. No effect sizes were reported and could not be determined with results presented.

Generally, psychosocial factors interacting with biological and economic factors contribute to the development of maladaptive responses to chronic pain; such responses may include catastrophizing, perceived helplessness, and low self-efficacy (Campbell, Clauw, & Keefe, 2003). By addressing these psychosocial factors early in treatment, it may be possible to prevent development of these maladaptive responses and improve functional behavior, allowing individuals to return to work sooner and adjust more readily to successful self-management of pain symptoms.

Models of Behavior Change

Successful treatment of chronic pain conditions relies heavily on the characteristics of the individual undergoing treatment. Clinicians and researchers must consider how

"individual characteristics of patients and their social environments influence responses to impairment, development of disability, and differential responses to alternative treatment interventions" (Turk & Melzack, 2001, p. 709). One question to be considered: Is the individual ready to take on self-management of his or her condition? Individuals may understand what needs to be done to improve their condition, but will they be motivated to perform these behaviors? The transtheoretical model (DiClemente & Prochaska, 1982) assumes that individuals pass through a series of stages before they are ready to take on and maintain more adaptive health behaviors. This theory, originally formed when studying individuals attempting to change smoking behaviors, integrates cognitive/affective processes and behavioral processes into specific change stages. Affective and cognitive processes (such as consciousness raising, self-reevaluation, and environmental reevaluation) are used most during early stages; behavioral processes (such as counter-conditioning, stimulus control, and reinforcement management) are used more during later stages of change.

These stages include precontemplation, contemplation, preparation, action, and maintenance (Table 1). These stages form a cyclic pattern in which individuals enter at the contemplation stage, may relapse at any point and leave the cycle, or, if successful, maintain positive, long-term behavior changes. In the precontemplative stage, individuals are not ready for change; they may become defensive, denying any problem behaviors in need of changing. When they are seriously ready to consider change, but may not be totally committed, they enter the contemplative stage, weighing both the pros and cons of their behaviors and the potential changes. Once committed to behavior change and

choosing a mode of action, individuals enter the preparation, or determination, stage. Attempts to modify behaviors are part of the next stage—the action stage. Individuals may selectively choose a course of action that works best for them, and discard options that do not fit their needs. Maintenance of more adaptive behaviors long term is the final desired stage of behavior change.

Table 1. Stages of behavior change according to the transtheoretical model (DiClemente & Prochaska, 1982).

Stage	Description
Precontemplation	Not ready for change; defensiveness & denial of any problem behaviors in need of changing
Contemplation	Seriously ready to consider change, but not totally committed; both pros and cons of problem behaviors and potential changes are considered
Preparation	Committed to behavior change; mode of action is chosen
Action	Attempts made to modify problem behaviors
Maintenance	Long term maintenance of more adaptive behaviors

Measuring Readiness for Behavior Change

With the development of the Pain Stages of Change Questionnaire (Kerns, Rosenberg, Jamison, Caudill, & Haythornthwaite, 1997), researchers attempted to utilize the transtheoretical model to explain why some individuals with chronic pain fail to progress to self-management of their pain symptoms through cognitive-behavioral techniques despite overwhelming evidence that incorporating psychological interventions

with treatment are more effective than traditional medical approaches alone. If individuals are not ready for behavior change, relapse chances increase; therefore it becomes beneficial to understand an individual's level of readiness to change when judging potential treatment success.

Development of an accurate measurement to classify patients into these stages may be problematic (Jensen, Nielson, Romano, Hill, & Turner, 2000). Although research results supported the validity of the PSOCQ subscales' ability to measure self-reported readiness for pain self-management, Jensen and colleagues were unable to classify participants accurately into any one specific stage within the change model. The authors point out that, conceptually, with certain problem behaviors, such as smoking, it is possible to target one specific behavior change. By using self-management of pain symptoms as a measurement of treatment success, the construct becomes too broad, encompassing too many behaviors to target for change. For example, an individual may be in the precontemplation stage regarding discontinuation of pain medication, in the contemplation stage for changing exercise behaviors, and in the action stage for decreasing work-related stress.

Other potential problems may lie within the scale itself. Strong, Westbury, Smith, McKenzie, and Ryan (2002) were unable to replicate the factor structure of the PSOCQ, finding a two-factor structure compared to four. Jensen et al. (2000) also found high correlations between scores on the action and maintenance stages in their samples.

Addressing some of the psychometric limitations of the PSOCQ, additional research lead to the development and evaluation of another pain stages of change self-

report questionnaire, the Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM; Maurischat, Härter, Auclair, Kerns, & Bengel, 2002; Maurischat, Härter, Kerns, & Bengel, 2006). Recruiting participants from inpatient rehabilitation centers, outpatient units, pain-related medical or psychological practices, and non-clinical settings such as self-help groups, Maurischat and colleagues (2002) attempted to improve the ability of the items to differentiate between contemplation and preparation responses and between action and maintenance responses by adding time-related criteria to several items. They used an item pool similar to the original 49 items used in development of the PSOCQ. Through factor analyses, the item pool was narrowed to 17 items that formed a four-factor model—precontemplation, preparation, action, and maintenance; these items are shown in Appendix B. The test–retest reliability of the FQ-STAPM was measured over a period of 2 to 11 days with a sample size of 54; test–retest correlations ranged from .72 to .79. Maurischat et al. (2006) were able to replicate the four-factor structure of the FQ-STAPM and confirm and adequate fit to their data within a sample recruited from similar locations as the 2002 study.

The Role of Acceptance in Self-Management of Chronic Pain Symptoms

Improving coping skills and changing coping strategies are often emphasized in cognitive-behavioral therapies. Recent research results have shown that approaching chronic pain as a problem of coping may be less effective for some individuals than approaching it as a problem of acceptance (McCracken & Eccleston, 2006). From this perspective, coping places emphasis on attempts to control or lessen the impact of pain on the individual, while acceptance allows the individual to focus on meaningful daily

experiences even with a certain amount of pain present. McCracken and Eccleston (2006) found acceptance accounted for greater variance in scores on measures of patient functioning, such as work status and psychosocial disability, than coping variables.

Acceptance of pain symptoms as a permanent part of daily life is one construct that has not been adequately researched related to successful self-management outcomes. Acceptance should not be construed to mean that all pain, even controllable pain, must be accepted; instead, acceptance of chronic pain involves using available resources to focus on the pursuit of meaningful activities and not on the constant pursuit of a pain-free life—or on the distress that occurs when a pain-free goal is not met.

As stated earlier, psychosocial factors interact with biological and economical factors to influence levels of pain disability and chronicity. Pain catastrophizing, feelings of helplessness and low self-efficacy are variables that have been shown to contribute to pain-related distress and maladaptive pain behaviors (Campbell et al., 2003; Keefe, Rumble, Scipio, Giordano, & Perri, 2004). Acceptance of chronic pain allows individuals to take control of their lives in spite of chronic pain symptoms; they are able to see that pain does not automatically mean disability and a hopeless future, thus lowering distress (Risdon, Eccleston, Crombez, & McCracken, 2003). Individuals with chronic pain also accept and work within new limitations; they are able to restructure their goals—or the means of reaching them—to achievable levels. These limitations are not seen from the perspective of helplessness against pain, but as a part of an ever-changing life that is dealt with day-by-day, and as a challenge to continue or "carry on regardless" of pain (Risdon et al., 2003, p. 380). Using a q-sort technique involving cards containing chronic pain-

related statements, Risdon and colleagues (2003) found three common characteristics: (1) recognizing the permanence of pain symptoms and the improbability of a total cure; (2) focusing on more rewarding activities—not associated with pain or pain control—and making the most of life in spite of pain; and (3) realizing that chronic pain, or acceptance of this pain, is not a weakness or a sign of giving up on a full and meaningful life.

