THE RELATIONS AMONG MINDFULNESS BASED CONSTRUCTS TO
DAILY FUNCTIONING AND SELF-EFFICACY
IN CHRONIC PAIN PATIENTS

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THE RELATIONS AMONG MINDFULNESS BASED CONSTRUCTS TO
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ABSTRACT

The purpose of this study was to investigate predictors of functional outcomes (physical and psychosocial daily functioning) and self-efficacy among persons with chronic pain. Specifically, the present study investigated whether mindfulness (observing, describing, acting with awareness, and accepting without judgment), psychological flexibility, and emotional intelligence predicted better overall daily functioning and greater self-efficacy in chronic pain patients. The sample (N= 148) consisted of individuals 18 years of age or older who have struggled with a chronic pain condition for more than three months and who were seeking treatment in a pain management treatment center in a Midwestern state. Participants completed the following measures: Demographic Questionnaire, Kentucky Inventory of Mindfulness Scale, Acceptance and Action Questionnaire, Brief Emotional Intelligence Scale, Pain Disability Index, and Pain Self-Efficacy Questionnaire. Two multiple regression analyses were utilized, each controlling for demographic factors found to correlate with overall daily functioning or self-efficacy. Results indicated that psychological flexibility significantly predicted both daily functioning level and self-efficacy among chronic pain patients. Emotional intelligence significantly predicted self-efficacy (but not daily functioning level) among chronic pain patients. Mindfulness was not found to significantly correlate with either daily functioning level or self-efficacy. Implications for clinical practice, as well as counselor education and supervision were reviewed. Recommendations for future research were also provided.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF FIGURES</th>
<th>ix</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. INTRODUCTION

1. Introduction to Chronic Pain ................................................. 3
2. Statement of the Problem .................................................... 14
3. Purpose of the Study .......................................................... 21
4. Research Questions .......................................................... 22
5. Operational Definitions .................................................... 22

### II. REVIEW OF THE RELATED LITERATURE

1. Summary of Research on Mindfulness and Daily Functioning Among Chronic Pain Patients ............................................. 28
2. Summary of Research on Psychological Flexibility and Daily Functioning Among Chronic Pain Patients ............................ 36
3. Summary of Research on Emotional Intelligence and Daily Functioning Among Chronic Pain Patients ............................. 47
4. Summary of Research on Mindfulness and Self-Efficacy Among Chronic Pain Patients ....................................................... 57
5. Summary of Research on Psychological Flexibility and Self-Efficacy Among Chronic Pain Patients .................................... 71
6. Summary of Research on Emotional Intelligence and Self-Efficacy Among Chronic Pain Patients .................................... 79
### Need for the Study

III. METHODOLOGY

- Research Questions
- Research Hypotheses
- Predictor and Criterion Variables
- Participants and Delimitations
- Instruments
- Procedures
- Data Analysis and Research Design
- Summary of Methodology

IV. RESULTS

- Pre-Analysis Data Screening
- Descriptive Statistics
- Inferential Statistics
- Summary of Results

V. DISCUSSION

- Descriptive Summary and Interpretation of Statistical Results
- Discussion of Results Compared to Related Research and Theory
- Implications for Counseling Practice
- Implications for Counselor Education and Supervision
- Limitations and Recommendations
- Summary of Discussion and Implications

REFERENCES
APPENDICES..................................................................................................................174

APPENDIX A. INFORMED CONSENT SCRIPT...............................................................175

APPENDIX B. DEMOGRAPHIC QUESTIONNAIRE.........................................................176

APPENDIX C. KENTUCKY INVENTORY OF MINDFULNESS SCALE..........................177

APPENDIX D. ACCEPTANCE AND ACTION QUESTIONNAIRE.................................180

APPENDIX E. BRIEF EMOTIONAL INTELLIGENCE SCALE......................................181

APPENDIX F. PAIN DISABILITY INDEX.....................................................................183

APPENDIX G. PAIN SELF-EFFICACY QUESTIONNAIRE.........................................185

APPENDIX H. INSTITUTIONAL REVIEW BOARD LETTERS.......................................187
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amount of Research on Psychological Flexibility, Mindfulness, and Emotional Intelligence as they Relate to Daily Functioning Level of Chronic Pain Patients</td>
<td>96</td>
</tr>
<tr>
<td>2</td>
<td>Amount of Research on Psychological Flexibility, Mindfulness, and Emotional Intelligence as they Relate to Self-Efficacy of Chronic Pain Patients</td>
<td>98</td>
</tr>
<tr>
<td>3</td>
<td>Amount of Research on Psychological Flexibility, Mindfulness, and Emotional Intelligence as they Relate to Daily Functioning Level and Self-Efficacy of Chronic Pain Patients</td>
<td>101</td>
</tr>
<tr>
<td>4</td>
<td>Relation Between Daily Functioning Level and Self-Efficacy and the Predictor Variables</td>
<td>145</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frequency Distribution of Criterion Variables</td>
</tr>
<tr>
<td>2</td>
<td>Frequency Distribution of Predictor and Criterion Variables</td>
</tr>
<tr>
<td>3</td>
<td>Pearson Correlation Coefficient for Hypothesis One</td>
</tr>
<tr>
<td>4</td>
<td>Means and Standard Deviations for Pain Disability Index and Level of Education</td>
</tr>
<tr>
<td>5</td>
<td>Means and Standard Deviations for Pain Disability Index and Gender</td>
</tr>
<tr>
<td>6</td>
<td>Summary of Hierarchical Multiple Regression Analysis</td>
</tr>
<tr>
<td>7</td>
<td>Pearson Correlation Coefficients for Hypothesis Two</td>
</tr>
<tr>
<td>8</td>
<td>Means and Standard Deviations for Pain Self-Efficacy Questionnaire and Level of Education</td>
</tr>
<tr>
<td>9</td>
<td>Means and Standard Deviations for Pain Self-Efficacy Questionnaire and Gender</td>
</tr>
<tr>
<td>10</td>
<td>Summary of Hierarchical Multiple Regression Analysis</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The United States Congress designated 2001–2010 as the Decade of Pain Control and Research (American Pain Society, 2010). Over the past ten years, there has been a significant increase in the research completed on chronic pain, yet chronic pain has risen in prevalence and is deemed a major health care problem not only in the United States but also worldwide. In a recent poll completed by the American Osteopathic Association (2010) more than 76 million Americans live with pain every day and chronic pain affects more Americans than cancer, diabetes and heart disease combined. The rising numbers of individuals struggling with chronic pain worldwide is indicative of the ineffectiveness of the current approaches to pain management. As the move continues toward evidenced-based interventions and approaches, it is critical to arrive at a clear understanding of the primary factors that play significant roles for individuals in managing chronic pain. Through the clarification of these individual characteristics/factors, clinicians will be better equipped in planning effective interventions to assist individuals in managing their chronic pain to maximize their daily functioning and enhance their self-efficacy.

The present study is an exploratory study that is not based on one theory or treatment approach but rather is based upon the biopsychosocial nature of chronic pain and mindfulness. This study investigated predictors of functional outcomes (physical and psychosocial daily...
functioning) and self-efficacy among persons with chronic pain. Specifically, the present exploratory study investigated whether mindfulness (observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence predict better overall daily functioning and greater self-efficacy in chronic pain patients. Following is an overview of chronic pain and its effects on daily functioning and self-efficacy, how mindfulness, psychological flexibility, and emotional intelligence may benefit chronic pain patients, limitations to research related to the present study’s purpose, and the intention of the present study.

The American Chronic Pain Association (2010) defines chronic pain as pain that continues a month or more beyond the usual recovery period for an injury or illness that goes on for months or years due to a chronic condition. The pain in this case may not be long term, but can interfere with daily life at all levels. Pain, according to the International Association for the Study of Pain (2010), is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” Pain lasting continually for more than three months meets the criteria for chronic pain. McCracken and Thompson (2009) also differentiated chronic pain from acute pain based upon the following: Chronic pain is a longstanding pain, most commonly defined as lasting longer than three months compared to acute pain that is defined as transient or short lived in nature. Acute pain episodes are resolved in shorter time periods, usually within a few days to a few weeks, minimally impacting daily living. In this study, chronic pain is operationalized as continual pain longer than three months in duration, which has been associated with significant personal distress or impairments in daily living.
Introduction to Chronic Pain

Chronic pain has led to more than $70 billion annually in health care costs and lost productivity; and it accounts for more than 80% of all physician visits (Gatchel, et al., 2007). The American Academy of Pain Management (2003) asserted that approximately 57% of all adult Americans reported experiencing recurrent or chronic pain in the past year. In Europe, chronic pain of moderate to severe intensity reportedly occurs in 19% of adult Europeans (Breivik, et al., 2006). This estimate is consistent with the research conducted worldwide that has indicated a range of 10-57% of adults struggle with chronic pain. Research has also shown the negative effects on the personal and working lives of those individuals with chronic pain. Chronic pain has resulted in disturbed daily functioning, emotional suffering, poor general health, high healthcare use, and high healthcare cost (Breivik et al., 2006). Additionally, research has suggested that very few Europeans were managed by pain specialists and nearly half received inadequate pain management.

The prevalence and cost of chronic pain is a major physical and mental health care problem in the United States and worldwide (Bronfort, et al., 2001; Dahl, Wilson, and Nilsson, 2004; Eriksen et al, 2003). In a study by Dersh, Polatin, and Gatchel (2002), many individuals with chronic pain also suffered with depression, 17-29% had an anxiety disorder, 15-28% had a substance abuse disorder, and 31-81% had a personality disorder. Chronic pain patients are also at greater risk for suicide (Gilbert, et al., 2009). The research has established a link between mental health and chronic pain, which further complicates the effective treatment of those individuals who struggle with chronic pain.
Overview of Chronic Pain and Daily Functioning

In 2001, the Joint Commission on Accreditation of Healthcare Organizations required physicians to consider pain as one of the vital signs, in addition the other four vital signs including pulse, blood pressure, core temperature, and respiration (Lanser & Gesell, 2001). This emphasis on addressing pain as part of a medical exam brings to light the importance in accurately assessing pain and the impact on daily functioning of the individual. The distress or impairments to daily living can take many different forms. Research has shown how chronic pain patients experience changes in the following areas: their family and interpersonal relationships; work/employment leading to loss of income and/or defining personal role; daily functioning including energy, appetite, sleep, and regular activities of daily living (Roy, 2008). In a study by Renshaw (2007) chronic pain patients were found to be at greater risk to experience divorce, alcoholism, drug abuse, family violence, absenteeism, job loss, depression, and suicide. Research has shown how individuals struggling with chronic pain are likely to avoid daily activities leading to reports of lower quality of life (Dusova & Csesezaro, 2008). Additionally, chronic pain patients frequently report disrupted sleep and disturbed mood, and commonly take potentially sedating medications (Greve, Etherton, Ord, Bianchini, & Curtis, 2009). Through the changes in eating and sleeping habits, low energy, and avoidance of previously enjoyed activities, the characteristics that define depression are present. In addition to the link with mental health disorders, specifically depression and anxiety, chronic pain has also been associated with low life satisfaction (Silvemark, Kallmen, Portala, & Molander, 2008).

Chronic pain affects not only the individual but also impacts significant others and familial relationships. Research has shown the negative impact of chronic pain on families. For example, Lewandowski, Morris, Burke-Drauker, and Risko (2007) found that 83% of persons
who have a spouse with chronic pain, report significant depressive symptomatology. In this same study, Lewandowski et al. (2007) indicated that couples living with chronic pain are more likely to experience a loss of sexual expression and intimacy. Anger, frustration, isolation, sense of helplessness, fear regarding future disability are additional symptoms that surface among family members of chronic pain patients (Grant & Haverkamp, 1995). These symptoms adversely affect interpersonal relationships and change the family dynamics. The roles of family are significantly affected along with the traditions that may change or cease due to the physical limitations of the family member struggling with chronic pain. The financial and emotional cost on the family is often significant, and with the changing dynamics in the family, can further complicate the successful treatment of the chronic pain.

**Overview of Chronic Pain and Self-Efficacy**

In a study of chronic pain patients completed by Tang, Goodchild, Hester, and Salkovskis (2010) the construct of mental defeat was found to be a strong predictor of pain interference, depression, and psychosocial disability. This construct of mental defeat is defined as a state of mind marked by a sense of a loss of autonomy, agency, and human integrity (Tang, Salkovskis, & Hanna, 2007). Mental defeat is pronounced in the research regarding Post Traumatic Stress Disorder, yet it is a construct that is influential in the assessment and treatment of chronic pain. Through this loss of autonomy and avoidance of activities, the construct of self-efficacy surfaces in this discussion for those individuals struggling with chronic pain.

Bandura (1977) conceptualized self-efficacy as a reflection of a ‘resilient self-belief system’ in the face of obstacles. If an individual believes that they can no longer complete certain tasks, they are more likely to avoid these situations. Research has shown how low pain self-efficacy is a predictor of people being at risk of long-term disability and depression.
In general, higher self-efficacy appears to enhance and maintain the long-term effects of rehabilitation (Keefe, Rumble, Scipio, Giordano, & Perri, 2004). In a study by Borsboro, Gerdle, and Peolsson (2010), self-efficacy correlated positively with variables of quality of life and general health. Low self-efficacy has been associated with greater disability and distress (Nicholas, 2006; Turk & Okifuji, 2002). The research has shown how self-efficacy is an important mediator between pain intensity and disability, as well as a significant predictor of depression in chronic pain patients (Asghari & Nicholas, 2001; Keefe, et al., 2004).

Turner, Ersek, and Kemp (2005) identified two types of self-efficacy that have been studied: Self-efficacy for managing pain and functional self-efficacy. Self-efficacy for managing pain refers to the individual’s beliefs that they have control over their pain. Functional self-efficacy, similar to Bandura’s definition, is a person’s confidence in his or her ability to perform specific activities. The results of this study (Turner, et. al., 2005) indicate that self-efficacy is an important factor in pain-related disability, depression, and pain coping strategy use among older adults with diverse chronic pain problems. Individuals’ perceptions of personal capability to exercise control over events that affect their lives, and more specifically, judgments of their capabilities to accomplish a particular level of performance.

Overview of Chronic Pain and Mindfulness

Mindfulness has been defined as a state in which one is highly aware and focused on the reality of the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situation or in emotional reactions to the situation (McCracken & Thompson, 2009). An operational working definition of mindfulness is: the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding experience moment by moment (Kabat-Zinn, 2003). Mindfulness is a way of directing
attention that originated in Eastern meditation traditions and has been acknowledged and practiced more in Western culture (Baer, Smith, & Allen, 2004). The meditative practice of mindfulness has been centered in the teachings of Buddhism. It has been traditionally described by the Sanskrit word ‘dharma,’ which carries the meaning of ‘lawfulness’ as in “the laws of physics” or simply “the way things are” (Kabat-Zinn, 2003).

According to Ludwig and Kabat-Zinn (2008), the original purpose of mindfulness in Buddhism was to alleviate suffering and cultivate compassion. As Mindfulness has become more present in the Western culture, there has been an increase in the use of mindfulness techniques to assist those individuals suffering from physical and mental health issues. Through regular mindfulness meditative practices, it is suggested that individuals have a reduction in their level of suffering and develop greater awareness, insight, wisdom and compassion (Kabat-Zinn, 2003). Specific interventions that involve mindfulness training include: mindfulness-based stress reduction, mindfulness based cognitive therapy, dialectical behavior therapy, acceptance and commitment therapy, and relapse prevention for substance abuse (Baer et al., 2004).

Over the past twenty years, the research on mindfulness has significantly increased, suggesting the benefits of using these meditative approaches to reduce suffering. Mindfulness has proven effective for reducing symptoms of stress, anxiety, depression and eating disorders (Baer, 2003; Evans et al., 2008). Research has also shown the effectiveness of mindfulness practice in reducing the suffering of cancer patients, fibromyalgia, and chronic pain (Baer, 2003). In a study by Speca, Carlson, Goodey, and Angen (2000) mindfulness based stress reduction was found to significantly reduce mood disturbance and stress levels among cancer patients. Kabat-Zinn et al. (1998) found that patients who listened to mindfulness audiotapes during individual
light therapy sessions showed quicker clearing of their skin than did patients who received light therapy alone.

In a review of four studies that addressed the effectiveness of mindfulness in treating chronic pain, Baer (2003) reported that in general, chronic pain patients show statistically significant improvements in ratings of pain, other medical symptoms, and general psychological symptoms. Research has shown that a mindfulness based meditation program may lead to improvement in pain acceptance and physical function of older adults with chronic pain (Morone, Greco, & Weiner, 2008). Additionally, mindfulness accounted for significant variance in depression, pain related anxiety, and disability, independent of patient background variables or reported pain intensity (Morone et al., 2008). In a study addressing the cognitive and behavioral processes underlying mindfulness, McCracken and Thompson (2009) data indicated that mindfulness was significantly related to measures of patient emotional, physical, and social functioning. Although the literature has consistently shown the benefits of mindfulness in treating pain, there is a need to expand the research on mindfulness as a predictor of functional outcomes (physical and daily functioning) and self-efficacy among chronic pain patients.

Overview of Chronic Pain and Psychological Flexibility

Psychological Flexibility includes qualities of acceptance and mindfulness, and the capacity to take committed and values-directed or goals directed action, among other qualities (McCracken, Vowles, & O’Brien, 2010). Psychological flexibility is defined as one’s ability to directly and openly contact experiences in the present moment and persisting or changing behavior according to what the situation affords and one’s personal goals and values (Bond, Flaxman, & Bunce, 2008; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Vowles & McCracken, 2010). This construct guides people in persisting with or changing their actions, in accordance
with the values-based contingencies that they contact, when they are willing to experience the present moment (Bond, Hayes, & Barnes-Holmes, 2006). Psychological flexibility spans a wide range of human abilities to: recognize and adapt to various situational demands; shift mindsets or behavioral repertoires when these strategies compromise personal or social functioning; maintain balance among important life domains; and be aware, open, and committed to behaviors that are congruent with deeply held values (Kashdan & Rottenberg, 2010).

Psychological flexibility is a construct that includes six overlapping components: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). McCracken, Vowles, and O’Brien (2010) suggested that the approach to behavior change within the cognitive behavioral approaches should be expanded to include Acceptance and Commitment Therapy (ACT). One of the primary goals of ACT is the strengthening of the six overlapping components that make up psychological flexibility. Grounded in an empirical, principle-focused approach, ACT is deemed the third wave of behavioral and cognitive therapy that embraces a contextualistic philosophy of science, a basic theory of language and cognition, and an applied theory of psychopathology and psychological change (Hayes et al., 2006).

The research on psychological flexibility is consistent with the literature regarding acceptance that has found acceptance of pain is associated with less pain, distress, disability and greater psychological well being (McCracken, 1998; Viane, Crombez, & Eccleston, 2004). An increasing body of research demonstrates that the acceptance of pain is significantly associated with the quality of daily functioning in people with chronic pain. Acceptance was found to be a stronger predictor of pain, disability, depression, pain related anxiety, and work status in a large sample of pain sufferers than coping skills (McCracken & Eccleston, 2003).
The literature (McCracken, Vowles, & Gauntlett-Gilbert, 2007), has shown that chronic pain patients with a more psychologically flexible profile were less depressed and anxious, and identified with a better daily functioning in general. Similarly, in a study by McCracken and Vowles (2007), psychological flexibility was more significantly correlated with measures of anxiety, depression, disability, and healthcare use than those achieved by the traditional pain management component for chronic pain patients. McCracken and Vowles (2010), continued to address this construct of psychological flexibility and found in the course of treatment, improvements in psychological flexibility were reliably associated with improvements in physical and psychosocial functioning compared to the traditional pain management component that had weaker, non-significant, associations. This study will further explore the previous research addressing the construct of psychological flexibility as a predictor of functional outcomes (physical and daily functioning) and self-efficacy among chronic pain patients.