Measuring Acceptance of Chronic Pain

With the revision of Geiser's (1992) Chronic Pain Acceptance Questionnaire (CPAQ), McCracken, Vowles, & Eccleston (2004) created an instrument that appears to tap into two facets of the construct of pain acceptance: active engagement in day-to-day activities in spite of pain, and willingness to experience a reasonable degree of pain and not focus on totally controlling pain symptoms. Items such as *"Although things have changed, I am living a normal life despite my chronic pain"* and *"When my pain increases, I can still take care of my responsibilities"* are intended to measure engagement in meaningful or routine daily activities. Items such as *"I need to concentrate on getting rid of my pain"* or *"I would gladly sacrifice important things in my life to control this pain better"* are reverse scored as part of the pain willingness scale.

The sample used in the 2004 study was recruited within the United Kingdom from referrals to an interdisciplinary pain management program.

Current Study

The first purpose of the current study was to analyze the relationship between chronic pain acceptance (as measured by the CPAQ) and cognitive and emotional distress related to pain (as measured by the PCS and PDI respectively). Previous research

indicated that acceptance is negatively correlated with cognitive and emotional distress (McCracken, Vowles, & Eccleston, 2004; McCracken & Eccleston, 2005).

The second purpose was to explore the relationship between chronic pain acceptance, cognitive distress, and emotional distress, and pain stages of change (as measured by the FQ-STAPM). Previous research has not fully explored cognitive and emotional variations (including pain acceptance) across these stages of pain behavior change.

The Pain Catastrophizing Scale (PCS; Sullivan, Bishop, & Pivik, 1995) and the Pain Distress Inventory (PDI; Osman, Barrios, Gutierres, Kopper, Butler, & Bagge, 2003) were used as dependent measures of pain-related disability and distress. Past research results have shown catastrophizing to be a significant predictor of emotional distress (Affleck, Tennen, Urrows, & Higgins, 1992), perceived disability (Sullivan, Stanish, Waite, Sullivan, & Tripp, 1998), and return to work rates after injury (Sullivan, Adams, Rhodenizer, & Stanish, 2006). The PCS is a well-established measurement of catastrophizing that has shown adequate reliability estimates and validity as well as support for the three-factor structure in research on college students and adults with various pain symptoms (Chibnall & Tait, 2005; Osman, Barrios, Gutierrez, Kopper, Merrifield, & Grittmann, 2000; Osman, Barrios, Kopper, Hauptmann, Jones, & O'Neill, 1997; Severeijns, van den Hout, Vlaeyen, & Picavet, 2002).

General measures of psychological distress, such as the Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996), have often been used when studying individuals with pain. With the development of the PDI (Osman et al., 2003), researchers

are now able to measure emotional distress specifically related to the experience of pain. Although the psychometric properties of the PDI have been mostly tested on non-clinical undergraduate and graduate student samples, scores on this instrument have shown adequate reliability estimates and construct validity for measuring pain-related responses in these samples (Osman et al., 2003; Osman, Barrios, Gutierrez, Schwarting, Kopper, & Wang, 2005).

Hypotheses

Hypothesis 1. Chronic pain acceptance (CPAQ total score) will show a significant negative correlation between catastrophizing as measured by the PCS total score—higher levels of acceptance will reflect lower levels of catastrophizing; it is further hypothesized the CPAQ total score will be significantly negatively correlated with PDI total score—higher levels of acceptance will reflect lower levels of emotional distress related to pain.

Hypothesis 2. Groups formed by the Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM; precontemplation, preparation, action, and maintenance) will vary on acceptance of pain, as measured by the Chronic Pain Acceptance Questionnaire (CPAQ) total score. Individuals in the precontemplation stage will show significantly lower acceptance total score than individuals in the remaining FQ-STAPM groups. It is also proposed that acceptance scores for each remaining group (preparation, action, and maintenance) will increase significantly compared to the previous group—preparation will be significantly higher than precontemplation, action will be significantly higher than preparation, and maintenance will be significantly higher than action.

Hypothesis 3. Groups formed by the FQ-STAPM will also vary on pain catastrophizing, as measured by the Pain Catastrophizing Scale (PCS) total score. Individuals in the precontemplation stage will have significantly higher PCS total scores compared to any of the remaining groups, and individuals in each remaining group will have significantly lower scores than the previous group.

Hypothesis 4. Groups formed by the FQ-STAPM will also vary significantly on scores of pain distress, as measured by the Pain Distress Inventory (PDI) total score. Individuals in the precontemplation stage will report significantly higher PDI total scores compared to any of the remaining groups, and further, individuals in each remaining group will report consistently and significantly lower scores than the previous group.

CHAPTER 2

METHODOLOGY OF CURRENT STUDY

Participants and Procedure

A community sample ($n = 49$) was recruited from three pain and mental health clinics, four private healthcare practices, two fibromyalgia and arthritis support groups, two businesses, and two community organizations in Iowa City, Cedar Rapids, Waterloo and Cedar Falls. A student sample ($n = 45$) was also recruited through mass testing of undergraduate introductory psychology students for partial class credit. No compensation was provided to the community sample. Potential participants were at least 18 years old, spoke and read English and experienced chronic pain. The definition of chronic pain in this study was similar to Gureje et al. (1998): pain present most of the time or on a recurring basis for a period of six consecutive months or more during the last year. This type of pain could include generalized pain disorders (e.g., chronic fatigue syndrome, fibromyalgia, or arthritis) as well as pain within specific areas of the body (e.g., migraine headaches or lower back pain). Participants from the community who met these criteria and agreed to participate were mailed consent forms and a packet of questionnaires and two self-addressed, stamped envelopes (one to mail back a signed consent form and one for completed questionnaires). About three to four weeks later, community participants received a second questionnaire packet to provide data for test–retest reliability analyses; the packet included the pain symptoms frequency scale, PDI, FQ-STAPM, CPAQ, and PCS in the same order the participant received in the first testing. Consent forms and

corresponding questionnaires were coded to allow later matching for data entry and analyses, or if a participant chose to withdraw from the study after initial data collection.

Students signed up for prescheduled test times outside of class and completed these questionnaires as part of a large battery of paper–pencil self-report assessments. The students received information about all study questionnaires and providing signed consent to participate. One hundred sixty questionnaires were completed. Forty-five students met the criterion for experiencing constant or recurring pain symptoms for at least six months out of the past year.

The community sample included 41 women and 8 men ranging in age from 22 to 76 years old. Students ranged in age from 18 to 23 years old and included 26 women and 17 men (one student did not provide gender information).

The mean age for women in the community sample was 53.78 years (SD = 13.19 years) and 59.63 years for men (SD = 11.92 years). Mean age for women and men in the student sample was 19.04 years (SD = .96 years) and 19.50 years (SD = 1.54 years) respectively. The majority of community participants were Caucasian (94%) and 57% were currently married. Twelve of these participants were employed full-time (25%), 9 maintained part-time employment (18%), 15 had retired (31%), and 7 were unemployed (14%; 5 due to disability). The 6 remaining participants (12%) included 1 student, 1 worker with seasonal or varied hours and 4 selected "*Other*" as their employment status. Twenty-five community participants had at least a high school diploma (31%) or 2-year college degree (20%), with 7 having completed a 4-year college degree (14%), 10 receiving graduate or professional training (20%) and 7 selected "*Other*" as their highest level of

education (14%). Nine participants reported experiencing chronic pain symptoms for 5 years or less; 15 for 6–10 years; 10 for 11–15 years; and 15 had experienced pain symptoms for 16 years or more.

Forty-six percent of participants reported experiencing two or more types of pain disorders. The most common chronic pain disorders reported were back pain ($n = 31$), migraine headaches ($n = 23$), fibromyalgia ($n = 21$), osteoarthritis ($n = 18$) and irritable bowel syndrome ($n = 15$).

Student participants were mostly Caucasian (96%), and had never been married (98%). No employment data were collected for college students. Nine students reported experiencing their pain symptoms for less than one year; 26 for 1–5 years; 7 for 6–10 years; and 3 for 11 years or more.

There were no significant differences between men and women within each sample overall in age or ethnicity. Results from a chi-square analysis for independence of gender and education of men and women in the community sample showed a significant difference in highest level of education completed, $\chi^2(4) = 14.26, p < .01$. Of men, 55.6% reported completing graduate or professional training, 33.3% completed a 4-year college degree, and 11.1% reported completing a 2-year college degree as their highest level of education. The highest percentage of women reported completing high school as their highest level of education (36.6%); 22% reported completing a 2-year college degree, with the remainder of women completing either a 4-year college degree or graduate/professional training (12.2% for both).

Measures

Survey of Demographic Information and Pain Symptom Frequency Checklist.

This locally developed measurement (Appendix A) gathered data related to gender, age, ethnicity, marital status, education, employment status, household income, type and frequency of pain symptoms experienced and duration of these symptoms. Participants also indicated what type(s) of chronic pain disorder(s) they had been diagnosed with or suspected they had, whether they had experienced an injury or illness in the past month, and how much their pain symptoms were bothering them that day compared to the past month.

In the current sample, Cronbach's alpha coefficient of internal consistency for the 18-item pain frequency scale was good, $\alpha = .90$ (95% CI = .87, .93; mean inter-item $r = .33$). Test–retest correlations were based on a mean of 5.93 weeks between the first and second test administration (range = 3.29 weeks to 10.71 weeks). Retest packets were mailed 3 to 4 weeks after receiving the first packet. If participants did not return the completed questionnaires within 2 to 3 weeks, reminder notices were sent. Test–retest correlation for the pain frequency scale was .85. Psychometric properties of each instrument used in this study are reported in Table 2. Except for test–retest correlations (which used only community sample scores), reliability estimates utilized scores from both student and community samples.

Freiburg Questionnaire – Stages of Chronic Pain Management

The Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM; Maurischat, Härter, Auclair, Kerns, & Bengel, 2002) is an English translation of the

German Freiburger Fragebogen – Stadien der Bewaltigung chronischer Schmerzen (FF-STABS). The FQ-STAPM is a 17-item self-report questionnaire (Appendix B) and was developed to address theoretical limitations of the Pain Stages of Change Questionnaire (PSOCQ; Kerns, Rosenberg, Jamison, Caudell, & Haythornthwaite, 1997). The FQ-STAPM assesses an individual's level of willingness to take on self-management of chronic pain symptoms. The four scales of the FQ-STAPM include: precontemplation (Items 2, 6, 10, 14, and 17), preparation (Items 3, 7, 11, and 15), action (Items 1, 5, 9, and 13), and maintenance (Items 4, 8, 12, and 16). Items are rated on a 5-point scale from 1 = *Strongly disagree* to 5 = *Strongly agree*. Higher scores on the action or maintenance scales indicate a greater tendency to practice cognitive-behavioral methods of pain self-management; higher scores on the Precontemplation or Preparation scales signify a stronger tendency toward more passive pain-management behaviors (e.g., reliance on medical professionals or pain medications to manage symptoms).

Means, standard deviations, and reliability estimates from initial development of the survey are shown after the FQ-STAPM in Appendix B. Similar descriptive data from initial development of each measurement used in this study are shown along with the instrument in their respective appendices.

In the current study, the FQ-STAPM was used to measure level of willingness to take on self-management of pain symptoms in order to classify participants into stages of change readiness. Estimates for internal consistency in the current sample were: precontemplation scale, $\alpha = .73$ (95% CI = .63, .81; mean inter-item $r = .35$); preparation scale, $\alpha = .76$ (95% CI = .67, .83; inter-item $r = .44$); action scale, $\alpha = .84$ (95% CI = .78,

.89; mean inter-item r = .57); and maintenance scale, α = .79 (95% CI = .70, .85; mean inter-item r = .48). Test–retest correlations were: precontemplation scale, r = .80; preparation scale, r = .38; action scale, r = .73; and maintenance scale, r = .62.

Chronic Pain Acceptance Questionnaire

The Chronic Pain Acceptance Questionnaire (CPAQ; McCracken, Vowles, & Eccleston, 2004) is a 20-item self-report measure (Appendix C) consisting of two subscales: activities engagement (Items 1-3, 5, 6, 8-10, 12, 15, and 19), and pain willingness (Items 4, 7, 11, 13, 14, 16-18, and 20; reverse scored). A total score is also calculated. The CPAQ was developed to assess acceptance of pain symptoms among individuals with chronic pain. Items are rated on a 7-point scale from 0 = *Never true* to 6 = *Always true*. Individuals scoring higher on the scale tend to participate more in day-to-day activities in spite of their pain and participate in fewer pain-avoidance or pain-controlling behaviors.

CPAQ total score was used in the current study as a dependent measure to examine differences between individual groups formed by FQ-STAPM mean scores. Internal consistency alpha estimates were .85 for activity engagement (95% CI = .80, .89; mean inter-item r = .34), .86 for pain willingness (95% CI = .81, .90; mean inter-item r = .40), and .88 for total score (95% CI = .84, .91; mean inter-item r = .27). Internal consistency for each was good, although the mean inter-item correlation for the total score did not meet the .30 cutoff. These items do not show a moderate to high level of correlation to be included within the same scale. Test–retest results were: activity engagement, r = .78; pain willingness, r = 78; and total scale, r = .82.

Pain Catastrophizing Scale

The Pain Catastrophizing Scale (PCS; Sullivan, Bishop, & Pivik, 1995) was developed to assess an individual's tendency to respond in an overly negative manner to pain. The 13 items on this measurement (Appendix D) form three scales: rumination (Items 8-11), magnification (Items 6, 7, and 13), and helplessness (Items 1-5, and 12). A total score is also calculated. Participants rate items on a 5-point scale from 0 = *Not at all* to 4 = *All the time*. Higher scores indicate a greater tendency to respond in a negative manner to pain (greater tendency to make catastrophic statements).

In this study, PCS total score was used as a dependent measure of participants' level of catastrophizing in response to their chronic pain symptoms. In this sample, internal consistency alpha estimates for the PCS were good; total score estimate was .94 (95% CI = .93, .96; mean inter-item r = .56). Subscale internal consistency estimates were .89 for rumination (95% CI = .86, .93; mean inter-item r = .68), .80 for magnification (95% CI = .71, .86; mean inter-item r = .57), and .90 for helplessness (95% CI = .87, .93; mean inter-item r = .60). Test–retest correlations were: rumination, r = .79; magnification, r = .80; helplessness, r = .79; and total scale, r = .83.

Pain Distress Inventory

The Pain Distress Inventory (PDI; Osman, Barrios, Gutierres, Kopper, Butler, & Bagge, 2003), shown in Appendix E, is a 26-item self-report inventory designed to measure affective distress in response to physical pain. Items are rated on a 5-point scale from 0 = *Not at all like me* to 4 = *Very much like me*. Distress factors measured by the four scales that make up the PDI include: depression (Items 4, 13, 17, 18, 19, 22, and 23),

anger (Items 6, 8, 10, 12, 14, and 16), pain sensitivity (Items 3, 11, 15, 20, 21, and 26), and somatic anxiety (Items 1, 2, 5, 7, 9, 24, and 25). A total score is also calculated for the PDI. Higher scale scores indicate greater levels of distress.

The PDI total score was used as a dependent measure of affective distress to perceived chronic pain symptoms in the current study. Cronbach's alpha estimates were all good: total score, $\alpha = .94$ (95% CI = .92, .96; mean inter-item $r = .38$); depression, $\alpha = .91$ (95% CI = .88, .94; mean inter-item $r = .60$); anger, $\alpha = .82$ (95% CI = .75, .87; mean inter-item $r = .43$); pain sensitivity, $\alpha = .94$ (95% CI = .91, .96; mean inter-item $r = .72$); and somatic anxiety, $\alpha = .86$ (95% CI = .81, .90; mean inter-item $r = .48$). Test–retest correlations were as follows: depression, $r = .90$; anger, $r = .82$; pain sensitivity, $r = .86$; somatic anxiety, $r = .86$; and total scale, $r = .92$.