Overview of Chronic Pain and Emotional Intelligence

Emotional intelligence has been defined as “the capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (Mayer, Salovey, & Caruso, 2004). Similarly, Extremera and Fernandez-Berrocal (2002) defined emotional intelligence as the capacity to process emotional information, accurately and efficiently, including the capacity to perceive, assimilate, understand, and manage emotions. The construct of emotional intelligence accounts for how people’s emotional reports vary in their accuracy and how the more accurate understanding of emotion leads to better problem solving in an individual’s emotional life (Salovey, Bedell, & Detweiler, 1999).
Emotional intelligence has played a promising role in explaining how people cope with and adapt to stressful situations contributing to growing social and psychological adjustment (Salovey, Bedell, & Detweiler, 1999). In a study investigating perceived emotional intelligence and quality of life of middle aged women, Extremera and Fernandez-Berrocal (2002) suggested that emotional intelligence may account for the health related quality of life including social, physical, and psychological symptoms. Specifically, the subscale of ability to repair moods was found to be associated with lower symptom reporting, lower illness reports, and fewer visits to a health center. The most commonly reported positive outcomes for high levels of emotional intelligence include higher levels of optimism, task mastery, and life satisfaction as well as lower levels of depression and impulsivity (Martínez-Pons, 1997; Schutte et al., 1998). Consistent with these findings, low emotional intelligence was found to be a significant predictor of depression among individuals in Pakistan in a study by Batool and Khalid (2009). Emotional intelligence has been shown to improve individuals’ level of happiness, ability to balance life’s various challenges, form quality decision making skills, positive work and academic outcomes, and life satisfaction (Eissa, Boseck, and Cassady, 2008).

The construct of emotional intelligence has been measured as a trait and also as an ability. Petrides and Furnham (2003), defined trait emotional intelligence as the typical performance of an individual identified through self-report assessments of typical level of functioning, compared to ability emotional intelligence that measures an individual’s maximal performance through questionnaires that have correct and incorrect responses. Trait emotional intelligence has been linked with personality factors (Bar-On, 1997). Ability emotional intelligence is measured by the successful completion of certain tasks. When measured as a trait,
emotional intelligence was more strongly associated with health than when it was measured as an ability (Martins, Ramalho, & Morin, 2010).

Mayer, Salovey, and Caruso (2004) described emotional intelligence through a four branch ability framework. These four areas included the following abilities: to perceive emotion, use emotion to facilitate thought, understand emotions, and manage emotions. The order of the branches represents the degree to which the ability is integrated within the individual’s overall personality (Mayer et al., 2004). In a study by Slaski and Cartwright (2003), it was suggested that emotional intelligence can be taught, learned and may be useful in reducing stress and improving health, well-being and performance. Consistent with these findings, in a study by Bar-On (1997), emotional intelligence was found to develop with age, validating the theory that emotional intelligence can be taught and learned.

The literature review performed, only six studies were found that addressed the relation between emotional intelligence and physical health. The research was consistent in displaying individuals with higher emotional intelligence suffer less subjective stress and experience better health and well-being (Ciarrochi, Deane, & Anderson, 2002; Mayer & Salovey, 1995; Tsaousis & Nikolaou, 2005). Consistent with these findings, in a study by Augusto-Lando & Montes-Berges, (2009), emotional intelligence showed high correlations with good health and psychological adjustment levels. In a study by Day, Therrien, and Carroll (2005) emotional intelligence was deemed an important factor in job and life success, in terms of both having better interpersonal relationships and being more psychologically healthy. In the literature review performed, there were not any studies identified that specifically addressed the relation between emotional intelligence and chronic pain.
The International Association for the Study of Pain identified that pain consisted of the following three elements: it is associated with ‘injury’ and ‘threat of injury,’ it is an ‘unpleasant’ and ‘emotional’ experience; and it is ‘subjective’ (Chen, 2001). As an ‘unpleasant’ and ‘emotional’ experience, it is implied that those who are better able to manage their emotions will be able to manage their chronic pain more effectively. In a study by Ong, Zautra and Reid (2011) that looked at the role of positive emotion on fostering adaptive responses to pain, the mediation analyses revealed that psychologically resilient individuals rebound from daily pain catastrophizing through experiences of positive emotion. Pain catastrophizing is defined as a negative emotional and cognitive response to pain that involves elements of magnification, helplessness, and pessimism, has been identified as one of the most robust and reliable predictors of the chronic pain experience (Sullivan et al., 2001).

Emotional intelligence is also linked to chronic pain through the ability to manage stress effectively. The link between emotional intelligence and stress is founded on the notion that negative emotions and stress are the result of some dysfunctional relationship between aspects of the self and the environment, and that the ability (emotional intelligence) to ‘read’ and manage emotions in the self and others is a moderator in this process (Slaski & Cartwright, 2003). Self-awareness is viewed as the cornerstone of emotional intelligence, and self-confidence and self acceptance are key factors in its development (Goleman, 1995). Through increased self-awareness, individuals are more able to detach themselves from events and regulate their emotions in order to prevent them from becoming ‘immersed in’ and ‘carried away’ by their emotional reaction (Slaski & Cartwright, 2003). Theoretically there is a clear link between pain catastrophizing and emotional intelligence.
Goleman (2005) identified that there is a growing body of evidence indicating that emotional states play a significant role in vulnerability to disease and in the course of recovery. States of mind can affect the strength of the immune system and the robustness of the cardiovascular system (Goleman, 1997). The afflictive or harmful states of mind included anger or hostility, depression, stress, nervousness, and anxiety. Those states that were found beneficial included calm, optimism, confidence, joy, and loving kindness. Research over the past twenty-five years has provided incontrovertible evidence that the immune system is influenced by the brain and that behavior, the nervous system, and the endocrine system are influenced by the immune system (Ader, 2001). The study of psychoneuroimmunology addresses these interactions/relations among behavioral, neural, and endocrine and immune processes. Psychosocial factors, including stressful life experiences, are capable of influencing the onset or severity of a variety of immune disorders and infectious diseases (Ader, 2001). This current exploratory study will look to further expand the research on emotions and health, by addressing the relation between emotional intelligence and functional outcomes (physical and psychosocial daily functioning) and self-efficacy among persons with chronic pain.

Statement of the Problem

Due to the complexity of chronic pain and the failure to find a cure for it, there is a need for additional research to address what factors influence/predict overall functioning level and self-efficacy of chronic pain patients. The research on chronic pain is growing, yet to the present date, there has not been a study that looks at the three mindfulness related constructs in relation to daily functioning and self-efficacy in chronic pain patients. The following sections highlight some weaknesses in previous research, and areas for further study, regarding mindfulness-related constructs and self-efficacy and daily functioning among chronic pain patients.
Mindfulness and Daily Functioning Research Among Chronic Pain Patients

There is growing research that has shown the effectiveness of mindfulness practice in reducing the suffering of cancer patients, fibromyalgia, and chronic pain (Baer, 2003; Morone, et al., 2008). Although the results of these studies are encouraging, it is important to point out the limitations of the previous studies, Morone et al. (2008) was a pilot study that addressed the effectiveness of a mindfulness meditation for the treatment of lower back pain for older adults. Due to the research design as a pilot study, the sample size was rather small, limiting the ability to detect between group differences. Baer (2003) provided a review of the literature on the effectiveness of mindfulness-based interventions that may be helpful in the treatment of several disorders. Baer (2008) identified the methodological flaws of some of the research and concluded the need for methodologically sound investigations in order to clarify the utility of mindfulness-based interventions.

McCracken and Thompson (2009) addressed the cognitive and behavioral processes underlying mindfulness. The results indicated that mindfulness was significantly related to measures of patient emotional, physical, and social functioning. One of the limitations of the study was the Mindfulness Attention Awareness Scale (MAAS) that was used to measure mindfulness. The MAAS is a 15 item measure that has a unidimensional factor structure. McCracken and Thompson (2009) recommended further research that explores and validates models of mindfulness-based processes.

For the purposes of this study, the Kentucky Inventory of Mindfulness Skills (KIMS) will be used to measure the construct of mindfulness. The KIMS is a 39 item instrument developed to measure the characteristics of observing, describing, acting with awareness, and accepting
without judgment (Baer, Smith, & Allen, 2004). The KIMS is a statistically reliable and valid instrument that measures the multidimensional construct of mindfulness (Baer et al., 2004). Future research is needed to expand on the previous research to address if the construct of mindfulness is a predictor of better overall physical and psychological functioning.

Mindfulness and Self-Efficacy Research Among Chronic Pain Patients

There has been limited research that has addressed the relationship between mindfulness and self-efficacy. Cusens, Dugan, Thorne, and Burch (2010) addressed the impact of a mindfulness program on well being of individuals in a pain management program. The study (Cusens et al., 2010) indicated significant positive change was found on self-report measures of depression, outlook, catastrophizing and pain self-efficacy in the intervention group, but not the comparison group. The research has shown how chronic pain patients are likely to withdraw from previously enjoyed activities due to the self-imposed limitations placed upon them due to their chronic pain condition. In improving their self-efficacy, these individuals will no longer avoid these activities but rather participate more fully in spite of their pain condition. A limitation of this study was found in the small sample size, N=33, that threatens the validity of the study, and the authors recommended that effect sizes should be interpreted with caution (Cusens, et al., 2010).

Theoretically, there is overlap between the two constructs. The literature has suggested that physiological and affective states can influence the perception of efficacy, and reduction or reinterpretation of such states can lead to higher perceived self-efficacy (Bandura, 1986, 1997). This goes hand in hand with mindfulness, whereby the individual enters a state of high awareness and focus on the reality of the present moment, without getting caught up in thoughts
that are about the situation or in emotional reactions to the situation (McCracken & Thompson, 2009). By entering this intentional state of awareness, the individual is able to focus their attention, on the present moment, with acceptance and avoid catastrophizing the current situation. Furthermore, self-efficacy research emphasizes self-awareness and self-regulation as factors influencing the development of self-efficacy beliefs (Bandura, 1997). It is with this common theme, that mindfulness is related from a theoretical standpoint to self-efficacy.

There were no other studies identified that addressed the relation between mindfulness and self-efficacy. It is clear that there is a need for further research to address if there is a relation between mindfulness and self-efficacy among chronic pain patients.

Psychological Flexibility and Daily Functioning Research Among Chronic Pain Patients

The construct of psychological flexibility has limited research to date, however, based on current research, it may be assumed that chronic pain patients with a more psychologically flexible profile identified with a better physical and psychosocial functioning level (McCracken, Vowles, & Gauntlett-Gilbert, 2007; Vowles & McCracken, 2010). McCracken and Velleman (2009) found that psychological flexibility may significantly influence patient outcomes, such as their level of emotional suffering, their physical and social functioning, and their healthcare use. Additional research was recommended to further explore the reliability of these findings. This is consistent with research on Acceptance and Commitment Therapy (McCracken & Gutierrez-Martinez, 2010) that found ACT based treatment participants reported significant reduced levels of depression, pain-related anxiety, physical and psychosocial disability, medical visits, and pain intensity in comparison to the start of treatment. Therefore, there is a need for additional research on this topic to address common themes that emerge.
Psychological Flexibility and Self-Efficacy Research Among Chronic Pain Patients

The literature on chronic pain has yet to address the relationship between psychological flexibility and self-efficacy. The construct of psychological flexibility is related to self-efficacy. Of the six overlapping components that make up psychological flexibility, self-as context and committed action involve the construct of self-efficacy. Through the ACT framework, in order to build psychological flexibility, ACT encourages the development of larger and larger patterns of values driven action (Hayes, Luoma, Bond, Masuda, and Lillis, 2006). Specifically, this is completed through the development of concrete goals in specific areas and behavior linked to those goals that are more involved, broader, and longer term (Bond, Hayes, & Barnes-Holmes, 2006). Similar to self-as context, self-efficacy involves the individual’s sense of self and belief system in regards to completing certain tasks or overcoming obstacles due to their chronic pain condition.

The component of committed action is a process whose goal is to construct behavioral patterns that begin to work for individuals, not against them (Bond, et al., 2006). This process ultimately builds self-efficacy, as the individual successfully completes tasks, they are more confident in their ability to successfully complete these tasks in the future. On the other hand, psychological inflexibility and low self-efficacy will both lead individuals to avoid certain tasks. Future research is needed to further address this relationship between psychological flexibility and self-efficacy among the chronic pain population.

Emotional Intelligence and Daily Functioning Research Among Chronic Pain Patients

Emotional intelligence has been defined as “the capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge,
and to reflectively regulate emotions so as to promote emotional and intellectual growth” (Mayer, Salovey, & Caruso, 2004). The research has been consistent in displaying the relation between emotional intelligence and overall health (Augusto-Lando & Montes-Berges, 2009; Ciarrochi, Deane, & Anderson, 2002; Mayer & Salovey, 1995; Tsaousis & Nikolaou, 2005). The samples of these studies ranged from nursing students (Augusto-Lando & Montes-Berges, 2009) to students and employees from various organizations (Tsaousis & Nikolaou, 2005). Building on this research, a study by Schutte, Malouff, Thorsteinsson, Bhullar, and Rooke (2007), found higher emotional intelligence was associated with better mental health and physical health. Similarly, Martins, Ramalho, and Morin (2010) found that emotional intelligence was strongly associated with physical health and emotional health was a plausible health predictor.

There were no studies that looked specifically at the relation between emotional intelligence and health functioning among chronic pain patients. This study will look to expand the research to address the relation between these two constructs specifically within the chronic pain population.

*Emotional Intelligence and Self-Efficacy Research Among Chronic Pain Patients*

Theoretically, the research has been clear in linking emotional intelligence with self-efficacy. Personal mastery experiences (or task mastery), vicarious mastery experiences, verbal persuasion, and physiological and affective states are the four factors identified by Bandura (1986, 1997) that determine the level of an individual’s self-efficacy. Personal successful masterful experiences have been found to lead to the expectation of future good outcomes for the self (Kirk, Schutte, and Hine (2011). Additionally, Bandura (1986, 1997) found that physiological and affective states, including very high levels of arousal or negative mood, can
influence the perception of efficacy, and reduction or reinterpretation of such states can lead to higher perceived self-efficacy. Self-efficacy research emphasizes self-awareness and self-regulation as factors influencing the development of self-efficacy beliefs (Bandura, 1997). The emotional intelligence literature suggests that individuals who experience higher emotional intelligence are more likely to experience performance related success, task mastery, than are individuals who exhibit lower emotional intelligence (George, 2000; Schutte, et al, 1998).

The literature addressed the relation between emotional intelligence and self-efficacy in the context of professional development (Di Fabio & Palazzeschi, 2008) and as predictors of job stress (Eissa & Khalifa, 2008). Di Fabio and Palazzeschi (2008) concluded that a number of significant and positive relationships between emotional and teacher self-efficacy, both globally and in its three dimensions (including efficacy in instructional activities, efficacy in classroom management, and efficacy in student engagement). Furthermore, higher emotional intelligence was linked to higher teacher self-efficacy in the capacity to manage the classroom, motivate and involve students, and use appropriate teaching strategies. Eissa and Khalifa (2008) found that emotional intelligence and self-efficacy were ‘potent’ predictors of job stress among elementary school teachers in Egypt.

The literature has suggested a relation between the two constructs of emotional intelligence and self-efficacy. Specifically, in a study by Kirk, Schutte, and Hine (2008), trait emotional intelligence was found to overlap with the construct of emotional self-efficacy. Petrides and Furnham (2003) went so far as to suggest that trait emotional could be termed ‘emotional self-efficacy.’ This suggestion has been criticized in that although trait emotional intelligence and emotional self-efficacy are similar constructs, they are not identical thus implying the distinctiveness of the constructs. Kirk et al. (2008) concluded that emotional self-
efficacy is a type of emotional intelligence in its own right, somewhat distinct and having separate utility from trait emotional intelligence and ability emotional intelligence. For the purposes of this study, emotional intelligence and self-efficacy will be viewed in the light of similar, yet distinct constructs that will be measured by two separate instruments.

The literature review did not provide any studies that specifically addressed the relation between emotional intelligence and self-efficacy for chronic pain patients. The research was clear in establishing a relation between the constructs of emotional intelligence and occupational self-efficacy, specifically teacher self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008); leader self-efficacy (Magyar et al., 2007); and counselor self-efficacy (Easton et al., 2008). Yet through the extensive literature review there were no studies that specifically had addressed the relation between emotional intelligence and self-efficacy among the chronic pain population. This study will advance the knowledge of the field to address the relation between these two constructs.

Purpose of the Study

The present exploratory study investigated predictors of daily functional outcomes and self-efficacy among persons with chronic pain. Specifically, the present exploratory study investigated whether mindfulness (observing, describing, acting with awareness, & accepting without judgement), psychological flexibility, and emotional intelligence predict overall daily functioning and self-efficacy in chronic pain patients.

Participants in the study were recruited from two pain management centers in a Midwestern state. The participants included patients over the age of 18 years who were currently being treated for chronic pain. The participants had experienced a chronic pain condition for
longer than three months in duration that was associated with significant personal distress or impairments in daily living. The literature has been consistent in defining chronic pain according to these general guidelines (American Chronic Pain Association, 2010; International Association for the Study of Pain, 2010; McCracken and Thompson, 2009). In order to increase the generalizability of results, no other patient related delimitations (i.e. demographic or medical) were utilized. Due to the exploratory study’s purpose being an investigation of the relation between the constructs of psychological flexibility, mindfulness (observing, describing, acting with awareness, & accepting without judgment), and emotional intelligence and the daily functioning level and self-efficacy of chronic pain patients, the study did not delimit participants according to type of chronic pain or type of treatment obtained.

Research Questions

1. Does mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence predict the degree of daily functioning among chronic pain patients?

2. Does mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence predict the degree of self-efficacy among chronic pain patients?

Operational Definitions

1. Chronic Pain: Pain that continues a month or more beyond the usual recovery period for an injury or illness that goes on for months or years due to a chronic condition. The pain in this case may not be long term, but can interfere with daily life at all levels (American Chronic Pain Association, 2010). A longstanding pain, most commonly defined as
lasting longer than three months compared to acute pain that is defined as transient or short lived in nature (McCracken and Thompson, 2009).


3. Emotional Intelligence: The capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth (Mayer, Salovey, & Caruso, 2004).

4. Mindfulness: State in which one is highly aware and focused on the reality of the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situation or in emotional reactions to the situation (McCracken & Thompson, 2009). Four mindfulness skills:
   a. **Accepting (or allowing) without judgment**: allowing or being nonjudgmental or non-evaluative about present moment experience.
   b. **Acting with awareness**: engaging fully in one’s current activity with undivided attention or focusing with awareness on one thing at a time.
   c. **Describing**: labeling or noting of observed phenomena by covertly applying words.
   d. **Observing**: noticing or attending to a variety of stimuli, including internal phenomena, such as bodily sensations, cognitions, emotions, and external phenomena, such as sounds and smells.
5. Pain: An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (International Association for the Study of Pain, 2010).