Table 2. Internal consistency estimates and test–retest correlations for the Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM), Chronic Pain Acceptance Questionnaire (CPAQ), Pain Distress Inventory (PDI), and Pain Catastrophizing Scale (PCS)

Instrument	Cronbach's α (95% CI) ($n = 94$)	Mean inter-item r	Test–retest r ($n = 40$)
FQ-STAPM			
Precontemplation	.73 (.63, .81)	.35	.80
Preparation	.76 (.67, .83)	.44	.38
Action	.84 (.78, .89)	.57	.73
Maintenance	.79 (.70, .85)	48	.62
CPAQ			
Activity Engagement	.85 (.80, .89)	.35	.78
Pain Willingness	.86 (.81, .90)	.40	.78
Total Score	.88 (.84, .91)	.27	.82
PCS			
Rumination	.89 (.86, .93)	.68	.79
Magnification	.80 (.71, .86)	.57	.80
Helplessness	.90 (.87, .93)	.60	.79
Total Score	.94 (.93, .96)	.56	.83
PDI			
Depression	.91 (.88, .94)	.60	.90
Anger	.82 (.75, .87)	.43	.82
Pain Sensitivity	.94 (.91, .96)	.72	.86
Somatic Anxiety	.86 (.81, .90)	.48	.86
Total Score	.94 (.92, .96)	.38	.92
Pain Frequency Scale			
Total Score	.90 (.87, .93)	.33	.85

Note. Test–retest results based on $M = 5.93$ weeks between first and second test administration (range = 3.29 weeks to 10.71 weeks).

CHAPTER 3

RESULTS AND DISCUSSION

Sample Distribution Characteristics

Normality of sample scores from the FQ-STAPM scales, CPAQ, PCS, PDI total scores and subscale scores, and the pain frequency scale total score was examined using skewness and kurtosis. Results showed responses within all scales were approximately normally distributed.

Pearson Product Moment Correlations for Total Sample

Pearson correlation analysis indicated moderate to high correlations between scores on the main measures (Table 3). Multivariate analyses of variance (MANOVAs) were used for remaining analyses in order to test for group differences which were embodied in the hypotheses. For any significant pairwise comparisons, *t* test results and Cohen's *d* estimates of effect size were reported. Effect size estimates of .2 were considered small, .5 medium, and .8 large.

Table 3. Correlation Matrix for Total Sample ($N = 94$)

	FQ_ PREC	FQ_ PREP	FQ_ ACT	FQ_ MAIN	CPAQ_ AE	CPAQ_ PW	CPAQ_ TOT
FQ_PREC	1						
FQ_PREP	.49**	1					
FQ_ACT	.18	.44**	1				
FQ_MAIN	-.14	-.02	.09	1			
CPAQ_AE	-.20*	-.15	.13	.58**	1		
CPAQ_PW	-.43**	-.66**	-.34**	.42**	.36**	1	
CPAQ_TOT	-.38**	-.47**	-.12	.61**	.85**	.80**	1
PCS_RUM	.37**	.36**	.21*	-.31**	-.46**	-.51**	-.59**
PCS_MAG	.47**	.53**	.15	-.32**	-.43**	-.58**	-.61**
PCS_HELP	.45**	.38**	.06	-.53**	-.52**	-.59**	-.67**
PCS_TOT	.47**	.44**	.14	-.45**	-.52**	-.61**	-.68**
PDI_DEP	.34**	.39**	.35**	-.38**	-.49**	-.57**	-.64**
PDI_ANG	.28**	.29**	.13	-.20	-.37**	-.41**	-.47**
PDI_PSEN	.46**	.49**	.18	-.23*	-.38**	-.54**	-.55**
PDI_SANX	.20	.25*	.15	-.21*	-.43**	-.29**	-.44**
PDI_TOT	.39**	.44**	.26*	-.32**	-.51**	-.56**	-.65**
PAIN_TOT	.06	.34**	.29**	-.34**	-.25*	-.55**	-.48**

Note. FQ-STAPM subscales: Precontemplation, Preparation, Action, and Maintenance. CPAQ subscales: Activity Engagement and Pain Willingness. PDI subscales: Depression, Anger, Pain Sensitivity, and Somatic Anxiety. PCS subscales: Rumination, Magnification, and Helplessness.
*$p < .05$, **$p < .01$

MANOVA Analysis for Sample and Gender Differences

A 2 x 2 x 7 MANOVA (sample x gender x measure) was conducted using SPSS (SPSS Inc., 2006) to examine differences between student and community sample scores on the main measures used in this study. Entering total scale scores from the CPAQ, PDI, PCS, and scale scores from the FQ-STAPM as dependent variables, a significant MANOVA indicated a difference between community and student sample scores,

Hotelling's *Trace* = .61, $F(7, 86) = 4.93$, $p < 001$, but no significant difference in scores between men and women, Hotelling's *Trace* = .14, $F(7, 85) = 1.71$, *ns*.

Results of independent group *t* tests using ZumaStat version 4.0.1 (Jaccard, 2006) showed students scored significantly higher on the CPAQ total scale ($M = 3.97$, $SD = 0.81$), $t(92) = 4.05$, $p < .001$, $d = .83$, and FQ-STAPM maintenance subscale ($M = 3.28$, $SD = 1.08$), $t(92) = 2.85$, $p < .01$, $d = .58$ compared to community respondents ($M = 3.27$, $SD = 0.86$; $M = 2.69$, $SD = 0.93$ respectively for CPAQ total and FQ-STAPM maintenance). Students scored lower ($M = 2.38$, $SD = 0.81$) than community participants ($M = 2.85$, $SD = 0.98$) on the FQ-STAPM precontemplation subscale, $t(92) = 2.52$, $p < .05$, $d = .52$. Students also scored lower ($M = 2.53$, $SD = 0.78$) than community participants ($M = 3.33$, $SD = 0.74$) on the FQ-STAPM preparation, $t(92) = 5.10$, $p < .001$, $d = 1.05$ and action subscales ($M = 2.54$, $SD = 1.05$ and $M = 3.24$, $SD = 0.97$ respectively for student and community samples), $t(92) = 3.36$, $p < .01$, $d = .69$. All effect size estimates for significant comparisons were moderate to large. Results of these and other pairwise comparisons between samples are shown in Table 4.

Table 4. Descriptive Statistics for the Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM), Chronic Pain Acceptance Questionnaire (CPAQ), Pain Catastrophizing Scale (PCS), Pain Distress Inventory (PDI), and Pain Frequency Total for Community and Student Samples

Instrument	Community Sample $n = 49$	Student Sample $n = 45$	$t(92)$	Cohen's d
	M (SD)	M (SD)		
FQ-STAPM				
Precontemplation	2.85 (0.98)	2.38 (0.81)	2.52*	.52
Preparation	3.33 (0.74)	2.53 (0.78)	5.10***	1.05
Action	3.24 (0.97)	2.54 (1.05)	3.36**	.69
Maintenance	2.69 (0.93)	3.28 (1.08)	2.85**	.58
CPAQ				
Activity Engagement	3.72 (1.10)	3.92 (0.98)	.93	.19
Pain Willingness	2.71 (0.90)	4.04 (0.99)	6.82***	1.40
Total Score	3.27 (0.86)	3.97 (0.81)	4.05***	.83
PCS				
Rumination	1.62 (1.09)	1.48 (0.99)	.65	.13
Magnification	1.29 (1.06)	1.05 (0.91)	1.17	.24
Helplessness	1.43 (1.02)	0.96 (0.87)	2.39*	.49
Total Score	1.46 (0.99)	1.14 (0.82)	1.70	.35
PDI				
Depression	2.32 (1.08)	1.68 (0.91)	3.09**	.63
Anger	0.88 (0.70)	0.77 (0.70)	.76	.16
Pain Sensitivity	1.17 (1.13)	0.79 (0.82)	1.85	.38
Somatic Anxiety	1.11 (0.86)	1.19 (0.81)	.46	.10
Total Score	1.40 (0.78)	1.13 (0.69)	1.77	.36
Pain Frequency Total	55.31 (11.40)	40.41 (8.42)	7.16***	1.47

*$p < .05$, **$p < .01$, ***$p < .001$

Pearson Correlations between CPAQ, PCS and PDI Total Scores

Correlations were computed to examine the relationship between the CPAQ total score and total scores on the PCS and PDI. Because of sample differences in scores on these measures, partial correlations were also conducted, statistically controlling for sample

as a dichotomous nominal variable. Significant correlations between CPAQ scores and scores on other instruments remained significant even when controlling for sample.