6. Psychological Flexibility: One’s ability to directly and openly contact experiences in the present moment and persisting or changing behavior according to what the situation affords and one’s personal goals and values (McCracken, Vowles, & O’Brien, 2010). Construct includes six overlapping components (Hayes et al., 2006):
   a. Acceptance: an alternative to experiential avoidance, and comprises awareness and compassionate acceptance of unpleasant material without any attempts to alter or avoid it
   b. Committed action: broad grouping of skills that can include skill acquisition, exposure, shaping, goal setting, and so on
   c. Contact with the present moment: ongoing, non-evaluative awareness of psychological and environmental events as they occur on a moment to moment basis
   d. Cognitive defusion: process by which an individual comes to understand that his or her thoughts are merely verbal events rather than actual events
   e. Self-as context: awareness that the self is distinct from and more than the sum of total parts
   f. Values: guiding principles that are thought to motivate sustained and complex chains of behavior

7. Self-Efficacy: A reflection of a ‘resilient self-belief system’ in the face of obstacles. How confident the individual is to complete certain tasks or activities at the present time, despite their pain condition (Bandura, 1977; Nicholas, 2007).
CHAPTER II

REVIEW OF THE RELATED LITERATURE

The research on chronic pain is growing, yet there has not been a clear breakthrough in reducing the significant suffering of those who are afflicted with chronic pain. Chronic pain was previously defined by McCracken and Thompson (2009) as a longstanding pain, lasting longer than three months compared to acute pain that is defined as transient or short term in nature. As previously identified by the American Osteopathic Association (2010), more than 76 million Americans live with pain every day and chronic pain affects more Americans than cancer, diabetes, and heart disease combined. Unfortunately these numbers continue to rise. The American Chronic Pain Association identified 62 chronic pain conditions that Americans have struggled with. Of those conditions, the most common types of chronic pain include back and neck pain, nerve pain, fibromyalgia, and central pain syndrome. The following paragraphs will briefly review these chronic pain conditions and summarize the literature of the constructs of mindfulness, psychological flexibility, and emotional intelligence as predictors of daily (physical and psychosocial) functioning and self-efficacy among chronic pain patients.

Back and neck pain has grown in prevalence in the United States. It is one of the most common chronic pain conditions (National Pain Foundation, 2011). There has been an overwhelming body of research conducted on back and neck pain, as evidenced by approximately 26,000 studies cited through EBSCO in 2011 that addressed this topic. The research has shown how depression, frustration and anger also are normal responses to any
chronic pain condition, including back and neck pain. The literature has addressed the reciprocal relation between the mind and the body, indicating that these negative emotions, not only act as a response to the pain condition, but have been found to further aggravate pain (National Pain Foundation, 2011). Medication management and physical therapy are the primary modes of treatment, along with psychological pain management techniques that incorporate a “mind-body” connection can help break this vicious cycle. These include breathing exercises, self-hypnosis, various forms of biofeedback training and other alternative therapies (National Association for Pain, 2011).

Peripheral neuropathy is defined as dysfunction of the structure and function of peripheral motor, sensory and autonomic nerves (Simon, 2009). Peripheral neuropathy is a problem with the nerves that carry information to and from the brain and spinal cord to the rest of the body. This can produce pain, loss of sensation, and an inability to control muscles. "Peripheral" means nerves further out from the center of the body, distant from the brain and spinal cord (which are called the central nervous system);"Neuro" means nerves;"Pathy" means abnormal (National Center for Biotechnology Information, 2011). Polyneuropathy may involve damage to a single nerve or nerve group or to multiple nerves. It is caused by diseases that affect the whole body, infections or inflammation, exposure to poisonous substances, and other miscellaneous causes. Symptoms include sensation changes, movement difficulty, and autonomic symptoms. Physical therapy, occupational therapy, or orthopedic interventions are used as the primary forms of treatment. Early diagnosis and treatment increases the chance of controlling symptoms.
Fibromyalgia syndrome is a common and chronic disorder characterized by chronic widespread pain for at least three months and the presence of widespread mechanical tenderness, fibromyalgia typically affects women and can be found in patients of varying ages who present in both primary care and psychiatric settings (Staud, Mease, & Williams, 2009). The word “fibromyalgia” comes from the Latin term for fibrous tissue (fibro) and the Greek ones for muscle (myo) and pain (algia) (National Institute of Health, 2011). Fibromyalgia affects up to seven percent of the population in the United States (Glombiewski, Sawyer, Gutermann, Koenig, Rief, and Hofman, 2010). The causes of fibromyalgia are unknown. It has been hypothesized that there may be a number of factors involved. Fibromyalgia has been linked to: stressful or traumatic events, such as car accidents; repetitive injuries; illness and certain diseases (National Institute of Health, 2011). Treatment of fibromyalgia is often viewed as very challenging, and the prognosis for recovery is poor (Glombiewski, et al., 2011). The optimal management of fibromyalgia is comprised of both pharmacologic and nonpharmacologic approaches, including use of serotonin-norepinephrine reuptake inhibitors and/or cognitive-behavioral therapy (Staud, Mease, & Williams, 2009).

Central pain syndrome is a neurological condition caused by damage to or dysfunction of the central nervous system (CNS), which includes the brain, brainstem, and spinal cord (National Institute of Neurological Disorders and Stroke, 2011). This syndrome can be caused by stroke, multiple sclerosis, tumors, epilepsy, brain or spinal cord trauma, or Parkinson's disease. Central pain syndrome may affect a large portion of the body or may be more restricted to specific areas, such as hands or feet. The extent of pain is usually related to the cause of the CNS injury or damage (National Institute of Neurological Disorders and Stroke, 2011). Pain medications often provide some reduction of pain, but not complete relief of pain, for those affected by central pain.
syndrome. Tricyclic antidepressants such as nortriptyline or anticonvulsants such as neurontin (gabapentin) can be useful. Lowering stress levels appears to reduce pain (National Association for Pain, 2011).

For the purposes of this study, chronic pain will not be restricted to specific conditions of chronic pain, rather it will include all forms of chronic pain as operationalized here. Similar to other studies completed on this topic, chronic pain will be operationalized as continual pain longer than three months in duration, which is associated with significant personal distress or impairments in daily living.

Summary of Research on Mindfulness & Daily Functioning Among Chronic Pain Patients

The following section provides a summary of the research on mindfulness among individuals struggling with pain. This summary consists of the breakdown of each study including the instruments used, a description of the findings and limitations of the study.

McCracken and Thompson (2009) examined the cognitive and behavioral processes underlying mindfulness. The study addressed the following: the preliminary reliability and validity analyses on Mindful Attention Awareness Scale; the component structure of the Mindful Attention Awareness Scale; and the possible differences between components of mindfulness in their ability to predict patient functioning (McCracken & Thompson, 2009). One hundred fifty patients seeking treatment for chronic pain on a United Kingdom based interdisciplinary pain management unit completed a battery of questionnaires, including the following instruments: Mindful Attention Awareness Scale; British-Columbia Major Depression Inventory; Pain Anxiety Symptoms Scale; and the Sickness Impact Profile.
McCracken and Thompson (2009) found that the construct of mindfulness as assessed by the Mindfulness Attention Awareness Scale, may include the following separate cognitive behavioral components: Acting with awareness, present focus, responsiveness, and social awareness. Acting with awareness and present focus both demonstrated adequate internal consistency and significant correlations with measures of patient functioning. Specifically, Acting with Awareness and Present Focus were components of mindfulness that were significantly correlated with pain, pain related distress, disability, depression, pain-related anxiety, medication use, and physician visits related to pain. The results of the study (McCracken and Thompson, 2009) supported the internal consistency, and criterion and construct validity, of the Mindfulness Attention Awareness Scale in patients with chronic pain.

McCracken and Thompson (2009) identified the following limitations of the study: the correlational focus of the research design, its reliance on only one measure of mindfulness, its lack of confirmatory analysis of the four factor solution from the Mindfulness Attention Awareness Scale, and its focus on a very specific clinical population. The results of the study identified the important role that the components Acting with Awareness and Present Focus in their significant correlation with the measures of patient functioning. The results suggest the link between the growing interest in mindfulness to strong empirical approaches within the cognitive behavioral tradition (McCracken & Thompson, 2009). To further expand this research, it would be interesting to assess the multidimensional construct of mindfulness and its subsequent relation to patient functioning.

In a study by Speca et al. (2000), the effects of participation in a mindfulness meditation based stress reduction program on mood disturbance and symptoms of stress in cancer outpatients was assessed. A randomized, wait list controlled design was used. A convenience
sampling strategy was used to enroll cancer patients in the study. Any patient who had a diagnosis of cancer at any time was eligible to participate. 90 participants in the study were provided the Profile of Mood States and the Symptoms of Stress Inventory. The participants were randomly assigned to either the immediate intervention group (treatment condition) or a wait-list control group (control condition). All participants were assessed at the initial intake, and were subsequently reassessed at the completion of the treatment program seven weeks later.

The treatment group had significantly lower scores on total mood disturbance and subscales of depression, anxiety, anger, and confusion, and more vigor than control subjects. The treatment group was also found to have fewer overall symptoms of stress; fewer cardiopulmonary and gastrointestinal symptoms; less emotional irritability, depression, and cognitive disorganization; and fewer habitual patterns of stress (Speca, et al., 2000). One of the limitations of the study is that other aspects of the group may have also been beneficial, such as relaxation, the opportunity to take an active role in their own care, social support, or cognitive techniques may have been beneficial. Another limitation identified by the authors was in the self-selection of the participants in the study that likely resulted in a sample of cancer patients who were well motivated to pursue new learning and to adhere to practice recommendations (Speca et al., 2000). Thus, the generalizability of the findings may be limited with respect to motivational factors, but the results show that the program can be beneficial in those who were motivated to participate in the program. The findings of this study further supports the role that mindfulness plays in the adjustment of those individuals who struggle with pain conditions.

Morone, Greco, and Weiner (2007) provided a randomized controlled pilot study to assess the feasibility of recruitment and adherence to an eight session mindfulness meditation program for community dwelling older adults with chronic low back pain and to develop initial
estimates of treatment effects. Participants were 37 community dwelling older adults aged 65 years and older with chronic lower back pain of moderate intensity occurring daily or almost every other day. Participants were randomized in blocks of six with no stratification using a software generated randomization plan. All of the participants completed the following scales: McGill Pain Questionnaire short form; Chronic Pain Acceptance Questionnaire; SF-36 Health Status Inventory; Roland and Morris Questionnaire; Short Physical Performance Battery; and the SF-36 Physical Function Scale. The intervention group completed the battery of instruments at four different intervals while the control group completed the instruments at three different intervals. Compared to the control group, the intervention group displayed significant improvement in the Chronic Pain Acceptance Questionnaire Total Score and Activities Engagement subscale and SF-36 Physical Function Scale.

The limitations of the study were due to the pilot study design that limits the generalizability of the results due to the small sample size. Additionally, the average age of the participants was 74 years old, which limits the generalizability of the results to younger individuals struggling with chronic pain. The study added to the literature on chronic pain the benefits of mindfulness based stress reduction to reduce chronic pain yet there remains a need to further explore the constructs of mindfulness on those individuals struggling with chronic pain. The authors recommended using other measures of mindfulness including the KIMS or the Mindful Attention Awareness Scale to accurately assess if it is the construct of mindfulness that is impacting the positive adjustment of the chronic pain patients rather than other factors.

Carlson et al. (2003) investigated the relationships between a mindfulness-based stress reduction meditation program for early stage breast and prostate cancer patients and quality of life, mood states, stress symptoms, lymphocyte counts, and cytokine production. Participants
included 49 patients with breast cancer and 10 with prostate cancer who participated in an eight week mindfulness based stress reduction program that incorporated relaxation, meditation, yoga, and daily home practice. Participants completed the following instruments at two different intervals (pre and post intervention group): European Organization for Research and treatment of Cancer Quality of Life Questionnaire; Profile of Mood States; and the Symptoms of Stress Inventory. The results of the pre-post intervention study indicated that this eight week mindfulness based stress reduction program was effective in decreasing symptoms of stress, improving sleep quality, and improving overall quality of life in this group of breast and prostate cancer patients. The authors identified that the primary limitation of the study was in the research design that lacking a control or comparison group. Additionally, the study did not control for other factors from the group that may have had a positive impact on the results of the study. Although the study used the Mindfulness Based Stress Reduction, it is unclear if the construct of mindfulness significantly impacted the results. The study reinforced the effectiveness of mindfulness based stress reduction program. The authors suggested that the changes were moderate, due perhaps to the high level of psychological and immunological functioning of patients at the start of the study (Carlson et al., 2003).

Chang et al. (2004) investigated the effects of a Mindfulness-based stress reduction program on pain, positive states of mind, stress, and mindfulness self-efficacy. Post intervention levels of stress were significantly lower than pre-intervention levels, while mindfulness self-efficacy and positive states of mind were at significantly higher levels. All 43 participants were enrolled in a private university continuing education course and were assessed pre and post treatment. Of the 43 participants, 28 completed follow-up measures. The following self-report measures were used at pre and post treatment: Pain Rating Scale, Positive States of Mind,
Perceived stress scale, and Mindfulness Self-efficacy scale. The measures were collected before and following an 8 week intervention. The participants reported significantly reduced perceived stress and enhanced positive states of mind, compared to baseline. There was a significant improvement in meditation self-efficacy scorers. The findings did not suggest that participants experienced significant reductions in pain and suffering from baseline to post-intervention.

The limitations of the study (Chang et al., 2004) were based on the research design, in that there was no control group, which makes it difficult to determine whether the findings of the study are due to the intervention or other factors. The generalization of the findings is limited due to the small sample size and the lack of diversity in the sample (93% were Caucasian, 100% college students). The study did not specifically address any changes in mindfulness in utilizing the Mindfulness-based Stress Reduction intervention, rather the study focused on the impact of the Mindfulness-based Stress Reduction intervention on mindfulness self-efficacy by utilizing the Mindfulness Self-efficacy scale that assesses whether participants can maintain non-judgmental awareness during different situations. The authors suggested that future research is needed to deepen the understanding of how enhancement of mental states and ultimately health outcomes can be derived from mindfulness meditation.

Rosenzweig et al. (2010) completed a study that compared changes in bodily pain, health related quality of life, and psychological symptoms during an 8-week mindfulness-based stress reduction program among groups of participants with different chronic pain conditions. The subgroups of pain included: back/neck pain (n=35), arthritis (n=24), headache/migraine (n=15), fibromyalgia (n=11), and comorbid pains (n=30). The measures included in the study were: Short Form 36 Health Survey and Symptom Checklist-90-revised. Rosenzweig et al. (2010) found that patients who reported chronic back/neck pain and patients who reported two or more
comorbid pain conditions experienced the largest average improvement in pain severity and functional limitations due to pain; lesser improvements were found in patients with fibromyalgia, arthritis, and chronic headache/migraine. The authors identified that the limitation of the study is in the research design, in that it was an observational study without a control group. The subgroups were rather small in number, limiting the generalizability of the results and limiting statistical power. Although the results varied by subgroups, overall the study provides support to the effective role that Mindfulness-based Stress Reduction interventions play in reducing pain and limiting functional impairments in chronic pain patients. Similar to other studies, it remains unclear as to what variables of the Mindfulness-based Stress Reduction interventions played a significant role in the outcomes of the study (i.e., the construct of mindfulness).

Reibel, Greeson, Brainard, and Rosenzweig (2001) examined the effects of mindfulness-based stress reduction (MBSR) on health-related quality of life and physical and psychological symptomatology in a heterogeneous patient population. The sample consisted of 136 patients who participated in an eight week MBSR program and were required to practice 20 minutes of meditation daily. Pre and post intervention data were collected using the following measures: Short Form Health Survey (SF-36), Medical Symptom Checklist (MSCL) and Symptom Checklist-90 Revised (SCL-90-R). The results of the study demonstrate significantly enhanced health-related quality of life, reduced physical symptoms, and decreased psychological distress in a heterogeneous patient population following an 8-week training program in MBSR. The primary limitation, similar to other studies on MBSR, is in the research design and the lack of a control group.

Reibel et al. (2001) identified how MBSR programs contain several potentially therapeutic elements that may account for observed improvements in physical and mental health
among participants. These include mindfulness meditation training as well as other therapeutic factors inherent in the group intervention, such as emotional expression and social support. At present, it is unknown to what extent training in mindfulness meditation alone is responsible for health improvements. Additionally, patient expectancy may also play a role in the healing response of patients, as the study had identified that 80% to 90% of the patients anticipated a reduction in their medical symptoms, bodily pain, and/or limitations of pain or discomfort.

Summary of the Literature on Mindfulness and Daily Functioning Among Chronic Pain Patients

The research reviewed above (e.g., Carlson et al., 2003; Morone, Greco, and Weiner, 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000) was consistent in its findings that mindfulness based stress reduction programs were effective in reducing symptoms of pain and improving quality of life for chronic pain patients, yet none of the studies controlled for other variables that may have influenced the results. The mindfulness based stress reduction programs involved a treatment group modality, whereby it is likely the supportive environment of the group was likely to influence the positive outcome of the chronic pain participants. Since the research design for the studies did not control for those variables, it is difficult to determine if the primary influencing factor was due primarily to the construct of mindfulness. Additionally, the research involved mindfulness based programs, yet none directly assessed the construct of mindfulness and its direct relation to daily functioning level of the chronic pain participants.

This literature review has demonstrated the need for additional research to address the construct of mindfulness as it relates to patient functioning among the chronic pain population. Morone et al. (2007) recommended using other measures of mindfulness including the Kentucky Inventory of Mindfulness Skills (KIMS) to accurately assess if it is the construct of mindfulness
that is impacting the positive adjustment of the chronic pain patients rather than other factors. For the purposes of this dissertation the KIMS will be used to assess the construct of mindfulness. The KIMS scale was not used in any of the research reviewed, yet has proven to be a reliable and valid instrument assessing mindfulness (Baer et al., 2004).

The present research will build upon previous studies in identifying the important role that mindfulness related constructs play in individuals’ ability to cope with chronic pain and enhance their daily functioning level. In maintaining the biopsychosocial approach to assessment and counseling, there is recognition of the interaction involved between the mind and body. There remains a need to continue to explore this construct of mindfulness in order to assist counselors with better knowledge regarding mindfulness based interventions in order to most effectively assist those individuals who struggle with chronic pain.

Summary of Research on Psychological Flexibility and Daily Functioning Among Chronic Pain Patients

The following section provides a summary of the research on psychological flexibility and daily functioning among chronic pain patients. This summary consists of the breakdown of each study including the instruments used, a description of the findings and limitations of the study.

McCracken, Vowles, and Gauntlett-Gilbert (2007) examined the relative utility of control oriented and acceptance oriented responses to chronic pain overtime. Participants in the study included 120 adult patients treated on an interdisciplinary pain management unit in the UK. The mean age of the sample was 44.6 years. The participants completed the following measures at both the initial assessment and on the first day in treatment (3.7 months later): Brief Pain Coping
Inventory; Chronic Pain Acceptance Questionnaire; Sickness Impact Profile; Beck Depression Inventory; and the Pain Anxiety Symptoms Scale. Results of the study demonstrated that responses to pain such as carrying on with activity, while acknowledging that pain is present, were associated with better physical, psychosocial, and emotional functioning over time. Through the analysis, it was found that when patients increased attempts to control pain they were found to experience increased difficulties, particularly with pain, psychosocial, and other disability, anxiety, and depression.

The results of the study were consistent with previous findings supporting the utility of acceptance over and above traditional approaches to coping (McCracken et al., 2007). Interestingly, the results suggested that asking for support or assistance, using pain medication, and using other means for pain reduction were associated with poorer future functioning, which on the surface may look as adaptive ways to approach chronic pain. McCracken et al. (2007) indicated that these behaviors may serve as a pattern of avoidance of pain, a pattern that could constrict daily functioning, if it is overly generalized or indiscriminate, and if it prevents the patient taking advantage of opportunities for healthy functioning. One of the primary limitations of the study is in its research design that is correlational in nature, thereby these methods cannot prove causation. The sample was identified as significantly disabled persons seeking treatment, limiting the generalizability of the results of the study to other populations. These results, suggest the importance in utilizing other approaches, including cognitive behavioral approaches, that can assist chronic pain patients in implementing other approaches to accept their chronic pain condition without avoiding activities or withdrawing from previously enjoyed activities.

Vowles and McCracken (2010) examined how changes in traditional pain management strategies and psychological flexibility from pre-to-post treatment relate to changes in
functioning from pre-treatment through a three month follow-up assessment. The participants were 114 individuals who completed a three or four week course of interdisciplinary treatment for chronic pain between January 2005 and July 2006, as well as a three month follow-up. The mean age of the participants was 46.1 years. All of the participants completed an assessment battery before and after treatment, and at a three month follow-up that included: Brief Pain Coping Inventory-2; British Columbia Major Depression Inventory; Pain Anxiety Symptoms Scale-20; Sickness Impact Profile; and two other measures assessed physical functioning, including walking distance achieved in two minutes and the number of sit to stand repetitions performed in one minute using a standard, armless chair.

The results of the study (Vowles and McCracken, 2010) indicated that changes in the traditionally conceived methods were essentially unrelated to treatment improvements, while changes in psychological flexibility were reliably and significantly related to these improvements. The primary limitation was found in that only 61% of the individuals who began treatment provided follow-up data and it is possible that a more complete set of data would yield different results. Vowles and McCracken (2010) also identified that it is possible that the pattern of observed findings was in some way a product of the treatment provided, which specifically targets the responses within the psychological flexibility subscale. Lastly, the variance accounted for by changes in Psychological Flexibility was somewhat modest and was not significant for depression. The study highlighted the influence of acceptability on chronic pain patients, and suggested further research on the other aspects of psychological flexibility in their role in assisting those with chronic pain. The present research will look to expand on these findings, by specifically addressing the construct of psychological flexibility and its subscales, on the daily functioning of chronic pain patients.
McCracken and Velleman (2009) investigated processes of acceptance, mindfulness, and values-based action in a sample of patients with chronic pain contacted in primary care setting. The study included 239 adult participants with chronic pain contacted through their primary care provider in the Southwest of England between May of 2007 to May of 2008. The participants were provided the following measures: The Chronic Pain Acceptance Questionnaire; The Mindful Attention Awareness Scale; The Acceptance and Action Questionnaire; The Chronic Pain Values Inventory; and The Short-Form Health Survey. The results of the study demonstrated significant relationships between components of psychological flexibility and measures of emotional, physical, and social functioning as well as healthcare use. The primary limitations of the study were based on the research design, in that the study was neither experimental nor a treatment outcome study. Another limitation is found in the generalizability of the findings due to the average age of the sample was 61.5 years and that the sample was recruited through contact in primary care, yet it is unknown how many of those in the sample had sought or will seek treatment in specialty care. The overarching theme of the study, was how the processes of psychological flexibility appear to participate in important ways in wider processes of interaction between bodily sensations of pain, emotional experiences, thoughts, social influences, and the daily life activities of those with chronic pain (McCracken & Velleman, 2010).

McCracken and Gutierrez-Martinez (2010) assessed the outcomes and processes of change in an ACT-based interdisciplinary, group treatment for chronic pain. Participants were 168 patients, with an average age of 46.2 years, who attended treatment at a tertiary care pain rehabilitation unit in southwest England between September 2006 and June 2009. All participants in the study were involved in a treatment program that was a form of Acceptance
and Commitment Therapy specifically designed to for delivery to groups of patients, in a specialty care setting. The participants completed the following measures before and after treatment and at the three month follow-up: Chronic Pain Acceptance Questionnaire; Acceptance and Action Questionnaire-II; Mindful Attention Awareness Scale; Chronic Pain Values Inventory; British Columbia Major Depression Inventory; Pain Anxiety Symptoms Scale-20; and Sickness Impact Profile.

McCracken and Gutierrez-Martinez (2010) found that immediately following treatment and at 3 month follow-up, participants reported significantly lower levels of depression, pain-related anxiety, physical and psychosocial disability, medical visits, and pain intensity in comparison to the start of treatment. The four processes of psychological flexibility (acceptance of pain, values-based action, psychological acceptance, and mindfulness) improved significantly over the time periods analyzed. General psychological acceptance was found to have a significant and unique role to play in the improvements achieved by the sample. McCracken and Gutierrez-Martinez (2011) identified the following limitations of the study: the absence of randomization and an appropriate control condition means that we cannot unambiguously attribute treatment effects to the ACT based treatment. The authors identified that it appears there may be additional processes or modes of coping that may be useful to integrate. The study adds to existing research into ACT-based treatments for chronic pain, particularly in the broader range of process measures used.

McCracken and Vowles (2008) investigated the relation between processes of acceptance and values based action and patient functioning among chronic pain patients. Participants included 115 adults with chronic pain attending an initial assessment and beginning treatment on a pain management unit in southwest England. The mean age at the initial assessment was 48
years old. All participants completed a set of standard measures on two occasions: at their initial assessment and beginning treatment. The time frame between administering the two measures was approximately 18 months apart. The participants completed the following measures: Chronic Pain Acceptance Questionnaire, Chronic Pain Values Inventory, Pain Anxiety Symptoms Scale, the British Columbia Major Depression Inventory and the Sickness Impact Profile.

The results of the study (McCracken & Vowles, 2008) demonstrate that measures of acceptance of pain and values based action predict functioning later in time for patients seeking treatment for chronic pain. The correlation analyses showed that acceptance of pain and values based action were associated with pain severity, pain-related distress, pain related anxiety and avoidance, depression, depression-related interference with functioning. McCracken and Vowles (2008) identified how it has been reliably demonstrated that behavior patterns including acceptance of pain and values based action correlate positively with emotional, physical, and social functioning in chronic pain. Overall, the measures of the processes were better able to account for variance in measures of depression, pain-related anxiety, and psychosocial functioning than in measures of physical or work related functioning.

The primary limitation of the study was in the research design, which used measures that relied on self-report, which can be affected by a range of influences. A second limitation identified by McCracken and Vowles (2008) involved the time interval investigated that was relatively arbitrary, arising as it did as a product of clinic waiting times, and the range varied from 10 weeks to 26.5 weeks. The results of the study are limited in generalizing to other populations due to the particular sample that was comprised of highly disabled pain sufferers who were seeking specialty treatment in the United Kingdom. The findings of Vowles and
McCracken (2008) further support that behavior patterns including acceptance of pain and values based action correlate positively with emotional, physical, and social functioning in chronic pain. The current study will look to build upon this study by looking more closely at the construct of psychological flexibility that is made up of acceptance of pain and values based action and its relation to the overall functioning level of chronic pain patients.

McCracken and Yang (2006) examined the degree of success chronic pain patients have in following their values as guides for their actions, and relations between values-based actions and other aspects of daily functioning. The samples consisted of 140 patients with chronic pain, who were assessed for treatment in a specialty interdisciplinary pain management center in the United Kingdom. The average age of participants was 47.6 years. For the purposes of the study, participants completed the following measures at their initial assessment visit: Chronic Pain Values Inventory, British Columbia-Major Depression Inventory, Chronic Pain Acceptance Questionnaire, Pain Anxiety Symptoms Scale, and the Sickness Impact Profile.

The results of the study (McCracken & Yang, 2006) demonstrated that values-related variables can be assessed in a reliable and valid manner. The results showed that highest importance was placed on values in the domains of family and health and the least importance in friends and growth or learning. Highest success was reported in domains of family and friends and the least success in health and growing or learning. Higher success at living according to one’s values and lower discrepancies between importance and success were correlated with less physical, psychosocial, and other disability, and with less depression, depression-related interference with functioning, and pain-related anxiety. Regression analysis showed that success at living according to values predicated variance in functioning independent of acceptance of
chronic pain, supporting its incremental utility in a contextual analysis of chronic pain and its potential importance in treatment of chronic pain.

The primary limitations of the study were found in the research design, specifically with the sample that consisted of patients who were referred for specialty pain management services. Secondly, the participants were recruited within the culture of the UK, limiting the generalizability of the results to other populations/cultures. Lastly, the research design was not an experiment or treatment study and therefore cannot confirm causal relations or treatment processes. McCracken and Yang (2006) bring to light the important role that values-related variables play in the treatment of chronic pain. This study will further explore values based variables through the construct of psychological flexibility and its impact on daily functioning level and self-efficacy among chronic pain patients.

Vowles and McCracken (2008) investigated the effectiveness of acceptance and commitment therapy in the treatment of chronic pain and also examined two processes of this model including acceptance and values-based action. The sample consisted of 171 individuals who were accepted for treatment at a tertiary care pain rehabilitation unit in southwest England. The participants provided data before and after treatment, and 114 also provided data at a 3 month follow-up appointment. The average age of the participants was 47.3 years old. The participants completed the following measures before and after treatment: Chronic Pain Acceptance Questionnaire, Chronic Pain Values Inventory, British Columbia Major Depression Inventory, Pain Anxiety Symptoms Scale-20, Sickness Impact Profile, and physical performance measures were also collected.
The results of the study (Vowles & McCracken, 2008) showed that immediately following treatment and at follow-up, the sample of complex pain sufferers achieved significant reductions in depression, pain related anxiety, disability, and healthcare use and significant improvements in physical performance measures. What is encouraging regarding this study, is that the median pain duration of the sample was 96 months, the results showed that three fourths of the patients treated demonstrated reliable improvement in depression, pain-related anxiety, or overall disability at follow-up. The data indicated that acceptance and values based action accounted for a fair to moderate proportion of variance in improvements following treatment.

The limitations of the study were based upon the research design that did not include comparison to a control group. Vowles and McCracken (2008) also identified that the findings may not generalize to other patients treated under different circumstances, as the current results were obtained under highly specific conditions in the treatment model. Lastly, it is unclear what parts of the group led to the improvement in physical performance measures and reduction in depression, pain related anxiety, disability, and healthcare use. This dissertation will further address the specific construct of psychological flexibility as it relates to functioning level of chronic pain patients.

McCracken, Williams, and Yang (2011) examined the potential role of processes of Acceptance and Commitment Therapy in relation to reports of insomnia in people with chronic pain. McCracken et al (2011) hypothesized that the processes of psychological flexibility would be significantly correlated with better sleep quality on available measures of insomnia severity, problems with sleep and rest throughout the day, sleep efficiency, and as indirectly reflected in a measure of reported fatigue. The sample consisted of 159 consecutive adult patients attending an assessment at a specialist pain management center in the southwest of England. The mean age
was 43.8 years. Sixty two percent were out of work due to their disability. The participants completed the following measures for the study: Insomnia Severity Index, Acceptance and Action Questionnaire, Chronic Pain Acceptance Questionnaire, Chronic Pain Values Inventory, Mindful Attention Awareness Scale, and the Sickness Impact Profile.

The results indicated that significant positive correlations were found between components of psychological flexibility, particularly acceptance of pain and values based action, and all measures of sleep quality. The results (McCracken, et al., 2011) also showed that psychological flexibility, as an integrated variable set, was a significant predictor of insomnia severity, problems with sleep and rest, sleep efficiency, and fatigue. Psychological flexibility was shown to be a significant predictor of insomnia severity and problems with sleep and rest even when the contribution of demographic variables, such as age, and pain-related variables, including severity and duration, were statistically controlled.

The limitations of the study are based upon the cross sectional design that allows for the exploration of possible relationships but not causal inference. Another limitation identified from the research design was using different instruments to measure psychological flexibility. Lastly, the generalizability of the results is questioned due to the criteria of the participants used in the study. The study by McCracken et al. (2011) provided further support to the construct of psychological flexibility as it relates to overall health of chronic pain patients. Pain is often a common reason for sleep disturbance among chronic pain patients. The results of the study provide evidence that supports the role of psychological flexibility in sleep quality. This study further supports the link between psychological flexibility and daily functioning that is adversely affected by insomnia and other forms of sleep deprivation that is brought on by chronic pain syndrome.
Summary of the Literature on Psychological Flexibility and Daily Functioning Among Chronic Pain Patients

This review of the literature provided further support to the construct of psychological flexibility as it relates to overall health of chronic pain patients (McCracken et al., 2011). Changes in psychological flexibility were shown to be more reliably and significantly related to treatment improvements compared to other traditional methods in the treatment of chronic pain (McCracken et al., 2007; Vowles and McCracken, 2010). Additionally, the research was consistent in its findings of significant relationships between components of psychological flexibility and measures of emotional, physical, and social functioning of chronic pain patients (McCracken and Velleman, 2009; McCracken and Vowles, 2008). All of the studies in the literature review included samples from the United Kingdom. The present research will look to build on the findings of the previous literature addressing the relation between the construct of psychological flexibility and daily functioning of chronic pain patients being treated in the United States.

Research has shown that Acceptance and Commitment Therapy has been effective in the treatment of chronic pain (McCracken et al, 2011; Vowles and McCracken, 2008). The implications of the research, suggested that the four processes of psychological flexibility (acceptance of pain, values-based action, psychological acceptance, and mindfulness) improved significantly over time through an Acceptance and Commitment Therapy group (McCracken and Gutierrez-Martinez, 2010). However, it is unclear as to the role that other factors of the group may have influenced the results of the McCracken and Gutierrez-Martinez (2010) study as the group factors were not controlled for in the research design. The present research will address
specifically the construct of psychological flexibility and daily functioning of chronic pain patients.

Through Acceptance and Commitment Therapy and other cognitive behavioral approaches, counselors can assist chronic pain patients in implementing more effective behavior patterns that include acceptance of pain and values based action (psychological flexibility). The research has suggested that this approach can assist individuals struggling with a chronic pain condition in managing their pain without avoiding activities or withdrawing from previously enjoyed activities. The research is encouraging to counselors to facilitate the implementation of this approach to those individuals struggling with chronic pain as an avenue to manage their pain in a more effective manner that does not interfere with their daily living.

Summary of Research on Emotional Intelligence and Daily Functioning Among Chronic Pain Patients

The following section provides a summary of the related research on emotional intelligence and daily functioning among chronic pain patients, as there were no studies identified in the literature review that specifically addressed the relation between emotional intelligence and daily functioning among chronic pain patients. This summary consists of the breakdown of each study including the instruments used, a description of the findings and limitations of the study.

Austin et al. (2005) investigated associations between emotional intelligence and variables theoretically linked to it: alexithymia, life satisfaction, social network size and quality, and health measures. The participants were recruited in Canada and Scotland. The Canadian group consisted of 500 undergraduate students attending the University of Saskatchewan with a
mean age of 22.8 years. The Scottish group was made up of 204 participants, with a mean age of 43.9 years. The participants completed the following measures: Modified Schutte Emotional Intelligence Scale; Short form Bar-On EQ-I; Personality mini-markers; The NEO five factor inventory: Form S; Toronto Alexithymia Scale; Temporal Satisfaction with Life Scale; short version of the Social Support Questionnaire; and Health-related information. The results displayed a positive association between emotional intelligence and life satisfaction. Emotional intelligence was also found to be positively associated with social network size and quality and negatively associated with alcohol consumption. Emotional intelligence and the other measures all showed significant associations with personality. Self-reported above average health was significantly associated with high extraversion and low neuroticism. Health was not found to be significantly related to emotional intelligence.

The primary limitations of the study are in the research design. The sample size is rather large and was pulled from Canada and Scotland, yet it is difficult to generalize the results of the study to other population due to the majority of the participants had completed higher education or were undergraduate students. Method bias plays a role in the study, as the participants had used self-report measures. Additionally, the health related information was gathered by participants disclosing how many units of alcohol they had consumed per week, whether they felt their health was above average, below average or average compared to others of the same age and sex, and how many times they had visited their family doctor in the past six months (Austin et al., 2005). The study highlights the important link between emotional intelligence and personality. There is a need to use other instruments that have proven reliable and valid in measuring overall health of participants to provide a more accurate picture of the impact of emotional intelligence on overall health. The authors indicated that more work is required to
investigate the possible existence of other variables that are predicted better by trait emotional intelligence than by personality. This current study will look to expand this research by looking at the impact of emotional intelligence on daily functioning and self-efficacy of chronic pain patients.

Saklofske et al. (2006) examined associations between personality, coping, health locus of control, emotional intelligence and health behaviors. The sample consisted of 362 university students from Canada with a mean age of 24 years old. The participants completed the following measures for the study: The 40-item Minimarkers scale of trait-descriptive adjectives was used; Schutte Emotional Intelligence Scale; Shortened version of the Coping Styles Questionnaire; Multidimensional Health Locus of Control Scale (form A); and provided additional health information gathered through disclosure of smoker/nonsmoker status, exercise activity, and estimated weekly alcohol consumption, in addition to completing an 8-item health scale.

The results indicated that emotional intelligence showed a significant positive correlation with rational coping and a significant negative correlation with the emotion focused coping. Additionally, emotional intelligence was found to be positively associated with internal health locus, negatively associated with chance health locus, and unrelated to powerful others health locus (Saklofske et al., 2006). Emotional intelligence was found to be significantly correlated with regularly exercising, diet strategy, and frequency of doctor visits.

The limitations of the study were in the research design that used an undergraduate sample that limits the generalizability of the results. The measures used, specifically the short form coping scale with low reliabilities, also acted as a limitation to the current study. The authors indicated the need for additional research that would look at these relationships within
the general population and within specific clinical groups would be of interest. The study further indicated the role of emotional intelligence as a positive coping resource in health and other contexts appears to be an interesting topic for further study. This leads to the present study addressing the relation between emotional intelligence and health among the chronic pain population.

Slaski and Cartwright (2003) investigated whether emotional intelligence can be developed in managers, and if so, whether increased emotional intelligence has a beneficial impact on health, well being, and performance. The sample consisted of 120 managers from a large UK retail chain volunteered for the study. Managers were allocated to either a training group or a control group. The training group consisted of 60 managers who participated in an emotional intelligence training program once a week for four weeks. The control group consisted of 60 managers who received no training at all. A repeated measures design was used and all participants completed measures prior to and 6 months following the completion of the program. The participants completed the following measures: Bar-On EQ-I, General Health Questionnaire, Queensland Public Agency Staff Survey, and other measures that included stress and manager performance. It was acknowledged that the stress measure was a subjective measure and had limited reliability and validity. The results of the study were encouraging in that emotional intelligence can be taught, learned, and may be useful in reducing stress and improving health, well being, and performance.

The primary limitation is due in part to the research design and specifically not being able to identify which aspects of the training were more effective in facilitating the development of emotional intelligence than others. Slaski and Cartwright (2003) identified that further research is needed to ascertain more conclusively whether emotional intelligence as a moderator of stress
or a consequence, ie. Distress negatively effects an individual’s capacity to think and act in an emotionally intelligent way.

Schutte et al. (2007) completed a meta-analytic investigation of the relationship between emotional intelligence and health. The purpose of the meta-analysis was the following: To obtain an estimate of the overall association between emotional intelligence and health for three types of health indicators: physical, mental, and psychosomatic; and to examine potential moderating factors of this relationship such as operationalization of emotional intelligence as an ability compared to a trait, type of trait measure, gender of participants, age of participants, and whether the participants were students or community members. A total of 35 studies, published after 1995 were used in the meta-analysis, including 44 effect sizes based on 7898 participants. The age range of participants was 11 to 51 years old.