Partial correlations between the CPAQ total score and PCS and PDI total scores were significant and in the expected negative direction, $r = -.68$ and $r = -.64$ respectively, $p < .001$ for both. This provides support for the first hypothesis that CPAQ total score would show a significant negative correlation with both PCS and PDI total scores.

Groups Formed by FQ-STAPM Scores

FQ-STAPM scale means and standard deviations were calculated both for student and community samples and for men and women within each sample to assist in forming pain stages of change groups. Individuals were placed into a group (precontemplation, preparation, action, or maintenance) if their scale means fell one standard deviation above their respective group mean. Results of these analyses indicated a limited ability of the FQ-STAPM to categorize individuals into distinct stages with 55% of individuals remaining uncategorized and 13 participants placed simultaneously into two stages. These 13 individuals were placed into only one category by using the one scale of the two containing the highest mean. One participant's highest mean was identical for both preparation and action stages; this participant was excluded from further FQ-STAPM group analyses. FQ-STAPM groups included: precontemplation, $n = 10$; preparation, $n = 5$; action, $n = 13$; and maintenance, $n = 14$.

MANCOVA for FQ-STAPM Group Differences

Because of significant sample differences between the community and student samples in scores on the main measures, a 4 x 3 (group x measure) multivariate analysis of

covariance (MANCOVA) was conducted, using sample as a covariate, to determine significant differences in scores on the CPAQ, PCS, and PDI between FQ-STAPM groups.

A significant MANCOVA indicated FQ-STAPM group differences when entering the CPAQ, PCS, and PDI total scores as dependent measures, Wilks' $\lambda = .46$, $F(9, 83) = 3.43$, $p < .01$. In followup independent group t tests using ZumaStat, the FQ-STAPM maintenance group had a significantly higher CPAQ total score ($M = 4.70$, $SD = 0.76$) compared to all three other FQ-STAPM groups: precontemplation ($M = 3.19$, $SD = 1.09$), $t(21) = 3.91$, $p < .001$, $d = 1.59$; preparation ($M = 2.70$, $SD = 0.50$), $t(16) = 5.42$, $p < .001$, $d = 2.72$; and action ($M = 3.75$, $SD = 0.82$), $t(24) = 3.08$, $p < .01$, $d = 1.17$. The CPAQ total score for the action group was significantly higher compared to the preparation group, $t(16) = 2.64$, $p < .05$, $d = 1.32$.

Individuals in the maintenance group also had a significantly lower PCS total score ($M = 0.54$, $SD = 0.35$) compared to precontemplation ($M = 1.76$, $SD = 1.17$), $t(21) = 3.59$, $p < .01$, $d = 1.46$; and preparation ($M = 2.62$, $SD = 0.79$), $t(16) = 7.96$, $p < .001$, $d = 3.99$. The action group had a significantly lower PCS score compared to the preparation group, $t(16) = 3.02$, $p < .01$, $d = 1.51$.

Maintenance group PDI total score was significantly lower ($M = 0.78$, $SD = 0.52$) compared to the precontemplation group ($M = 1.53$, $SD = 1.02$), $t(21) = 2.32$, $p < .05$, $d = 0.94$, and preparation group ($M = 1.97$, $SD = 0.89$), $t(16) = 3.57$, $p < .01$, $d = 1.79$.

These results partially support the second, third, and fourth hypotheses; groups formed by the FQ-STAPM varied in their level of acceptance of chronic pain, and levels of cognitive and emotional distress (Figure 1), but not all comparisons reached significance.

As expected, individuals in the precontemplation stage did have lower CPAQ total scores and higher PCS and PDI total scores compared to the action and maintenance groups, but, unexpectedly, these individuals had higher CPAQ total scores and lower PCS and PDI total scores compared to the preparation stage, although these differences did not reach significance. Individuals within the preparation stage actually reported the lowest acceptance scores and the highest cognitive and emotional distress scores.

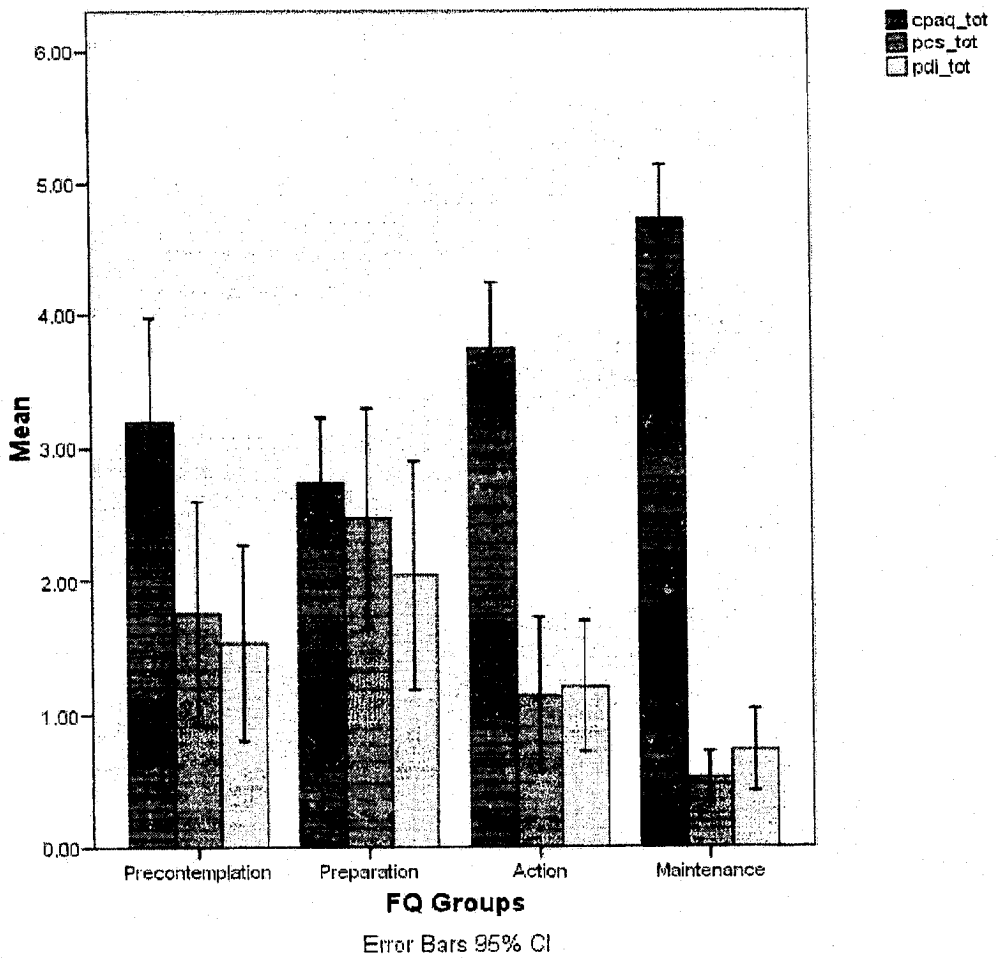

Figure 1. Freiburg Questionnaire – Stages of Chronic Pain Management (FQ-STAPM) Group Differences in Total Scores on the Chronic Pain Acceptance Questionnaire (CPAQ), Pain Catastrophizing Scale (PCS), and Pain Distress Inventory (PDI). Participants in the maintenance group had a significantly higher level of pain acceptance (as measured by CPAQ total score) compared to each of the other three groups. Participants in this group also had significantly lower levels of cognitive and emotional distress (as measured by the PCS and PDI) compared to participants in the precontemplation and preparation groups.