The results (Schutte et al., 2007) showed that mental, physical, and psychosomatic health all had medium effect sizes. Emotional intelligence measured as an individual’s typical or trait performance, and assessed through self-report of perceived functioning, was more strongly associated with mental health than emotional intelligence conceptualized as an ability and assessed through a performance measure. There were not enough study results available to make this comparison with regard to physical health or psychosomatic health. Overall, the meta-analysis conducted by Schutte et al. (2007) indicates that there are significant relationships between emotional intelligence and mental health, psychosomatic health, and physical health.

The primary limitation is in the research design that does not provide evidence regarding causality. Another limitation due to the research design was through method bias, in that measures of perceived trait emotional intelligence and emotional health were all based on self-
report. Clearly, there has been a relation established between emotional intelligence and health, yet there is a need to further expand this research within the chronic pain population to more effectively address this construct of emotional intelligence and how it relates to assisting individuals who are struggling with health problems.

Martins, Ramalho, and Morin (2010) provided a comprehensive meta-analysis of the relationship between emotional intelligence and health that expanded the previous study by Schutte, et al., (2007). The purpose of the study by Martins et al. (2010) was to expand the previous meta-analysis by including the following: recent studies published since Schutte et al. (2007); non-English studies; and a cumulative meta-analysis to check for the sufficiency and stability in the history of this research domain. Martins et al. (2010) conducted two separate meta-analysis: one considering the two distinct methods as different tasks (ability vs. trait) and another based on the instrument used as different tasks. Similar to Shutte (2007), health was categorized using the same criteria according to the following categories: physical, psychosomatic, and mental. When analyzing the studies, whenever multiple measures were used for the same variables, effect sizes were averaged to avoid biasing the results by deriving too many effect sizes from the same sample. The study including the original 36 studies (Schutte et al., 2007) and added 46 additional studies. Based on 105 effect sizes and 19,815 participants, the results supported previous results that identified how emotional intelligence, when measured as a trait, was more strongly associated with health, than when it was measured as an ability. The weighted average association with mental and psychosomatic health was higher than the association with physical health. Within the trait approach, the Trait Emotional Intelligence Questionnaire showed the strongest correlation with mental health, followed by the Emotional
Intelligence Questionnaire, Schutte Emotional Intelligence Scale, and the Trait Meta Mood Scale.

The limitations of the meta-analysis are in the research design in that it is difficult to control for bias, specifically publication bias, search bias, and selection bias. Walker (2008) defined publication bias as those studies that typically show a “positive” result that have been approved for publication. It is difficult to control for the studies on the topic that have not been approved for publication. Search bias refers to identifying the relevant studies by using the relevant key words in the search to assure that all appropriate studies are included in the meta-analysis. Lastly, selection bias refers to the authors effectively choosing the studies to be included avoiding biases or duplication in the sample. Some researchers have questioned the reliability of meta-analysis and have gone so far as to suggest that meta-analysis research should only be viewed as exploratory (Lyman & Kuderer, 2005). The current meta-analysis addresses the construct of emotional intelligence as a predictor of health. There is a clear relation between emotional intelligence and health. The current study will look to expand this research within the chronic pain sample.

Augusto-Lando and Montes-Berges (2009) investigated the relation between the perceived emotional intelligence, health, and somatic illnesses. The construct of emotional intelligence is viewed as an ability that has different functions: to identify and to perceive our own and others’ emotions; to regulate and to modify our mood in a proper way; and to improve our thought. The results were consistent with previous research in that emotional intelligence was found to be significantly correlated with good health and psychological adjustment level. The sample consisted of 116 first year nursing students who completed the Trait Meta Mood Scale (TMMS) to measure emotional intelligence, the Health Survey (SF-36), and Somatic
Symptoms Scale Revised (ESS R). The results showed significant correlations between TMMS subscales (attention, clarity, and repair) and the SF-36 factors, and somatic illness subscales. The attention subscale was negatively correlated with the Role Emotional subscale of the SF-36. The authors suggested that those individuals who scored high on the attention subscale would be more likely to ruminate regarding pain symptoms. The repair subscale was related positively to the following subscales of the SF-36: social functioning, mental health, vitality and general health.

The primary limitation of the study (Augusto-Lando and Montes-Berges, 2009) was in the generalizability of the results, as the sample consisted of first year nursing students from the University of Jaen, in Spain with an average age of 20 years old. The authors questioned the impact of social desirability on the results of the study, as the questionnaires were self report. The authors suggested that psychophysiological measures be used that would more accurately reflect the relation between health, somatic symptoms, and emotional intelligence measures. Lastly, the study found that emotional intelligence accounted for part of the variance of health, a great part of variance remains without explanation. It would be interesting to see what other factors may attribute to the variance in health. The present study will look at other factors including the constructs of psychological flexibility and mindfulness.

Tsaousis and Nicolaou (2005) investigated the relationship of emotional intelligence characteristics, such as perception, control, use and understanding of emotions, with physical and psychological health. Two studies were completed: The first study explored whether there was a relationship between the characteristics that define emotional intelligence and health. The second study further explored the relationship between emotional intelligence and health functioning. The first study consisted of 365 participants with an average age of 25, of which
126 were male and 239 were female. One-hundred and ninety one were students and 174 were employees from various organizations. The participants completed the Traits Emotional Intelligence Questionnaire and General Health Questionnaire (GHQ-28).

Based on the results of the first study the second study of Tsaousis and Nikolaou (2005), examined how dimensions of emotional intelligence are related to habits that research has demonstrated are closely related to health functioning. The sample consisted of 212 employees from a mental health institution. The average age was 36 years old, of which 57 were males and 155 were females. The participants completed the following measures: The Traits Emotional Intelligence Questionnaire and ASSET (tool in diagnosing occupational stress).

The results of the study by Tsaousis and Nikolaou (2005) provided further support on the claims that there is a negative relationship between increased levels of emotional intelligence and low physical and psychological health. The two studies, using the different measures, were consistent in their findings regarding the statistically significant relationship identified between emotional intelligence and physical and psychological health. Trends in gender differences were identified in both studies. Overall, men scored higher in the emotional intelligence measure than females. Females scored higher than males on the perception and appraisal dimension of emotion.

The primary limitation in the study by Tsaousis and Nikolaou (2005) is found in the research design that does not allow affirmative conclusions on the causality of the relationship. Another limitation in the study as a result of the research design was in the data being collected through the use of a single survey at a single point in time, the results may be influenced by common method bias. Additionally, the generalizability of the results is limited to the
population served in the study as the population was primarily made up of students and employees of a mental health institution and ‘various agencies.’ Tsaousis and Nikolaou (2005) further demonstrated the significance of the relation between emotional intelligence and physical and psychological health. There is further need to expand this research to other populations including those individuals who are afflicted with chronic pain.

**Summary of the Literature on Emotional Intelligence and Daily Functioning Among Chronic Pain Patients**

There were no studies that specifically addressed the relation between emotional intelligence and daily functioning among chronic pain patients, however studies reviewed above focused on emotional intelligence and health more generally. This present study will look to expand the research to address the relation between these two constructs specifically within the chronic pain population. The research has shown how emotional intelligence can be taught, learned, and may be useful in reducing stress and improving health, well being, and performance (Slaski and Cartwright, 2003). Emotional intelligence has also been positively related to life satisfaction (Austin et al., 2005), rational coping (Saklofske et al., 2006), good health and psychological adjustment (Augusto-Lando and Montes-Berges, 2009; Ciarrochi et al, 2002; Tsaousis and Nikolaou, 2005). There is a need to further clarify and address this construct of emotional intelligence as it relates to daily functioning of chronic pain patients.

In two separate meta-analytic studies of emotional intelligence and health, Schutte et al. (2007) and Martins et al. (2010) were consistent in their findings that emotional intelligence, when measured as a trait, was more strongly associated with health, than when it was measured as an ability. The research has not been consistent with this finding. In a study by Augusto-
Lando and Montes-Berges (2009) emotional intelligence was measured as an ability, and found to be significantly correlated with good health and psychological adjustment level.

Research has suggested the relation between emotional intelligence and overall physical and psychological health. This current dissertation will look to expand this knowledge to the chronic pain population. The implications for counselors is significant in the understanding that emotional intelligence can be taught, learned, and the current dissertation will clarify its relation to daily functioning level of chronic pain patients. With this understanding, counselors will be better equipped to accurately assess and treat those individuals who struggle with chronic pain, by incorporating therapeutic interventions to build emotional intelligence that will improve their daily functioning level.

Summary of Research on Mindfulness and Self-Efficacy Among Chronic Pain Patients

The following section provides a summary of the research on mindfulness and self-efficacy. This summary consists of the breakdown of each study including the instruments used, a description of the findings and limitations of the study. There was only one study identified in the literature review that addressed the constructs of mindfulness and self-efficacy within a chronic pain sample (Cusens et al., 2010).

In a pilot study by Cusens et al. (2010), the impact of the Breathworks mindfulness-based pain management program on the well-being of chronic pain patients was investigated. The sample consisted of 33 participants attending the Breathworks Pain Management program. The intervention group consisted of twenty participants while the comparison group consisted of the remaining thirteen. All of the participants provided pre and post intervention questionnaire data by completing the following measures: The Depression, Anxiety, and Positive Outlook Scale;
The Chronic Pain Acceptance Questionnaire; The Pain Self-efficacy Questionnaire; The Pain Catastrophizing Scale; the SF-36 Health Survey; and the Pain Scale. The Pain Self-efficacy Questionnaire was used to assess the participant’s confidence in his/her ability to perform specific behaviors while experiencing pain. The results indicated significant interactions were found between Group (Intervention and Comparison) and Time (pre and post questionnaires) on measures of depression, positive outlook, pain acceptance, and pain catastrophizing. Marginally significant interactions were found on indices of willingness, pain self-efficacy, rumination, and helplessness. Improvements over time were greater for the intervention group than for the comparison group. Scores on the SF-36 increased over time in the intervention group. There was no change across time on the Pain Intensity Scale.

Cusens et al. (2010) suggested that the improved well-being without pain reduction reinforces the importance of pain acceptance for clinical outcomes. One of the primary limitations of the study was due to the research design as a pilot study. The small sample size limited the generalizability of the results. Additionally, the study did not control for other variables of the treatment group that may have influenced the outcomes of the study. The findings of the study are encouraging in addressing the relation between mindfulness and self-efficacy in the chronic pain sample. There remains a need for further research to explore these two constructs and their relation to the adjustment of chronic pain patients.

In a study by Denison et al. (2007), subgroup profiles on self-reported pain intensity, disability, self-efficacy, fear of movement/(re)injury, and catastrophizing in patients with musculoskeletal pain were examined. The participants were recruited among people who were seeking care at physical therapy departments in Sweden. Two subgroups were used: sample one consisted of 215 participants with a mean age of 45; sample two consisted of 161 participants
with a mean age of 47. Both samples had a median duration of pain for 12 months. The participants completed the following measures at the start of physical therapy treatment: Pain Disability Index, Self-Efficacy Scale, Tampa Scale for Kinesiophobia, and the Coping Strategies Questionnaire.

The results in this study (Denison et al., 2007) show the presence of subgroups with different profiles in pain intensity, disability, self-efficacy, fear of movement or (re)injury, and catastrophizing among patients with musculoskeletal pain in primary health care. The subgroups were replicated in a second sample, and in both samples the cluster solutions were validated by significant differences in work status. Further, the subgroups did not differ in age, gender, or duration of pain. These results are in accordance with earlier work that shows no association between subgroups defined by psychosocial and behavioral variables and demographic variables among pain patients in primary health care.

Three subgroups were identified in sample 1 and replicated in sample 2. These were labeled “High self-efficacy–Low fear-avoidance,” “Low self-efficacy–Low fear-avoidance,” and “Low self-efficacy–High fear-avoidance.” The subgroups differed significantly in work-status in both samples ($P < .001$), but not in age, gender, or duration of pain. The results show the presence of subgroups based on pain intensity, disability, self-efficacy, fear of movement/(re)injury, and catastrophizing. The profile patterns suggest that different management strategies may be relevant in each subgroup.

The profile of the “high self-efficacy-low fear-avoidance” subgroup indicated that members of this group had low levels of pain and disability, low levels of fear of movement/(re)injury, and catastrophizing and a high level of self-efficacy. The “high self-efficacy-low fear-avoidance” was the largest subgroup in both samples. The profile of the “low-
self-efficacy-low fear-avoidance” subgroup shows that although the levels of pain and disability were fairly high, the levels of fear of movement/(re)injury and catastrophizing were low; but the level of self-efficacy was also low. The profile of the “low-self-efficacy-high fear-avoidance” subgroup indicates that these subjects had high levels of pain and disability along with high levels of fear of movement or (re)injury, and catastrophizing, along with low levels of self-efficacy. The limitations of the study were primarily in the research design that limits the generalizability of the findings due to the sample consisting of only participants in primary health care in Sweden. Secondly, the research design does not lend itself to causation due to the correlational focus of the study.

Overall, Denison et al. (2007) indicated that self-efficacy and disability have been shown to be highly correlated. In recognizing the differences between the three subgroups, clinicians can more effectively tailor assessment and treatment approaches to better assist patients in managing their chronic pain and improve their self-efficacy. The present research will look to expand the research on constructs related to self-efficacy, specifically mindfulness related constructs. McCracken and Thompson (2009) defined mindfulness as a state in which one is highly aware and focused on the reality of the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situations or in emotional reactions to the situations (catastrophizing). As mindfulness is improved, individuals will be more likely to believe in their performance of specific tasks while experiencing pain (self-efficacy).

Verhoeven et al. (2010) provided an experimental study that investigated the role of motivation in distraction tasks in diverting attention away from pain. The sample of this study consisted of 78 undergraduate students with a mean age of 18.67 years. Of the 78 participants from Ghent University in Belgium, 66 were female. All of the participants were Caucasian. The
majority of the participants reported good medical and psychological health. The participants were randomly assigned to one of three experimental groups: Distraction only group; a motivated-distraction group; and a control group. In the distraction only group, the participants performed the same distraction task. In the motivated-distraction group, participants were rewarded for their task performance through a financial incentive. Participants completed the Pain Catastrophizing Scale along with a socio-demographic questionnaire and self-reported attention to pain.

The results of the study (Verhoeven et al., 2010) indicated that engagement in the distraction task was better in the motivated-distracted group in comparison with the distraction-only group. The participants in both distraction groups experienced less pain compared to the control group. The effect of distraction was influenced by the level of catastrophic thinking about pain. Low catastrophizers were found in both distraction groups to report less pain as compared to the non-distracted control group. High catastrophizers reported less intense pain in the motivated-distracted group, compared to the non-distracted group. Verhoeven et al. (2010) concluded that increasing the motivational relevance of the distraction task may increase the effects of distraction, especially for those who catastrophize about pain.

The limitations of the study identified by the authors (Verhoeven, et al., 2010) included the sample of only undergraduate students of good health from Belgium. This limits the generalizability of the findings to other populations, especially those disabled individuals struggling with chronic pain for extended periods of time. This experimental study involved pain that is best described as acute pain which cannot be generalized to those individuals who struggle with chronic pain. The painful stimulation was created and delivered in a laboratory setting, and there were no extreme levels of catastrophic thinking about pain that often surfaces
in the chronic pain population. Another limitation identified by the authors included that the results showed no effects of distraction on pain affect that differed from prior research. Lastly, the distraction task was not rated as very interesting by the participants, thus affecting the results of the experimental study.

Verhoeven et al. (2010) identified how distraction is an intuitive way of coping with pain and is part of many different pain treatment programs. It is a form of diverting one’s attention from pain thereby reducing the pain experience for the individual. This concept is consistent with the role of mindfulness to avoid catastrophizing pain that ultimately will lead to greater self-efficacy and higher functioning level among individuals who struggle with pain. This dissertation will look to further expand the knowledge of the construct of mindfulness as a means of accepting pain, and diverting one’s attention from the debilitating pain condition that impacts the daily functioning and self-efficacy of those who struggle with chronic pain.

Shelby et al. (2008) evaluated whether domain specific arthritis self-efficacy mediated the relationship between pain catastrophizing and patient outcomes (pain and disability). Shelby et al. (2008) hypothesized that higher pain catastrophizing would be associated with lower self-efficacy in all domains, and domain specific self-efficacy would mediate the impact of pain catastrophizing on corresponding outcomes. The participants were recruited through the Rheumatology, Orthopaedic Surgery, and Pain Management clinics at Duke University Medical Center. The sample consisted of 192 individuals diagnosed with osteoarthritis of the knees who reported knee pain for over six months and were overweight or obese. The participants received bilateral knee x-rays, a medical evaluation, and completed the following measures: Catastrophizing Scale from the Coping Strategies Questionnaire, Arthritis Self-Efficacy Scale, and the Arthritis Impact Measurement Scales.
The results showed that domain specific self-efficacy mediated the relationship between pain catastrophizing and adjustment. Higher pain catastrophizing was associated with lower self-efficacy in all three domains: self-efficacy for pain control; self-efficacy for physical function; self-efficacy for other functions. The results indicate that higher pain catastrophizing leads to greater physical disability through lowered self-efficacy for physical function. Additionally, the results suggest that pain catastrophizing leads to greater psychological disability directly and through lower self-efficacy for managing emotional symptoms.

Shelby et al. (2008) identified that one of the limitations of the study is in the correlational design that prevents causal attributions about the relationships between pain catastrophizing and psychological disability. Another limitation is in the generalizability of the results due to the willingness and motivation of the patients to participate in the treatment study that targeted pain reduction and weight control. The generalizability of the results was also limited to the specific target population and would be difficult to generalize to other populations.

Shelby et al. (2008) found that pain catastrophizing led to greater pain and disability through lowered domain specific self-efficacy. The authors suggested that further research is needed to examine how self-efficacy beliefs, and pain cognitions, such as pain catastrophizing, contribute to adjustment. The fear-avoidance model suggests that catastrophizing about pain initiates a vicious cycle that leads to pain-related fear, avoidance of activities, and ultimately greater disability and pain. The present research will look to further explore the construct of mindfulness as it relates to self-efficacy. The implications for the counseling field include utilizing mindfulness related techniques to assist in the prevention of catastrophizing and ultimately improving self-efficacy through the practice of acting with awareness and personal accomplishments.
Adegoke and Ezeukwu (2010) investigated the relationship between pain intensity, self-efficacy, and physical performance in patients with chronic low back pain receiving physiotherapy at selected hospitals in Nigeria. The sample consisted of 142 patients from the outpatient units of the physiotherapy departments of the University of Nigeria Teaching Hospital, Enugu and the National Orthopaedic Hospital, Enugu. The average age of the participants was 48 years old. Information was gathered for each participant regarding their height and weight. The participants completed the following measures: Box Numerical Scale, Chronic Pain Self-Efficacy Scale, and the Back Performance Scale.

The results indicated that there was no significant correlation between pain intensity and physical performance. Adegoke and Ezeukwu (2010) reported that this finding suggests that changes in pain severity may not lead to changes in physical function of patients with chronic lower back pain, or vice versa. Significant negative correlations were identified between self-efficacy domain scores (pain management, physical function, and coping with symptoms) and physical performance. Self-efficacy scores for the three domains were significantly and positively correlated with each other. Pain management and coping with symptoms both correlated negatively with pain intensity, after controlling for the characteristics of the participants. It is implied that strategies toward improving self-efficacy would lead to lower subjective experience of pain in chronic lower back pain patients.

The limitations of the study identified by Adegoke and Ezeukwu (2010) was in the limited sample that consisted only of chronic lower back patients who sought treatment at Physiotherapy clinics in Nigeria, thus limiting the generalizability of the findings to other populations. Secondly, the research design does not imply causality as it is correlational in design. The authors suggested that improving any one of the three domains of self-efficacy would increase
physical function. This dissertation will look to expand on this study by addressing the relation between mindfulness and self-efficacy among chronic pain patients to determine if greater mindfulness is related to greater self-efficacy and daily functioning among a chronic pain sample.

Arnstein (2000) investigated the hypothesis that self-efficacy beliefs mediate the relationship between pain and pain-related disability in chronic pain patient samples. The sample consisted of 479 chronic pain patients from two clinics in northeastern United States, of which 95% were Caucasian, the average age was 44 years old, and the median duration of pain was nearly three years. The participants were grouped into the following three convenience samples: Those patients evaluated at a major referral center; patients at a community-based primary care and specialty clinic; and patients who were treated at both settings in addition to a community-based hospital with no prior depression to the onset of pain. The participants completed the following measures: Visual Analog Scale, the Chronic Pain Self-efficacy Scale, Pain Disability Index, and the Centre for Epidemiological Study-Depression Scale.

The results (Arnstein, 2000) supported self-efficacy as a mediator of the relationship between pain intensity and disability in all three groups. The results also suggested that the more intense the pain, the greater it interferes with the person’s thoughts, feelings, and activities. The primary limitation of the study is in the correlational research design that does not allow for causation. Secondly, reporting bias plays a role in the self-report measures used in the study. Lastly, although the sample size was large, it was limited in the diversity of the participants, primarily consisting of Caucasian females from the northeastern United States that limits the ability to generalize to other populations.
The author (Arnsetein, 2000) suggested that therapy designed to reduce pain intensity needs to be included in therapies whose goal is to change thinking, reduce depression, and disability associated with chronic pain. One approach to assist patients in managing their chronic pain is through mindfulness that is aimed toward increasing awareness and being focused on the present moment. This dissertation will add to the research by exploring the construct of mindfulness and its impact on self-efficacy and functioning level as a means for counselors to better assist clients who struggle with chronic pain.

Walker and Watts (2009) examined the relationship between perceived early childhood family influence, pain self-efficacy beliefs, and pain-related disability. The sample consisted of 30 adults with chronic pain who were being treated in one of five pain and injury clinics offering the chronic pain program in Texas. The average age of participants was 42.7 years old. The participants completed the following measures: Perceived Early Childhood Family Influence Scale, Pain Self-Efficacy Questionnaire, and the Chronic Pain Grading Scale. The results indicated that there was no relation between perceived early childhood family influence and perceived pain self-efficacy. Similarly, there was no significant relationship between perceived early childhood family influence and pain-related disability. Walker and Watts (2009) did support previous research that indicated pain self-efficacy was related to disability of chronic pain patients.

There were a number of limitations in the current study. The sample size was very small limiting the ability to generalize to other populations. Secondly, the correlational research design does not allow for implications of causation between the variables. Walker and Watts (2009) had recommended that future research address individual perceptions on pain expectations, attitudes, meanings, and emotional expressions by observing the behaviors of
others in their cultural group. As evidenced by the current study, the approach in treatment of pain has shifted from a biomedical model to a biopsychosocial model that focuses on the influence of psychosocial factors, including self-efficacy beliefs, in the progression of acute pain to chronic pain and disability. This dissertation will further explore mindfulness related constructs in the treatment of chronic pain that fits within the guise of the biopsychosocial model recognizing the link between mind and body.

Osteras et al. (2006) examined the prevalence of neck, shoulder and upper back pain, and evaluate possible associations between these conditions and physical activity, self-efficacy and relaxation ability in a sample of adolescents. The sample consisted of 416 second-year students (265 females, 151 males) from 13 technical schools in Norway, with an average age of 17.5 years. The participants completed the General Self-Efficacy Scale and answered questions related to experiences of pain, duration of pain, and frequency of physical activities outside of school. Each of the participants was also assessed for relaxation ability by one of three physiotherapists using selected items from the Global Physiotherapy Muscle Examination. There reportedly was high inter-rater reliability among the physiotherapists.

The results (Osteras et al., 2006) showed that female students reported significantly higher pain intensity and obtained significantly higher sum scores (intensity x duration) than male students. Females were engaged in less physical activity and obtained lower self-efficacy, but demonstrated better relaxation ability than male students. In bivariate analyses, high self-efficacy scores were significantly associated with high levels of physical activity and poor relaxation ability among males. No significant associations were found in multivariate analyses between physical activity, self-efficacy, or relaxation ability and pain symptoms in either males or females.
The primary limitation of the study is in the research design through the use of self-report measures on physical activity, self-efficacy, and disclosures of pain symptoms that does not control for reporting bias. Secondly, the specific population (technical students in Norway) studied does not allow for generalizing to other populations. Although the study did not focus on chronic pain patients, the findings of Osteras et al. (2006) brought to light the need for additional research to address the gender differences in self-efficacy, in addition to further exploring the relation between self-efficacy and relaxation ability. This dissertation will further address relaxation ability through the construct of Mindfulness and its subsequent relation to self-efficacy among chronic pain patients.

Wong et al. (2010) examined the effectiveness of a pain management educational intervention on level of pain, anxiety, and self-efficacy among patients with musculoskeletal trauma and consequent orthopaedic surgery. The sample consisted of 125 patients from two of the largest regional public hospitals in Hong Kong, of which 62 patients were in the experimental group and 63 were in the control group. The participants in the experimental group received the usual care plus the educational intervention. The educational intervention consisted of a thirty minute educational intervention whose goal was to enhance patients’ self-efficacy by providing them with knowledge about pain and the use of analgesics, and performing breathing exercises. The participants completed the following measures: Visual Analog Scale, The State Scale of the State-Trait Anxiety Inventory, Self-efficacy Scale, and demographic information. The measures were completed at the following times: before surgery, day 2, day 4, day 7, 1 month, and 3 months after surgery.

The results (Wong et al., 2010) showed that the experimental group reported statistically significant lower levels of pain, less anxiety and better self-efficacy during hospitalization,
before surgery and up to day seven, as compared to the control group. At the three month evaluation, a statistically significant effect on anxiety level was found for the experimental group compared to the control group yet there was no intervention effect on the self-efficacy scale across three months.

One of the limitations of the study (Wong et al., 2010) was in the inability of the results to be generalized to other populations due to the sample consisting primarily of patients from Hong Kong. Additionally, the authors suggested that the Hawthorne effect may have played a role in the results of the study, as the experimental group may have been aware that other types of patients in the same ward did not receive the educational intervention that they had received. Lastly, the research design was limited in that it did not control for other factors that may have influenced the results of the study.

Although this study focuses primarily on acute pain as a result of a musculoskeletal injury, and is not considered chronic pain, it highlights the relation between mindfulness based exercises and self-efficacy. There was clearly a short term benefit identified between the breathing relaxation exercises as part of the educational intervention that improved self-efficacy in pain management. For acute pain, as the time length was extended, there was no significant intervention effect on the self-efficacy scale, which makes sense due to the short term nature of acute pain. This dissertation will look to further advance the knowledge of the relation between mindfulness and self-efficacy within the chronic pain population.

**Summary of the Literature on Mindfulness and Self-Efficacy Among Chronic Pain Patients**

The literature review identified the limited research regarding the constructs of mindfulness and self-efficacy within the chronic pain population. Only one study was identified in the literature review that specifically addressed these two constructs (Cusens et al., 2010).
Cusens et al. (2010) found marginally significant interactions on the Breathworks Pain Management program on pain self-efficacy, suggesting that mindfulness can assist chronic pain patients in developing greater confidence in their ability to complete certain tasks while experiencing pain. These findings are interpreted with caution, as the Cusens et al. (2010) study was a pilot study in design. There clearly is a need to further address the relation between mindfulness and self-efficacy among the chronic pain population.

The other eight studies identified the connection between self-efficacy and disability within the pain population. The research had shown that self-efficacy acted as a mediator to disability of pain patients (Adegoke and Ezeukwu, 2010; Arnstein, 2000; Denison et al., 2007; Walker and Watts, 2009; and Wong et al, 2010). The construct of mindfulness is linked with the following variables used in the studies: relaxation (Osteras et al., 2006; Wong et al, 2010); coping (Denison et al, 2007); distraction (Verhoeven et al., 2010); and catastrophizing (Shelby et al., 2008). Mindfulness has been defined as a state in which one is highly aware and focused on the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situations or in emotional reactions to the situations (McCracken and Thompson, 2009). Although the case can be made regarding the presence of the construct of mindfulness in the previous studies, there is a need to specifically address the relation between the construct of mindfulness and self-efficacy and the subsequent impact on the daily functioning of individuals struggling with chronic pain.

Self-efficacy research (Bandura, 1977) has emphasized self-awareness and self-regulation as factors influencing the development of self-efficacy beliefs. Similarly, McCracken and Thompson (2009) indicated that as mindfulness is improved, individuals will be more likely to perform specific tasks while experiencing pain (improving self-efficacy). This dissertation
will further explore these foundational principles of self-efficacy to the current day struggles of the chronic pain population. In developing a better understanding of these constructs and their impact on daily functioning, counselors can use this knowledge to more accurately assess the client’s level of need and treatment approaches to better assist them in managing their chronic pain condition and improving their self-efficacy.

Research (Keefe et al., 2004) supports cognitive behavioral and self-management treatments for chronic pain problems that increase individuals’ self-efficacy for managing their pain and that such change is related to improvement in outcomes. By improving self-efficacy, these individuals will be more confident in managing daily tasks in spite of their chronic pain condition and less likely to avoid or withdraw from previously pleasurable tasks. This current study will look to build upon the limited research to address if mindfulness is related to self-efficacy within the chronic pain population.

Summary of Research on Psychological Flexibility and Self-Efficacy Among Chronic Pain Patients

The following section provides a summary of the research on psychological flexibility and self-efficacy among chronic pain patients. This summary consists of the breakdown of each study including the instruments used, a description of the findings and limitations of the study. There were no studies that specifically addressed the relation between psychological flexibility and self-efficacy among chronic pain patients.

Wells-Federman, Arnstein, and Caudill (2002) The sample consisted of 154 chronic pain patients who participated in a 10-visit outpatient cognitive-behavioral group treatment program. The initial sample consisted of 376 chronic pain patients, 76 did not start the program, an
additional 98 dropped out, that left 202 participants who completed the program. One hundred and fifty four of the 202 consented to participate in the study and completed the following questionnaires at baseline and at the completion of the program: Pain Intensity-Visual Analog Scale, Chronic Pain Self-Efficacy Scale, the Pain Disability Index, and the Center for Epidemiological Study-Depression Scale. The mean age of the participants was 46 years, 94% were Caucasian, 75% were women, with an average duration of pain of 50 months.

The results of the study (Wells-Federman, et al., 2002) indicated that those patients who completed the 10-week treatment program reported significant reductions in pain intensity, depression, and disability, and an increase in self-efficacy. The authors identified that the limitations of the study included a limited ability to generalize to other chronic pain populations. Another limitation was in the research design that did not allow for a control group to compare which comparisons could be made. Another limitation in the research design, involved the use of self-report measures which cannot control for reporting bias from the participants. Additionally, this study did not control for other group dynamics that may have positively contributed to the results. One also questions other factors that were not controlled for that may have positively impacted the results of the study including the following constructs: motivation, mindfulness, emotional intelligence, and psychological flexibility and their impact on self-efficacy. As part of the group treatment plan, the patients review relaxation exercises and breathing awareness exercises that involve the role of psychological flexibility (mindfulness and acceptance) in the treatment of chronic pain. The present research will further expand the research to specifically address the construct of psychological flexibility and it relation to self-efficacy among the chronic pain population.
Menzies et al. (2006) investigated the effects of a 6-week intervention of guided imagery on pain level, functional status, and self-efficacy in persons with fibromyalgia and explored the dose response effect of imagery use on outcomes. The sample consisted of 48 participants recruited from physicians’ offices and clinics in the University of Virginia Health System. The average age of participants was 49.6 years old, of which 47 were female. The participants completed baseline questionnaires and were randomly placed in one of two groups: Usual Care plus guided imagery or in the Usual Care alone groups. The participants completed the following measures at intake, Week 6 and at Week 10: Short Form McGill Pain Questionnaire; Fibromyalgia Impact Questionnaire; and the Arthritis Self-Efficacy Scale.

The results (Menzies et al., 2006) indicated that self-efficacy for managing pain and other significant symptoms significantly improved in the Guided Imagery group compared to the usual care group. Additionally, Menzies et al. (2006) identified that functional status improved significantly in the Guided Imagery group at six weeks and the improvement was maintained at 10 weeks, compared to the usual care group. In regards to pain, there were no significant differences over time between the Guided Imagery and the Usual Care alone groups, nor among the four subscales of pain measured by the Short-Form McGill Pain Questionnaire. This is important to point out how the individuals in the Guided Imagery group showed significant improvement in self-efficacy and functional status, yet this did not affect their experience of pain.

The primary limitations of the study are found in the small sample size that lacked diversity, limiting the generalizability of the findings. Another limitation was found in the research design that did not control for other variables that may have affected the results of the study, including positive aspects of the group environment that provide a support group that
helps to empower the individual to more effectively manage their symptoms. This dissertation will further explore the construct of psychological flexibility as it relates to self-efficacy and functioning level of chronic pain patients.

Sarda, Nicholas, Asghari, and Pimenta (2009), examined the contribution of sociodemographic factors and pain variables, depression and cognition (self-efficacy, catastrophising, and acceptance) to disability and work status in chronic pain patients from Australia and Brazil. The sample consisted of 311 patients attending nine pain clinics in Southern and Southeastern Brazil. For comparison, data from a sample of 311 Australian chronic pain patients, matched for age (49 yrs) and gender (male 26%, female 74%), were selected from a database at the Pain Management and Research Center in Sydney, Australia. The participants completed the following measures: Roland and Morris Disability Questionnaire, the Pain Self-efficacy Questionnaire, the depression anxiety stress scale, the pain response self-statements scale, and the chronic pain acceptance questionnaire.

The regression analyses revealed that education level and age made were significantly related to work status. Self-efficacy beliefs and disability level reportedly made significant contributions to work status in the Brazilian sample but were not statistically significant in the Australian sample. Depression was significantly related to unemployment in the Brazilian sample but not in the Australian sample. The results also indicated that acceptance of pain and catastrophizing were not significantly related to disability or work status in the Brazilian and Australian samples. Acceptance was significantly related to self-efficacy in both samples. Lastly, the results reported statistically significant negative correlation between self-efficacy and catastrophizing in both samples.
The limitations of the study (Sarda et al., 2009) are in the research design that primarily used self-report data whereby reporter bias would affect the results of the study. Secondly, due to the correlational design of the study, causation cannot be assumed from the results. The generalizability of the results was also questioned by the authors, as the sample was not representative of the general populations of chronic pain patients in both countries. Lastly, the study did not control for other factors that may have influenced the results of the study (work conditions and opportunities). Sarda et al. (2009) supported previous research in addressing the role that psychosocial variables, including self-efficacy, contribute significantly to the physical disability and work status over and above the level or nature of persisting pain. Additionally, significant correlations were identified between self-efficacy and the following variables: acceptance, depression, and catastrophizing. This dissertation will look to further explore the construct of psychological flexibility and its relation to self-efficacy among chronic pain patients.

Turner, Ersek, and Kemp (2005) examined the association of self-efficacy for managing pain with pain intensity, disability, depressive symptoms, and pain coping strategy use in a sample of older adults living in retirement communities. The sample consisted of 140 participants residing in retirement communities with an average age of 81.7 years old. Eighty-eight percent of the sample was female and 94% were Caucasian. The participants completed the following measures: Self-efficacy scale, Roland Morris Disability Questionnaire, Brief Pain Inventory, Geriatric Depression Scale, and the Chronic Pain Coping Inventory.

The results indicated that participants with higher self-efficacy had significantly lower scores on measures of disability and depressive symptoms. The study was consistent with previous research in that the relation between self-efficacy and pain intensity was not statistically
significant. High self-efficacy was also found to be significantly related to more frequent use of pain coping strategies. Turner et al., (2005) suggested that retirement community residents with higher self-efficacy for managing pain, regardless of pain intensity levels, are more likely to exercise and stretch, use coping self-statements, pace their activities, and persist in activities despite pain. The strongest relationship was with task persistence in its relation to better outcomes. Relaxation was not found to be significantly related to self-efficacy.

Turner et al. (2005) identified that one of the limitations of the study was in the possibility of a sample self-selection bias, questioning how well representative the sample was of the larger group. Additionally, only one measure was used to address self-efficacy as it related to managing pain. It is also difficult to generalize the results of the study to other populations as the sample consisted primarily of Caucasian females in residing in retirement communities. Lastly, the research design was limited in not controlling for other variables that may have impacted the results of the study (i.e., motivation, type of pain). The present research will look to expand the findings of Turner et al. (2005) in addressing what other factors influence self-efficacy for managing chronic pain, specifically the construct of psychological flexibility as it includes elements of relaxation/mindfulness and coping self-statements.

Wicksell, Olsson, and Hayes (2010) addressed the processes of change in a previously reported successful randomized controlled trial evaluating the effectiveness of an exposure-based form of behavioral and cognitive therapy, Acceptance and Commitment Therapy (ACT), on improvement in pain-related disability and life satisfaction for patients suffering from whiplash-associated disorder. The sample consisted of twenty individuals over the age of 20 years old, who have struggled for over three months with whiplash associated disorder. The treatment group received 10 ACT individual sessions in an 8-week period. Eleven of the participants were
in the treatment group and the remaining nine made up the control group. All of the participants completed the following measures: Pain Disability Index; Satisfaction with Life Scale; Visual Analog Scale; Hospital Anxiety and Depression Scale; Self-Efficacy Scale; Tampa Scale of Kinesiophobia; and the Psychological Inflexibility in Pain Scale.

The results of the Wicksell et al. (2010) study indicated that pain intensity, anxiety, depression, kinesiophobia, and self-efficacy did not have significant mediating effects on improvement in pain related disability and life satisfaction among patients suffering from whiplash associated disorder. The results did indicate significant indirect effects for psychological inflexibility to pain related disability and life satisfaction.

The primary limitations of the study are in the research design that has a small sample size that limits the generalizability of the findings. Additionally, all of the measures used were self report that are susceptible to reporting bias. Reporting bias needs to be taken into consideration when interpreting the results of the current study. Another limitation in the research design involved controlling for other factors that may have significantly impacted the results of the study.

Wicksell et al. (2010) contributes to the growing body of evidence for exposure and acceptance based treatments in chronic pain. The authors (Wicksell et al., 2010) recommended future studies use other measures to address the construct of psychological flexibility in addition to other processes including catastrophizing, perceived self control, or general cognitive styles. This current dissertation will look to further address the construct of psychological flexibility and its subsequent impact on functioning level and on building self-efficacy among chronic pain patients.
Summary of the Literature on Psychological Flexibility and Self-Efficacy Among Chronic Pain Patients

There were no studies identified in the literature review that specifically addressed the relation between psychological flexibility and self-efficacy. Psychological Flexibility consists of the following four processes: acceptance of pain, values based action, psychological acceptance and mindfulness (McCracken & Gutierrez-Martinez, 2010). In the study by Sarda et al. (2009) acceptance was found to be significantly related to self-efficacy and supported previous research in addressing the role that psychosocial variables, including self-efficacy, contribute significantly to the physical disability and work status over and above the level or nature of persisting pain. Similarly, Turner et al. (2005) found that those individuals with high self-efficacy had significantly lower scores on measures of disability and depression symptoms. There is a need to further explore constructs that are significantly related to self-efficacy as a means to better assist those struggling with chronic pain.