Supplemental Analyses

Robust confirmatory factor analyses (CFAs) were conducted using EQS 6.1 (Bentler & Wu, 2004) to determine the fit of the factor structure model for each instrument to current data from this study. Mardia's coefficient was used to determine normality of the distribution; a coefficient estimate of 30 or less indicates normally distributed data. Maximum likelihood goodness of fit indices used included a relative chi-square (R-chi-square) of 3.0 or less, a Bentler-Bonett Non-Normed Fit Index (NNFI) of .90 or higher, a Comparative Fit Index (CFI) of .90 or greater, and a Root Mean-square Error of Approximation (RMSEA) of .05 or less. Meeting three of the four criteria was considered an adequate fit for the model.

Data from the FQ-STAPM were normally distributed (Mardia's coefficient estimate = 26.18), but did not meet three out of four of the goodness of fit criterion, therefore the factor structure of the FQ-STAPM was not a good fit for these data. Results of the orthogonal 4-factor model indicated a significant chi-square (R-chi-square = 2.28; NNFI = .708; CFI = .745; RMSEA = .106, 95% CI = .086, .124). R-squared estimates within the standardized factor loadings indicated five relatively weak items (Items 2, 4, 6, and 11), each providing an R-squared estimate of less than .30.

Results from an oblique analysis of a 2-factor model of the CPAQ indicated a non-normal distribution (Mardia's coefficient estimate = 66.10). The 2-factor model of the CPAQ also did not meet three out of the four goodness of fit criteria, indicating a poor fit to current data (significant R-chi-square = 2.31; NNFI = .804; CFI = .825; RMSEA = .085, 95% CI = .066, .102). Six items from the CPAQ also produced R-squared estimates of less

than .30 (Items 1, 3, 5, 10, 16, and 19), indicating a weak contribution to the factor structure of the instrument and greater error variance associated with these items.

Discussion

The first purpose of the current study was to analyze the relationship between chronic pain acceptance (as measured by the CPAQ) and cognitive and emotional distress related to pain (as measured by the PCS and PDI respectively). Hypothesis one proposed that chronic pain acceptance (CPAQ total score) would show a significant negative correlation between catastrophizing as measured by the PCS total score—higher levels of acceptance will reflect lower levels of catastrophizing; it was further hypothesized the CPAQ total score would be significantly negatively correlated with PDI total score. In support of this hypothesis, chronic pain acceptance (CPAQ total score) did show significant negative correlation between catastrophizing as measured by the PCS total score—higher levels of acceptance reflected lower levels of catastrophizing. CPAQ total score also produced a significant negative correlation between PDI total score—higher levels of acceptance reflected lower levels of emotional distress related to pain.

The second purpose was to explore the relationship between acceptance, cognitive distress, and emotional distress related to pain, and stages of behavior change (as measured by the FQ-STAPM). Hypothesis 2 proposed that groups formed by the Freiburg Questionnaire-Stages of Chronic Pain Management (FQ-STAPM; precontemplation, preparation, action, and maintenance) would vary on acceptance of pain, as measured by the Chronic Pain Acceptance Questionnaire (CPAQ) total score. Individuals in the precontemplation stage would have a significantly lower acceptance

total score than individuals in any other group. It was further hypothesized that each remaining group's CPAQ score would increase significantly compared to the previous group. Results partially supported this hypothesis. Individuals categorized in the maintenance stage had significantly higher CPAQ total scores compared to individuals in each of the other three stages. Those categorized as part of the action stage scored significantly higher on the CPAQ total scale than those in the preparation stage.

In a similar manner, hypotheses 3 and 4 stated that groups formed by the FQ-STAPM would vary significantly on measures of cognitive and emotional distress (as measured by the Pain Catastrophizing Scale (PCS) and Pain Distress Inventory (PDI) total scores respectively. These hypotheses were also partially supported by the results of this study. Participants in the maintenance group had significantly lower levels of cognitive and emotional distress compared to participants in the precontemplation and preparation groups. Members of the action group scored significantly lower on these measures compared to individuals in the preparation group.

Participants from this study seemed to endorse different emotional and cognitive qualities across the stages of change readiness. Those who endorsed items within the precontemplation and preparation subscales reported moderate to high levels of emotional and cognitive distress according to their responses on the PDI and PCS. They also reported a moderate level of unwillingness to experience pain.

According to item responses in the action subscale, individuals endorsed less emotional and cognitive distress at this point. Maintenance scale items seemed to tap into an acceptance of pain and a willingness to engage in daily activities even with some level

of pain present. Responses to these items also reflected a shift in a significant negative direction to items measuring emotional and cognitive distress.

What factors may contribute to this shift across stages of behavior change? Acceptance of chronic pain focuses on the pursuit of meaningful activities and not on the constant pursuit of a pain-free life—or on the distress that occurs when a pain-free goal is not met.

Could a shift in coping strategies contribute to this acceptance of pain and willingness to pursue a more active lifestyle? Within the current sample, activity engagement did not significantly correlate with items on the FQ-STAPM until the maintenance stage. As individuals actively attempt to self-manage their pain, they may experience a cognitive shift. In this study, correlations reflected a decrease in willingness in experience pain, an increase in emotional distress, and greater frequency of reported pain symptoms between the precontemplation and preparation stages. A drastic decrease in emotional and cognitive distress is reflected in the action stage by far fewer significant correlations between these scores. The willingness to experience pain also appears to increase at this point.

One weakness of this study is the design was cross-sectional and correlational only. It would be valuable to do longitudinal studies to understand the transitions that may occur for the same individuals as they progress through the stages of behavior change related to chronic pain. Studying individuals who enter pain treatment programs and comparing them to individuals who do not experience this type of treatment would also give us more

information about the pain experience and how specific programs may be of assistance in the transition to self-management.

Although this study statistically controlled for sample differences, it did not control for other important variables, such as pain duration, reported severity, type of pain disorder or symptoms experienced. The length of time an individual has experienced chronic pain, the severity of the pain, and the type of pain he or she may be dealing with may be related to cognitive and emotional variables across the stages of behavior change. Individuals categorized as catastrophizers tend to report higher ratings of pain severity and emotional distress compared to noncatastrophizers (e.g., see Sullivan et al., 1995).

As strengths of the study, moderate to large effect sizes were still observed when comparing individuals who were categorized into each FQ-STAPM stage, even with a small number of individuals within each stage. Results still showed important group differences in acceptance and cognitive and emotional distress between groups.

These results offer significant theoretical and clinical implications. Individuals with chronic pain seem to experience distinctly different types of emotional and cognitive distress as they progress through levels of day-to-day functionality when dealing with pain. Clinicians may also need to realize that even though lowering distress is important, a certain amount of distress may be needed to propel patients successfully to self-management of pain symptoms. Acceptance also appears to be an important variable in the transition to successful self-management of pain symptoms. More research is needed to help explain this overall shift in pain acceptance and distress in individuals with chronic pain.

As reflected by results of confirmatory factor analyses, the FQ-STAPM and CPAQ also have weaknesses that need to be addressed. Even with Maurischat and colleagues' (2002) addition of time-related criteria to certain items, the FQ-STAPM was still unable to categorize over half of participants into change stages. However, this instrument's greatest contribution may be in its ability to differentiate individuals' cognitive and emotional states across stages in correlation with other measurements.

The CPAQ provides valuable information about individual differences in willingness to experience some level of pain and remain engaged in satisfying activities on a day-to-day basis. It appears, though, that each scale of the CPAQ (activity engagement and pain willingness) should remain separate with no total score figured. The relatively low mean inter-item correlation of the total scale supports this. This would also simplify the scoring of the instrument, eliminating reverse scoring and transforming the pain willingness scale into a pain *un*willingness scale.