Three of the studies (Menzies et al., 2006; Wells-Federman et al, 2002; Wicksell et al, 2010) investigated the effectiveness of group therapy in building self-efficacy of the participants. The therapeutic groups differed according to their approach (guided imagery, cognitive behavioral treatment, and ACT, respectively). Menzies et al. (2006) and Wells-Federman et al. (2002) indicated significant differences in the treatment group compared to the control group in relation to self-efficacy of the participants. The treatment groups reported significant improvements in self-efficacy and functional status. Interestingly, the results of Menzies et al. (2006) did not indicate a significant reduction in their experience of pain, while Wells-Federman et al. (2002) reported that the treatment group reported significant reductions in their pain intensity as compared to the control group. None of the studies controlled for other variables in
the group that may have influenced the results. It is clear that additional research is needed to more adequately address the construct of psychological flexibility and its relation to self-efficacy of chronic pain patients.

The literature (Keefe, 2004; Menzies et al., 2006; Wells-Federman et al., 2002) supports cognitive behavioral and self-management treatments for chronic pain problems that increase individuals’ self-efficacy for managing their pain and that such change is related to improvement in outcomes. By improving self-efficacy, these individuals will be more confident in managing daily tasks in spite of their chronic pain condition and less likely to avoid or withdraw from previously pleasurable tasks. Psychological flexibility is a construct that includes six overlapping components: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). One of the primary goals of ACT is the strengthening of the six overlapping components that make up psychological flexibility. The research has shown how Acceptance and Commitment Therapy is linked with psychological flexibility as one of the primary goals of ACT is the strengthening of the six overlapping components that make up psychological flexibility. This present study will look to build upon the limited research to address if psychological flexibility is related to self-efficacy within the chronic pain population.

Summary of Research on Emotional Intelligence and Self-Efficacy Among Chronic Pain Patients

The following section provides a summary of the research on emotional intelligence and studies related to self-efficacy, as there were no studies that specifically addressed the relation between emotional intelligence and self-efficacy among chronic pain patients. This summary consists of the breakdown of each study including the instruments used, a description of the
findings and limitations of the study. The present study will look to expand the research to include these two constructs within a chronic pain sample.

In a study by Chan (2008), the roles of emotional intelligence and general teacher self-efficacy were examined as personal resource factors in the process of coping with teacher stress. The sample consisted of 273 prospective and in-service Chinese teachers, of which 118 were male and 144 were female. The participants completed the following measures: Emotional Intelligence Scale; General Teacher Self-Efficacy Scale; and Chinese Ways of Coping Questionnaire. The results indicated that general teacher self-efficacy correlated significantly with intrapersonal emotional intelligence and interpersonal intelligence. Teacher self-efficacy and emotional intelligence correlated positively and substantially with active coping, they correlated negatively or minimally with passive coping.

The primary limitation of the study was based in the research design that focused exclusively on teachers in China that ultimately limits the generalizability of the findings of the study to other populations. Secondly, the research design did not allow for reverse directionality or bidirectional influences, whereby coping may have an influence on the self-efficacy of teachers. Lastly, since the participants were students in either pre-service or in-service training, the results may not be generalized to more seasoned traditional teachers.

Chan (2008) indicated that the findings of the study have implications for developing preventative and intervention programs to help teachers to combat stress. Specifically the finding that active coping was significantly predicted by emotional intelligence could lead to adaptive coping. Those individuals who have struggled with chronic pain, often are in need of effective coping skills to assist them in managing their chronic pain condition. For the purposes
of this dissertation, the relation between emotional intelligence and self-efficacy will be further assessed within the chronic pain population.

In an earlier study by Chan (2004), perceived emotional intelligence and its relationships to self-efficacy beliefs in a sample of Chinese secondary school teachers in Hong Kong was examined. The sample consisted of 158 secondary teachers (65 men and 92 women, one did not report gender) in Hong Kong. The participants completed the following measures: Emotional Intelligence Scale, General Self-efficacy, and Self-efficacy Toward Helping. The results (Chan, 2004) indicated that teachers reported relatively higher scores on components describing awareness and appraisal of one’s emotions as well as skills in utilizing emotions positively in generating ideas and solutions in problem solving, and lower scores on components related to sensitivity to the expression of emotion by others as well as to positive mood regulation. Different components of perceived emotional intelligence were found to predict significantly different self-efficacy beliefs for different groups of teachers were meaningful and noteworthy. This included positive mood regulation and utilization of emotions were found to predict perceived general self-efficacy among non-guidance teachers, whereas empathic sensitivity to others’ emotions predicted perceived self-efficacy toward helping others among guidance teachers (Chan, 2004).

The primary limitations were in the research design, specifically in only using cross sectional data. Another limitation is in the sample consisting only of Chinese teachers that would limit the opportunity to generalize to other populations. Lastly, using self-report measures would subject the study to reporter bias and faking according to the authors. Clearly there is a link between emotional intelligence and self-efficacy, it is unclear if there is a bi-directional relationship between the two. Chan (2004) clarified the impact of the relation between
emotional intelligence and self-efficacy on teachers in Hong Kong. This dissertation will look to further expand the knowledge of the relation between the two constructs, as positive mood regulation and utilization of emotions would be expected to improve the general self-efficacy of chronic pain patients in encouraging and empowering them to complete daily tasks that they would have avoided due to fear of the negative impact of their chronic pain condition.

Di Fabio and Palazzeschi (2008) investigated the construct of emotional intelligence and its relation to occupational self-efficacy in a sample of Italian teachers. The sample consisted of 169 teachers from high schools located in Tuscany, of which 111 were female and 58 were male. The participants completed the following measures: Bar-on Emotional Quotient Inventory, Short Form and the Ohio State Teacher Efficacy Scale. The results of the study (Di Fabio & Palazzeschi, 2008) indicated that there were a number of significant and positive relationships between emotional intelligence and teacher self-efficacy, both globally and in its three dimensions (efficacy in instructional activities, efficacy in classroom management, and efficacy in student engagement). Furthermore, higher emotional intelligence was linked to higher teacher self-efficacy in the capacity to manage the classroom, motivate and involve students, and use appropriate teaching strategies. Teacher self-efficacy was best predicted by the intrapersonal dimension, and to a lesser extent, by adaptability.

The primary limitation of the study (Di Fabio & Palazzeschi, 2008) is in the use of self-report measures that are subject to reporter bias and misinterpretation of items. Another limitation is attributed to the sample consisting of teachers from Tuscany, Italy, limiting the generalizability of the results to other populations. Lastly, the authors identified that other variables may have impacted the results of the study that were not controlled for, including teachers’ training and years of teaching as variables impacting the results of the study. Di
Fabio and Palazzeschi (2008) provide further support to the link between emotional intelligence and occupational self-efficacy beliefs of teachers, giving weight to teacher self-efficacy and to its main link to the intrapersonal dimension of self-efficacy. This dissertation will further address this relation between emotional intelligence and self-efficacy, as the link between the intrapersonal dimension and self-efficacy is significantly related. Within the chronic pain population, it would appear logical that those individuals who scored higher on the intrapersonal dimension would be more aware of their emotions and describe themselves as more capable of expressing their feelings and communicating their needs effectively.

Easton, Martin, and Wilson (2008) completed a study that investigated whether a person’s perceived emotional intelligence and counselor self-efficacy could be increased with counselor training and experience over time or if these perceptions would remain relatively stable. Easton et al. (2008) was based upon a previous study (Martin et al., 2004) that found emotional intelligence to be a unique construct inherent in persons who are preparing for careers as professional counselors. The second phase of the study was conducted nine months after Phase I, when student participants would be expected to be enrolled in either their practicum or internship. The participants included 118 of those who participated in phase I of the study (84%). Of the 118, 66 were professional counselors, and 52 were counselors in training. The participants completed the following measures at Phase I and at Phase II: COSE (Counseling Self-estimate Inventory), and the EJI (Emotional Judgment Inventory). The results (Easton et al., 2008) indicated that there was a significant correlation between two of the EJI scales (identifying own emotions and identifying others emotions) and four of the five COSE scales (confidence in executing microskills; attending to process; dealing with difficult client behaviors, and being aware of one’s own values).
The primary limitations of the study (Easton et al., 2008) were in the research design that used self-report measures, and that are subject to response bias and/or misinterpretation of the items. Secondly, the authors identified that since the research design was correlational and causal comparative, there was no random assignment of participants to the comparison group. Lastly, the participants were all from Arizona, which limits the generalizability of the results to other populations. Within the current study (Easton et al., 2008), it is suggested that based upon the relation between counselor self-efficacy and emotional intelligence, the EJI be used as a self-assessment tool to increase one’s self-perceptions and areas for improvement to become a more effective counselor. Similarly, within the chronic pain population, it is important for chronic pain patients to become more self-aware and recognize their ability in regulating emotions as it relates to managing chronic pain and avoiding catastrophizing one’s pain condition.

Eniola and Adebiyi (2007) examined emotional intelligence and goal setting techniques in enhancing motivation to work among visually impaired students. The sample consisted of 32 youth from the School for Handicapped Children, Ibadan and Osogbo, Nigeria and assigned to one of the following treatment groups: emotional intelligence group (N=16) and the goal setting group (N=16). The participants completed the Work Value Inventory prior to the treatment groups and following the six week treatment the participants completed the Work Value Inventory. The results indicated that both goal setting and emotional intelligence interventions appeared to have an impact upon visually impaired student’s motivation to work. Eniola and Adebiyi (2007) reported that further research is needed to assess which group was more effective than the other.

The primary limitation of the study (Eniola & Adebiyi, 2007) was in the small sample size that only included 32 participants limiting the ability to generalize the results to other
populations. Another limitation was in the research design that included a self-report measure that was subject to reporter bias. The findings of Eniola and Adebiyi (2007) warrant additional research to further address the relation between emotional intelligence and goal setting upon individual’s motivation to complete tasks. Within the chronic pain population, counseling efforts are directed toward increasing the individual’s motivation to pursue and complete certain tasks that they have avoided due to fear of additional pain experiences. This dissertation will look to further address the relation between these constructs with the purpose of assisting counselors in understanding the special needs of this population and implementing techniques that will empower chronic pain patients by building their confidence and motivation to complete certain daily tasks that will deter them from avoiding previously enjoyed activities.

In a study by Magyar et al. (2007), group leaders’ self-efficacy and emotional intelligence were examined to address their perceptions that they care about their sport campers. The sample consisted of 37 group leaders that consisted of 16 males and 21 females, from two summer sport camps for underserved youth. The participants completed the following measures: Personal Caring Scale, Physical Teacher Efficacy Scale, and a 16 item measure of Emotional Intelligence. The results indicated that leadership efficacy emerged as a significant and positive determinant of personal caring. Emotional intelligence, as defined by the leaders’ ability to assess and regulate their own personal emotions and understand the emotions of others, was also related in a significant and positive manner with personal caring. The primary limitation of the study is in the small sample size that limits the generalizability of the findings to other populations. Another limitation was in the measures used, whereby the authors did not confirm the reliability and validity of the instruments used in the study.
Magyar et al. (2007) reported that when leaders feel confident about their knowledge and their ability to advance the learning of their followers, they are more likely to welcome and conquer adverse and difficult situations. Similarly, for those individuals who are struggling with chronic pain, for those individuals who feel confident about their knowledge and ability to complete certain tasks (self-efficacy), they are more likely to welcome and conquer those difficult situations that they may face each day.

Adeyemo (2007) examined the moderating influence of emotional intelligence on the link between academic self-efficacy and achievement among university students. The sample consisted of 300 first and second year undergraduate students at the University of Ibadan, Ibadan, Nigeria. The participants completed the following measures: Emotional Intelligence Questionnaire and the Academic Confidence Scale. Academic achievement was assessed by using the student’s first semester examination results. The results indicated that emotional intelligence and academic self-efficacy significantly correlated with academic achievement. The moderating effect of emotional intelligence on the relationship between academic self-efficacy and achievement was also established.

The primary limitations of the study were in the sample of undergraduate students from one university in Nigeria that limits the generalizability of the results to other populations. Secondly, the research design was limited in its assessment of the academic performance based upon the students’ first semester examination results, which can be argued against being the best indicator of one’s academic performance. Lastly, the two measures were self-report where the results are subjected to reporter bias. Adeyemo’s (2007) findings confirmed the role that academic self-efficacy and emotional intelligence play in influencing academic achievement of undergraduate students. Adeyomo (2007) identified the following characteristics of those
students with high self-efficacy: Have the capacity to accept more challenging tasks, make
greater effort expenditure, demonstrate increased persistence in the face of obstacles, show lower
anxiety level, show flexibility in the use of learning strategies, employ more self-regulation
strategies than other students, display accurate self-evaluation of their academic performance,
show greater intrinsic interest in scholastic matters and demonstrate greater propensity for self-
motivation. Adeyomo (2007) also identified the following competences of emotional
intelligence: ability to regulate one’s feeling, problem solving, intrapersonal and interpersonal
skills, and are highly germane to academic success. The components of these two constructs can
also apply to those individuals who are struggling with chronic pain, being able to regulate one’s
feelings, problem solving, persistence in the face of obstacles, flexibility in the use of learning
strategies are all critical in building upon the skill set of chronic pain patients to more effectively
cope with their pain condition.

Summary of the Literature on Emotional Intelligence and Self-Efficacy Among the Chronic Pain
Population

There were no studies identified in the literature review that specifically addressed the
relation between emotional intelligence and self-efficacy. The research was clear in establishing
a relation between the constructs of emotional intelligence and occupational self-efficacy,
specifically teacher self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008);
leader self-efficacy (Magyar et al., 2007); and counselor self-efficacy (Easton et al., 2008).
Furthermore, within the student population, emotional intelligence and self-efficacy impacted the
motivation to work among visually impaired students (Eniola and Adebiyi, 2007) and were
significantly correlated with academic achievement (Adeyemo, 2007). The literature review
identified the main components and competences of these two constructs. Of those components
and competences identified, the link to the treatment of chronic pain is clear. Through regulating one’s feelings, effectively problem solving, developing intrapersonal and interpersonal skills, accepting of challenging tasks, and demonstrating persistence in the face of obstacles, those individuals who have struggled with a chronic pain condition will be empowered to more effectively manage their pain.

The four factors that determine the level of an individual’s self-efficacy (Bandura, 1986, 1997) include the following: Personal mastery experiences (or task mastery), vicarious mastery experiences, verbal persuasion, and physiological and affective states. Research on emotional intelligence has shown how those individuals who experience higher emotional intelligence are more likely to experience performance related success, task mastery, than are individuals who experience lower emotional intelligence (Shutte et al., 1998). This applies to those individuals who struggle with chronic pain, and their need to develop healthy coping skills and experience success in task mastery. Chronic pain patients are often characterized as withdrawing from activities that previously brought them pleasure due to fear of additional pain symptoms. By increasing emotional intelligence and self-efficacy, those individuals who struggle with chronic pain will be able to manage their chronic pain condition more effectively and maintain an active lifestyle.

A common theme that surfaced in the emotional intelligence and self-efficacy literature involved the regulation of emotion. Specifically in the positive results of effectively regulating one’s emotions as it relates to generating ideas and solutions in problem solving (Chan, 2004), and leads to greater awareness of their own emotions and expressing their feelings and communicating their needs more effectively (Di Fabio and Palazzechi, 2008). Through becoming more self aware and recognizing their ability in regulating emotions, chronic pain
patients will more effectively be able to manage their chronic pain condition while avoiding catastrophizing.

The approach in the treatment of pain has shifted from a biomedical model to a biopsychosocial model that focuses on the influence of psychosocial factors including self-efficacy beliefs. In recognizing the link between mind and body, counselors can utilize cognitive behavioral and self management approaches in the treatment of chronic pain. Through these interventions and improving self-efficacy, chronic pain patients will be more confident in maintaining a more active lifestyle in spite of their chronic pain condition. There clearly is a lack of research regarding the relation between emotional intelligence and self-efficacy as it relates to chronic pain. This dissertation will look to address this gap in the research on chronic pain.

Need for the Study

Through the literature presented, there is a strong argument for considering the constructs of psychological flexibility, mindfulness and emotional intelligence in determining the daily functioning level and self-efficacy of persons with chronic pain. To date, these variables have not been brought together in one study to address the impact on chronic pain patients. The studies identified in the literature review support the theory that these constructs are important to the successful treatment of chronic pain patients, yet none of these constructs have been used in one study to address the impact on chronic pain patients. This dissertation will look to build upon the current research to advance the knowledge of the specific mechanisms for change within this population.
The literature was consistent in its findings that mindfulness based stress reduction programs were effective in reducing symptoms of pain and improving quality of life for chronic pain patients (Carlson et al., 2003; Morone et al., 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000). The primary weaknesses of previous studies related to the research designs that did not control for other variables that may have influenced the results, nor did the studies address if the construct of mindfulness was specifically linked to reducing the symptoms of pain and improving the quality of life for chronic pain patients. The present dissertation will attempt to advance knowledge of this relation by specifically addressing the construct of mindfulness and daily functioning level of chronic pain patients.

The research identified in the literature review was limited regarding the relation of the constructs of mindfulness and self-efficacy within the chronic pain population. In a study by McCracken and Thompson (2009) it was suggested that as the construct of mindfulness is improved, individuals will be more likely to perform specific tasks while experiencing pain. Within the self-efficacy research (Bandura, 1977) the construct of mindfulness was included within the emphasis on self-awareness and self-regulation as factors influencing the development of self-efficacy beliefs. However, there was only one study that specifically addressed mindfulness and self-efficacy within the chronic pain sample (Cusens et al., 2010). Results of the Cusens et al. (2010) study suggested that mindfulness can assist chronic pain patients in developing greater confidence in their ability to complete certain tasks while experiencing pain (self-efficacy). These findings are interpreted with caution, as the Cusens et al. (2010) study was a pilot study, providing further support for the need for additional research to address the relation between mindfulness and self-efficacy among the chronic pain population. This dissertation will
look to build upon the limited research on the relation between these two constructs to gain a better understanding of the potential agents of change within this population.

The literature review supported the role of psychological flexibility as it relates to overall health of chronic pain patients. The research was consistent in its findings of significant relationships between components of psychological flexibility and measures of emotional, physical, and social functioning of chronic pain patients (McCracken & Velleman, 2009; McCracken & Vowles, 2008). Changes in psychological flexibility were shown to be more reliably and significantly related to treatment improvements compared to other traditional methods in the treatment of chronic pain (McCracken et al., 2007; Vowles & McCracken, 2010). For example, Acceptance and Commitment Therapy (ACT) has been linked with psychological flexibility, as one of the primary goals of ACT is the strengthening of the six overlapping components that make up psychological flexibility that include: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Research has shown that ACT has been effective in the treatment of chronic pain (McCracken et al, 2011; Vowles and McCracken, 2008), yet there is a need to advance the understanding between the relation between the construct of psychological flexibility and daily functioning level among the chronic pain population. This relation has yet to be researched. The present dissertation will further evaluate the relation between these two constructs among individuals being treated for chronic pain in the United States, as the previous research was conducted on samples in the United Kingdom.