With updating of current items or additional items on the FQ-STAPM and CPAQ, greater construct validity may strengthen their value for use with chronic pain patients.

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APPENDIX A

DEMOGRAPHICS FORM AND PAIN FREQUENCY CHECKLIST

Gender: ☐ Male ☐ Female Age: _____

Where did you hear about this study? _____

Ethnicity/racial identity (check one):

☐ Caucasian ☐ Asian American ☐ African American ☐ Mixed Ethnicity
☐ Hispanic/Latino ☐ Asian Indian ☐ American Indian ☐ Other_____

Marital status (check one):

☐ Single, never married ☐ Married ☐ Separated ☐ Widowed
☐ Engaged ☐ Live-in partner ☐ Divorced

Education (highest grade level completed):

☐ No formal education ☐ High school ☐ Graduate/professional
☐ Elementary school ☐ 2-year college/training ☐ Other_____
☐ Middle school/Junior high ☐ 4-year college/training

Employment status (check one):

☐ Employed full time (35 hours or more/week) ☐ Home responsibilities or full-time parent
☐ Employed part time (less than 35 hours/week) ☐ Retired
☐ Seasonal work or hours vary per week ☐ Student
☐ Unemployed—looking for work ☐ Other: _____
☐ Unemployed—on disability

Household pre-tax income level (check one):

☐ Less than $10,000/year ☐ $50,001 and $70,000/year
☐ $10,001 and $20,000/year ☐ $70,001 and $100,000/year
☐ $20,001 and $30,000/year ☐ More than $100,000/year
☐ $30,001 and $50,000/year ☐ Don't know or prefer not to respond

Have you experienced any of these physical symptoms within the **PAST MONTH**?

Rate the frequency of these symptoms this past month on a scale of 1 to 5
1 = never, 2 = rarely, 3 = occasional, 4 = regularly, 5 = constantly

	Never	Rarely	Occasionally	Regularly	Constantly
1. All-over general body aches	1	2	3	4	5
2. General morning stiffness	1	2	3	4	5
3. Back pain	1	2	3	4	5
4. Head/neck/shoulder pain	1	2	3	4	5
5. Chest pain	1	2	3	4	5
6. Leg pain	1	2	3	4	5
7. Difficulty falling asleep or staying asleep	1	2	3	4	5
8. Constipation and/or diarrhea	1	2	3	4	5
9. Frequent urination	1	2	3	4	5
10. Waking up feeling unrested	1	2	3	4	5
11. Lightheaded or easily dizzy	1	2	3	4	5
12. Abdominal bloating, intestinal gas	1	2	3	4	5
13. Abdominal pain	1	2	3	4	5
14. Headaches	1	2	3	4	5
15. Foot pain	1	2	3	4	5
16. Hand pain	1	2	3	4	5
17. Joint pain	1	2	3	4	5
18. Fatigue	1	2	3	4	5
14. *(For women still experiencing menstrual periods)* Increased menstrual discomfort	1	2	3	4	5

How many years have you been experiencing these pain symptoms overall? (check one):

☐ Less than 1 year ☐ 6 to 10 years ☐ 16 to 20 years

☐ 1 to 5 years ☐ 11 to 16 years ☐ 21 years or more

What long-term (chronic) disorder(s) have you been diagnosed with or suspect you have *(e.g., migraine headaches, back pain, irritable bowel syndrome, fibromyalgia, rheumatoid arthritis, etc.)*? _____

_____

Have you experienced an injury or illness within the past month? **1.** Yes **2.** No___

How much are your symptoms bothering you TODAY compared to the past month?

1	**2**	**3**	**4**	**5**
Much Better	Better	Same	Worse	Much Worse

Practitioners and treatments that have been a <u>regular</u> part of your pain-management routine this past year (check all that apply):

- ☐ General practitioner
- ☐ Specialist (e.g., rheumatologist)
- ☐ Psychologist or psychiatrist
- ☐ Physical therapist
- ☐ Chiropractor
- ☐ Massage therapist
- ☐ Aqua therapy
- ☐ Acupuncture
- ☐ Pain medications (prescription or over-the-counter)
- ☐ Stretching and/or exercise
- ☐ Meditation or relaxation
- ☐ Herbal or nutritional supplements
- ☐ Medical procedure for pain-related symptoms (e.g., surgery, injections)
- ☐ Other practitioners or treatments utilized regularly_____

_____

APPENDIX B

FREIBURG QUESTIONNAIRE – STAGES OF CHRONIC PAIN MANAGEMENT

(FQ-STAPM)

FQ-STAPM

Using the following scale, please indicate the degree to which you agree or disagree with each of the statements regarding pain management by circling the corresponding number.

Rating scale

1 = Strongly disagree (SD)	2 = Disagree (D)	3 = Neutral (N)	4 = Agree (A)	5 = Strongly agree (SA)

FQ-STAPM; Maurischat, Härter, Auclair, Kerns, & Bengel, 2002	SD	D	N	A	SA
1. I have been working to learn skills in order to handle my pain for more than one month.	1	2	3	4	5
2. I suspect that I have long-term pain problems, but there is nothing that I can really change.	1	2	3	4	5
3. Even if my pain did not go away, I would be willing to change the way I am dealing with it.	1	2	3	4	5
4. When my pain occurs, I stay calm and go about my usual everyday life.	1	2	3	4	5
5. Weeks ago I started to develop strategies that are helping me to be in better control of my pain.	1	2	3	4	5
6. My pain is exclusively a medical problem, thus a matter for doctors to deal with.	1	2	3	4	5
7. Time has come for me to think seriously about a different approach towards my pain.	1	2	3	4	5
8. I am 100% in control of my pain and its effect on my life.	1	2	3	4	5
9. For a few months now, I have been taking suggestions from others and acting on them, regarding how I can better live with my pain.	1	2	3	4	5
10. In spite of what the doctors say, I am convinced that there must be a surgery or medication that would help to get free of this pain.	1	2	3	4	5
11. Within the next month I will start to control my pain, before it ruins my life.	1	2	3	4	5
12. For several months now my pain has hardly influenced me.	1	2	3	4	5
13. For several weeks I have been learning different strategies that influence my pain.	1	2	3	4	5
14. The best solution for me is to find a physician who can determine how I can get rid of my pain entirely.	1	2	3	4	5
15. In the near future, I am seriously intending to deal with my pain in a different way.	1	2	3	4	5
16. I have known for a long time that I can control my pain.	1	2	3	4	5
17. I am asking myself: "Why can't somebody simply do something so that my pain will go away?"	1	2	3	4	5

Freiburg Questionnaire-Stages of Chronic Pain Management (FQ-STAPM; Maurischat, Härter, Auclair, Kerns & Bengel, 2002).

Items are rated on a 5-point scale:
1 = *Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree;* 5 = *Strongly agree.*

Subscales are scored by finding the mean score of each:
Precontemplation = (2 + 6 + 10 + 14 + 17)/5
Preparation = (3 + 7 + 11 + 15)/4
Action = (1 + 5 + 9 + 13)/4
Maintenance = (4 + 8 + 12 + 16)/4

Means & Reliability Estimates for the Freiburg Questionnaire-Stages of Chronic Pain Management (FQ-STAPM)

	Test-Retest *r*	*M* (*SD*)	Cronbach's α
Precontemplation	.79**	2.6 (1.0)*	.79*
Preparation	.72**	3.4 (1.1)*	.86*
Action	.73**	2.9 (1.0)*	.83*
Maintenance	.73**	2.6 (1.0)*	.72*

* Maurischat, Härter, Auclair, Kerns, & Bengel (2002); $n = 116$
** Maurischat, Härter, Kerns, & Bengel (2006); $n = 54$

APPENDIX C

CHRONIC PAIN ACCEPTANCE QUESTIONNAIRE (CPAQ)

CPAQ

Directions: Below you will find a list of statements. Please rate the truth of each statement as it applies to you by circling a number. Use the following rating scale to make your choices. For instance, if you believe a statement is "Always True", you would circle the 6 next to that statement.

0 Never True	1 Very Rarely True	2 Seldom True	3 Sometimes True	4 Often True	5 Almost Always True	6 Always True

1. I am getting on with the business of living no matter what my level of pain is	0	1	2	3	4	5	6
2. My life is going well, even though I have chronic pain	0	1	2	3	4	5	6
3. It's O.K. to experience pain	0	1	2	3	4	5	6
4. I would gladly sacrifice important things in my life to control this pain better	0	1	2	3	4	5	6
5. It's not necessary for me to control my pain in order to handle my life well	0	1	2	3	4	5	6
6. Although things have changed, I am living a normal life despite my chronic pain	0	1	2	3	4	5	6
7. I need to concentrate on getting rid of my pain	0	1	2	3	4	5	6
8. There are many activities I do when I feel pain	0	1	2	3	4	5	6
9. I lead a full life even though I have chronic pain	0	1	2	3	4	5	6
10. Controlling pain is less important than other goals in my life	0	1	2	3	4	5	6

0 Never True	1 Very Rarely True	2 Seldom True	3 Sometimes True	4 Often True	5 Almost Always True	6 Always True

11. My thoughts and feelings about pain must change before I can take important steps in my life	0	1	2	3	4	5	6
12. Despite the pain, I am now sticking to a certain course in my life	0	1	2	3	4	5	6
13. Keeping my pain level under control takes first priority whenever I am doing something	0	1	2	3	4	5	6
14. Before I can make any serious plans, I have to get some control over my pain	0	1	2	3	4	5	6
15. When my pain increases, I can still take care of my responsibilities	0	1	2	3	4	5	6
16. I will have better control over my life if I can control my negative thoughts about pain	0	1	2	3	4	5	6
17. I avoid putting myself in situations where pain might increase	0	1	2	3	4	5	6
18. My worries and fears about what pain will do to me are true	0	1	2	3	4	5	6
19. It's a relief to realize that I don't have to change my pain to get on with my life	0	1	2	3	4	5	6
20. I have to struggle to do things when I have pain	0	1	2	3	4	5	6

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Means & Reliability Estimates for the Chronic Pain Acceptance Questionnaire (CPAQ)			
	Test-Retest *r*	*SM* (*SD*)	Cronbach's α
Activities Engagement	.76**	29.3 (12.0)*	.82*
Pain Willingness	.59**	17.4 (9.7)*	.78*
Total	.75**	70.5 (19.0)*	.78*

* McCracken, Vowles, & Eccleston (2004); $n = 235$

** McCracken & Eccleston (2005); $n = 118$

APPENDIX D

PAIN CATASTROPHIZING SCALE (PCS)

Age: _____ Sex: M(__) F(__) Today's Date: _____

PCS

Everyone experiences painful situations at some point in their lives. Such experiences may include headaches, tooth pain, joint or muscle pain. People are often exposed to situations that may cause pain such as illness, injury, dental procedures or surgery.

Instructions:

We are interested in the types of thoughts and feelings that you have when you are in pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are experiencing pain.

0 = not at all	1 = to a slight degree	2 = to a moderate degree	3 = to a great degree	4 = all the time

When I'm in pain ...	not at all	Rating			all the time
1 I worry all the time about whether the pain will end.	0	1	2	3	4
2 I feel I can't go on.	0	1	2	3	4
3 It's terrible and I think it's never going to get any better.	0	1	2	3	4
4 It's awful and I feel that it overwhelms me.	0	1	2	3	4
5 I feel I can't stand it anymore.	0	1	2	3	4
6 I become afraid that the pain will get worse.	0	1	2	3	4
7 I keep thinking of other painful events.	0	1	2	3	4
8 I anxiously want the pain to go away.	0	1	2	3	4
9 I can't seem to keep it out of my mind.	0	1	2	3	4
10 I keep thinking about how much it hurts.	0	1	2	3	4
11 I keep thinking about how badly I want the pain to stop.	0	1	2	3	4
12 There's nothing I can do to reduce the intensity of the pain.	0	1	2	3	4
13 I wonder whether something serious may happen.	0	1	2	3	4

Means & Reliability Estimates for the Pain Catastrophizing Scale			
	Test-Retest *r*	*M* (*SD*)	Cronbach's α
Rumination		10.1 (4.3)**	.87*
Magnification		4.8 (2.8)**	.66*
Helplessness		13.3 (6.1)**	.78*
Total	.75*	28.2 (12.3)**	.87*

* Sullivan, Bishop, & Pivik (1995); $n = 438$

** Sullivan, Stanish, Waite, Sullivan, & Tripp (1998); $n = 86$

APPENDIX E

PAIN DISTRESS INVENTORY (PDI)

Ψ **Name/ID:** _____ **Gender: M/F** **Age:**____ **PDI**

Ethnicity: _____ **Marital Status:**_____ **Education:** _____

This questionnaire is about how people respond to physical or bodily pain. Please indicate how descriptive each statement is for you. Please read each statement carefully and then circle a number in the space to the right of each statement.

	0 = Not at all like me	1 = Rarely like me	2 = Sometimes like me	3 = Often like me	4 = Very much like me
1. When I am in pain, I feel more dizzy or lightheaded than usual	0	1	2	3	4
2. When I am in pain, my stomach hurts or bothers me more than usual	0	1	2	3	4
3. I am terrified about being in pain	0	1	2	3	4
4. I have difficulty thinking straight when I am in pain	0	1	2	3	4
5. My body shakes or trembles more than usual when I am in pain	0	1	2	3	4
6. When I am in pain, I usually feel the urge to scream or yell at other people	0	1	2	3	4
7. I usually have trouble catching my breath when my pain gets worse	0	1	2	3	4
8. When I am in pain, I quietly wish I could get back at people who make my pain get worse	0	1	2	3	4
9. When I am in pain, I am bothered by feelings of nausea more than usual	0	1	2	3	4
10. When I am in pain, I feel more easily angry with people than I am willing to admit	0	1	2	3	4
11. I have always had a terrible fear of being in pain	0	1	2	3	4
12. When I am in pain, I think seriously about saying nasty things to people	0	1	2	3	4
13. I usually do not get a lot done at work, home, or school when pain gets worse	0	1	2	3	4
14. When I am in pain, I hold grudges against people (e.g., doctors) who think the pain is all in 'my head'	0	1	2	3	4
15. I am afraid of pain sensations	0	1	2	3	4
16. When I am in pain, I tend to blame other people in general although I do not tell them openly	0	1	2	3	4
17. I usually feel miserable, down, or awful when I am in pain	0	1	2	3	4
18. It is hard for me to focus or concentrate as usual when I am in pain	0	1	2	3	4
19. When I am in pain, my mood is usually down, depressed, or lower than usual	0	1	2	3	4
20. I dread thinking about pain	0	1	2	3	4
21. I feel frightened when I sense pain coming on	0	1	2	3	4
22. When I am in pain, I feel down because I have difficulty enjoying most of the things I usually enjoy	0	1	2	3	4
23. When pain gets worse, nothing seems enjoyable	0	1	2	3	4
24. When I am in pain, I have trouble swallowing food or beverages	0	1	2	3	4
25. My heart pounds or races more than usual when my pain gets worse	0	1	2	3	4
26. I can't stand the thought of being in pain	0	1	2	3	4

Means & Reliability Estimates for the Pain Distress Inventory*					
	Test-Retest	*M* (*SD*)		Cronbach's α	
	r	Men	Women	Men	Women
PDI-Depression		1.45 (.89)	1.90 (.93)	.92	.93
PDI-Sensitivity		.59 (.70)	.89 (.98)	.91	.93
PDI-Somatic		.78 (.68)	1.04 (.76)	.87	.83
PDI-Anger		.95 (.79)	.94 (.85)	.83	.87
PDI-Total		.95 (.65)	1.22 (.75)	.95	.95

* Osman et al., 2003; $n = 300$