The literature review did not identify any studies that specifically addressed the relation between psychological flexibility and self-efficacy. Within the review, a study by Sarda et al. (2009) found acceptance (one of the components of psychological flexibility) to be related to
self-efficacy. Additionally, studies that addressed group therapy effectiveness in building self-efficacy included the following treatment groups: guided imagery (Menzies et al., 2006); cognitive behavioral treatment (Wells-Federman et al., 2002); and ACT (Wicksell et al., 2010).

There is a cognitive component that underlies each of the group treatment modalities included in the studies addressed. Two of the studies, (Menzies et al., 2006; Wells-Federman et al., 2002) indicated that the treatment groups increased individuals’ self-efficacy for managing pain and that such change is related to improvement in outcomes. Interestingly, the Wicksell et al. (2010) study did not find a significant relation between the ACT group and self-efficacy, although the results are interpreted with much caution as the sample size was very small. Ultimately, the literature points to the need for additional research on the relation between the construct of psychological flexibility and self-efficacy within the chronic pain population.

There were no studies found that specifically addressed the relation between emotional intelligence and daily functioning among chronic pain patients. The research was consistent in emotional intelligence has also been positively related to life satisfaction (Austin et al., 2005), rational coping (Saklofske et al., 2006), good health and psychological adjustment (Augusto-Lando and Montes-Berges, 2009; Ciarrochi et al, 2002; Slaski and Cartwright, 2003; Tsaousis and Nikolaou, 2005). Past research has shown how emotional intelligence can be taught, learned, and may be useful in reducing stress and improving health, well being, and performance (Slaski and Cartwright, 2003). Although there has been much debate on the construct of emotional intelligence on defining the construct as a trait as compared to an ability, the research (Martins et al., 2010; Schutte et al., 2007) has shown how trait emotional intelligence has been found to be strongly associated with health. Similarly, when emotional intelligence was measured as an ability, the construct was also found to be strongly associated with health in
general (Augusto-Lando and Montes-Berges, 2009). The research has been clear in linking emotional intelligence with overall health, yet it has not been directly linked to daily functioning level of chronic pain patients. This dissertation will aim to add clarity to the impact of emotional intelligence on the chronic pain population.

Similarly, there were no studies identified in the literature review that specifically addressed the relation between emotional intelligence and self-efficacy. There were links established between the constructs of emotional intelligence and teacher self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008); leader self-efficacy (Magyar et al., 2007); and counselor self-efficacy (Easton et al., 2008). Emotional intelligence and self-efficacy were found to impact the motivation to work among visually impaired students (Eniola and Adebiyi, 2007) and were significantly correlated with academic achievement (Adeyemo, 2007). For example, the research on emotional intelligence has shown how those individuals who experience higher emotional intelligence are more likely to experience performance related success and task mastery, than are individuals who experience lower emotional intelligence (Shutte et al., 1998). Therefore, there is a need to further explore the relation between emotional intelligence and self-efficacy among chronic pain patients as this subject area has not been addressed in the research, to better equip counselors with potential mechanisms for change among their clients who struggle with chronic pain. Through this knowledge, counselors can assist their clients in more effectively regulating their feelings, enhancing problem solving skills, developing intrapersonal and interpersonal skills, accepting of challenging tasks, and demonstrating persistence in the face of obstacles, with the ultimate goal of empowering clients to more effectively manage their chronic pain condition and maintain an active lifestyle.
Further investigation of the constructs of emotional intelligence, psychological flexibility, and mindfulness are warranted to further advance the understanding of chronic pain and to further assist counselors to better assist those individuals who have struggled with chronic pain. Alternative therapies are necessary to address this growing chronic pain population. Research on ACT has been promising in the proven effectiveness among the chronic pain population (McCracken and Gutierrez-Martinez, 2010; McCracken et al., 2011; Vowles and McCracken, 2008). Each of the constructs identified within this study are related to the domains of ACT. The overarching goal of ACT is to foster psychological flexibility so that individuals may pursue goals in meaningful or valued domains (Coyne et al., 2011). These six targets/goals include: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Emotional intelligence is closely linked with the domain of self as context, while mindfulness can be linked to the domain of cognitive defusion (Bond et al., 2006).

Coyne et al. (2011) provided the following definitions of these domains: Acceptance is defined as an alternative to experiential avoidance, and comprises awareness and compassionate acceptance of unpleasant material without any attempts to alter or avoid it; Contact with the present moment is defined as ongoing, non-evaluative awareness of psychological and environmental events as they occur on a moment to moment basis. The goal of present moment awareness is that individuals be in direct, continuous contact with their worlds; Cognitive defusion refers to the process by which an individual comes to understand that his or her thoughts are merely verbal events rather than actual events; Self-as context refers to the awareness that the self is distinct from and more than the sum of total parts. The self is experienced as a constant, unchanging, perspective from which one can observe thoughts,
emotions, and external experiences as they come and go; Values refers to domains of importance to individuals. Values are not goals that can be attained, but are rather guiding principles that are thought to motivate sustained and complex chains of behavior; Committed action refers to a broad grouping of skills that can include skill acquisition, exposure, shaping, goal setting, and so on.

Through ACT, as an example of one treatment approach related to constructs studied in the present research, counselors can assist chronic pain patients in implementing more effective behavior patterns that include acceptance of pain and values based action (psychological flexibility). The research is encouraging for counselors to facilitate the implementation of this approach to those individuals struggling with chronic pain as an avenue to manage their pain in a more effective manner that does not interfere with their daily living. The primary goal of this dissertation is to expand the knowledge of the role that each of these constructs directly plays in the functioning level and self-efficacy of chronic pain patients, and that it would provide clarification as to what mechanisms most impact the possibility of treatment success with this chronic pain population.
Figure 1 Amount of Research on Psychological Flexibility, Mindfulness, and Emotional Intelligence as they Relate to Daily Functioning Level of Chronic Pain Patients

Figure 1, depicts the amount of research (number of studies) conducted on psychological flexibility, mindfulness, and emotional intelligence as they relate to daily functioning level of chronic pain patients. There was a moderate amount of research identified in the literature review that addressed mindfulness and daily functioning level of chronic pain patients. The literature specifically addressed the effectiveness of mindfulness based stress reduction programs on reducing symptoms of pain and improving quality of life for chronic pain patients (Carlson et al., 2003; Morone et al., 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000). However, there are limitations to the research, in that the studies did not directly assess the relation of the construct of mindfulness and daily functioning level of chronic pain patients, nor
did the studies control for other factors of the therapeutic groups that may have contributed to the findings of the studies. There is an established need to specifically explore the construct of mindfulness as it relates to daily functioning level of chronic pain patients to advance the understanding of this hypothesized relation between constructs.

The literature review identified a moderate amount of research between psychological flexibility and daily functioning level of chronic pain patients. Three studies (McCracken and Velleman, 2009; McCracken and Vowles, 2008; McCracken et al., 2007) were consistent in their findings in the relation between the construct of psychological flexibility and emotional, physical, and social functioning of chronic pain patients, however, it is important to note that all of the studies identified in the literature review were conducted in the United Kingdom making it difficult to generalize to other populations. Additionally, the literature review cited studies (McCracken et al., 2011; Vowles and McCracken, 2008) that addressed the effectiveness of Acceptance and Commitment Therapy which is theoretically linked to psychological flexibility. Although the findings of these studies were encouraging in clarifying that Acceptance and Commitment Therapy was effective in the treatment of chronic pain, neither of the studies specifically measured the construct of psychological flexibility to assess if it was related to the daily functioning level of the chronic pain patients. This dissertation will look to expand this research to clarify the relation between the construct of psychological flexibility and daily functioning level of chronic pain patients in the United States.

Overall, there were no studies that specifically addressed the constructs of emotional intelligence and daily functioning level of chronic pain patients, however, studies were identified that addressed research the relation between the construct of emotional intelligence with overall health. Overall, with the exception of the study by Austin et al. (2005), the studies were
consistent in their findings that emotional intelligence was significantly related to physical health. Higher emotional intelligence was linked with greater physical exercise, diet strategy, and frequency of doctor visits (Saklofske et al., 2006). This dissertation looked to expand upon the knowledge of the construct of emotional intelligence as it relates to the overall experiences of health (physical and psychosocial daily functioning level) within the chronic pain population. For those individuals struggling with chronic pain, improving their daily functioning level can be defined by maintaining an active lifestyle that avoids the debilitating effects of their chronic pain condition.

Figure 2  Amount of Research on Psychological Flexibility, Mindfulness, and Emotional Intelligence as they Relate to Self-Efficacy of Chronic Pain Patients
Figure 2, depicts the literature review assessing the amount of research (number of studies) on psychological flexibility, mindfulness, and emotional intelligence as they relate to self-efficacy of chronic pain patients. There were no studies in the literature review that assessed the relation between psychological flexibility and self-efficacy within the chronic pain population. However, there was one study (Sarda et al., 2009) that addressed the relation between acceptance (one of the domains of psychological flexibility) and self-efficacy. Sarda et al.’s (2009) findings were encouraging in that acceptance was found to be significantly related to self-efficacy and supported previous research in addressing the role that psychosocial variables, including self-efficacy, contribute to the physical disability over and above the level or nature of persisting pain. Three studies addressed in the literature review involved the impact of treatment approaches on improving self-efficacy (Menzies et al., 2006; Wells-Federman et al., 2002; Wicksell et al., 2010) that all shared a common underlying cognitive therapeutic component. There is a need to advance the understanding of the role of the construct of psychological flexibility as it relates to self-efficacy of chronic pain patients as this relation has not been established in the literature to date.

There was one study identified in the literature review that specifically addressed mindfulness and self-efficacy within the chronic pain population (Cusens et al., 2010). The findings of this pilot study indicated that the Breathworks mindfulness-based pain management program can assist chronic pain patients in developing greater confidence in their ability to complete certain tasks while experiencing pain (self-efficacy). It is unclear if the improvement in self-efficacy was due to the construct of mindfulness being improved or due to other variables that were not controlled for in this pilot study. Theoretically, the construct of mindfulness was included within the emphasis on self-awareness and self-regulation as factors influencing the
development of self-efficacy beliefs (Bandura, 1977). These two constructs theoretically are linked, yet there has not been any research specifically addressing these two constructs within the chronic pain population.

The literature review did not identify any studies that addressed the relation between emotional intelligence and self-efficacy among the chronic pain population or in regards to overall health. The studies identified in the literature review involved emotional intelligence and occupational self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008; Easton et al., 2008), academic achievement (Adeyemo, 2007), and leader self-efficacy (Magyar et al., 2007). The results of the studies indicated that higher emotional intelligence was related to individuals’ experience of performance related success and task mastery. These constructs have not been addressed to date within the chronic pain population. This dissertation will look to advance the understanding between these two constructs to address whether higher emotional intelligence is related to chronic pain patients’ confidence in their ability to complete tasks while experiencing pain.
Figure 3, depicts the literature review assessing the amount of research on psychological flexibility, mindfulness, and emotional intelligence as they relate to self-efficacy and daily functioning level of chronic pain patients. The overall number of studies identified that addressed the relation between the predictor variables psychological flexibility, mindfulness (observing, describing, acting with awareness, accepting without judgment), and emotional intelligence; and the criterion variables (daily functioning level and self-efficacy) was depicted within Figures 1 and 2. Overall, one can see the limitations in the amount of research that addresses these three variables and their relation to daily functioning level and self-efficacy.
The literature has been consistent in the finding that the relation between pain, distress, and disability is mediated by cognitive variables (Nicholas & Asghari, 2006). Of these cognitive, mediating variables, self-efficacy continues to surface as one of the most important (Sarda et al., 2007). In addressing the relation between self-efficacy and disability, Arnstein (2000) identified that individuals with chronic pain may become disabled, in part, because of low self-efficacy beliefs. Through this low confidence in their ability to complete daily tasks, this self-doubt, often leads to greater disability. Similarly, a strong confidence in one’s own ability may delay or minimize the extent to which a person is disabled by their pain.

It is believed that there is a bidirectional relation between self-efficacy and daily functioning level, as improved self-efficacy can improve the daily functioning level of a chronic pain patient. Similarly, success in completing certain daily tasks can improve the individual’s confidence in their ability to complete certain tasks and maintain a more active lifestyle despite their chronic pain condition. For individuals with chronic pain, confidence in their ability to perform specified activities have been correlated with the subsequent performance of those activities (Asghari & Nicholas, 2007).

In a study by Adegoke and Eukwu (2010), an increase in self-efficacy was significantly related to improvement in physical function of patients with lower back pain, and vice versa. This finding is consistent with the theoretical conceptualizations proposed by Bandura (1977), that there is a link between a person’s beliefs about his/her ability to perform a given behavior or task and his/her subsequent performance of that behavior. Adegoke and Eukwu (2010) were consistent with previous research that found higher levels of self-efficacy were associated with higher levels of functioning in patients with chronic pain. Therefore, counselors can assist chronic pain patients in improving their self-efficacy as a means to improve daily functioning.
level to avoid disability, or similarly, counselors can assist their clients in building upon their current performance in completing tasks as a means to improve their self-efficacy that will assist them in overcoming other functional deficits. This dissertation will look to expand upon the previous research to clarify the overlap or mediating relation between the constructs of self-efficacy and daily functioning level among the chronic pain population.
CHAPTER III

METHODOLOGY

The purpose of this study is to investigate whether mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence predicts better overall daily functioning level and greater self-efficacy in chronic pain patients. Prior research on this topic is limited, and to date, none of these constructs have been used in one study to address the impact on chronic pain patients. Data for this study will be collected from chronic pain patients who are being treated in outpatient pain management centers in a Midwestern state. This chapter provides an overview of the research question, a description of the variables, and an overview of the research design for the study.

Research Questions

1. Are mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence related to the degree of daily functioning among chronic pain patients?

2. Are mindfulness, (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence related to the degree of self-efficacy among chronic pain patients?
Research Hypotheses

The following section includes each of the null hypotheses that were examined in the present study. This section also includes the directional hypotheses of the present study.

Null Hypothesis 1:

There is no statistically significant relation between mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility and emotional intelligence, and daily functioning, among chronic pain patients.

Directional Hypothesis 1:

Higher levels of mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence will be significantly related to higher levels of daily functioning among chronic pain patients.

Null Hypothesis 2:

There is no statistically significant relation between mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility and emotional intelligence, and self-efficacy, among chronic pain patients.

Directional Hypothesis 2:

Higher levels of mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence will be significantly related to higher levels of self-efficacy among chronic pain patients.
Predictor and Criterion Variables

In order to test null hypotheses one and two, self-report ratings of mindfulness, psychological flexibility, and emotional intelligence served as the predictor variables. The predictor variables were measured by the following: Mindfulness scores were measured using four subscales of the Kentucky Inventory of Mindfulness (KIMS) (Baer et al., 2004); psychological flexibility was measured by the total score on the Acceptance and Action Questionnaire (AAQ-II) (Hayes et al., 2004); and emotional intelligence was measured by the total score on the Brief Emotional Intelligence Scale (BEIS-10) (Davies, et al., 2010). The criterion variable for null hypothesis one was self-report ratings of daily functioning, measured by the total score on the Pain Disability Index (Pollard, 1984), which measures daily functioning specifically among chronic pain patients. The criterion variable for null hypothesis two included a self-report ratings of self-efficacy, measured by the total score on the Pain Self-efficacy Questionnaire (Nicholas, 2007), which measures self-efficacy specifically among chronic pain patients.

Participants and Delimitations

Participants in the study were recruited from two pain management centers in a Midwestern State. Participation was from a convenience sample that was representative of standard pain management centers and provided an adequate sample size for the study. The participants included patients who are 18 years or older and who are currently being treated for chronic pain at the participating pain management centers. The sample population in this study was delimited to those individuals who have experienced continual chronic pain for longer than
three months in duration. In order to increase generalizability of results, no other patient-related (i.e., demographic or medical) delimitations were utilized. Due to the study’s purpose being an investigation of the relation between the constructs of psychological flexibility, mindfulness, and emotional intelligence and the daily functioning level and self-efficacy of chronic pain patients, the present study did not delimit participants according to type of chronic pain or type of treatment obtained.

A total of 151 chronic pain patients participated in the current study. Of the 151 chronic pain patients, 3 were eliminated from the study due to a large amount of missing data, yielding a final sample of 148 participants. Prior to data collection, a power analysis was conducted to determine the sample size necessary for this study to achieve a desired power of .80 or above. Using an alpha level set at .05, and a hypothesized medium effect size, in order to achieve adequate power to test null hypotheses one and two using multiple regression analyses, a minimum of 108 participants are needed (Cohen, 1992). Therefore, adequate statistical power was achieved in order to achieve a probability of rejecting the null hypothesis when the null hypothesis is false.

Demographic information was obtained through the participants completing a demographic questionnaire. The demographic questionnaire addressed the following five areas: age, gender, race, duration of chronic pain (in months), and level of education. Table 1 displays the frequency distributions of demographic variables for the participants in the study. Of the 148 participants in the study, the age ranged from 23 to 84 years old (M = 52.8, SD = 14.0). 53 (36%) of the participants were male and 95 (64%) were female. Race of the participants included 1 (1%) Asian, 2 (1%) Native American, 17 (12%) Black/African American, 125 (64%) White/European American, 2 (1%) Multi-racial, and 1 (1%) Other. Number of months with
chronic pain ranged from 3 months to 516 months (M = 76.8, SD = 95.6). The education level of participants ranged from 5 (3%) with no high school diploma, 94 (64%) with high school or/GED, 19 (13%) with an Associate’s Degree, 19 (13%) with a Bachelor’s Degree, and 11 (7%) with a Master’s Degree.

Table 1

Frequency Distributions for Criterion Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Categories</th>
<th>Frequencies</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>52.8</td>
<td>14.0</td>
<td>Male</td>
<td>53</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>95</td>
<td>64%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>Asian</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Native American</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Black/African American</td>
<td>17</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>White/European American</td>
<td>125</td>
<td>84%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Multi-racial</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Duration of Chronic Pain</td>
<td>76.8</td>
<td>95.6</td>
<td>No High School Diploma</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
<td>High School Diploma/GED</td>
<td>94</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Associate’s Degree</td>
<td>19</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>19</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Master’s Degree</td>
<td>11</td>
<td>7%</td>
</tr>
</tbody>
</table>
Instruments

This section reviews the instruments that were used in the study, specifically addressing the development, validity, and reliability of the instruments used. Each participant was provided an Informed Consent Script, a Demographic questionnaire, and the following measures: Kentucky Inventory of Mindfulness; Acceptance and Action Questionnaire-II; Brief Emotional Intelligence Scale; Pain Disability Index; and the Pain Self-efficacy Questionnaire.

Informed Consent Script

An informed consent script was the first research-related information provided to participants (see Appendix A). The purpose of the informed consent script was to provide the participants with written communication regarding their informed, voluntary choice to participate in this research study. The informed consent script describes the title of the study, information about the researcher, the purpose of the study, procedures used, risks, discomforts, and benefits of the study, information regarding the right to refuse to participate or withdraw from the study, efforts that were taken to maintain participant confidentiality and their data, contact information should the participants have any questions, and a statement regarding voluntary agreement to participate in the study.

Demographic Questionnaire

Demographic information about participants was gathered from the completion of a demographic questionnaire developed by the researcher. There was one demographic questionnaire utilized for all participants (see Appendix B). This demographic questionnaire included self-report questions related to the following variables: age, gender, race, duration of chronic pain, and level of education.
The Kentucky Inventory of Mindfulness Skills (KIMS) is a 39 item instrument designed to assess mindfulness in daily life. The KIMS is designed to be understandable to general and clinical populations regardless of meditation experience, and to measure four different components of mindfulness (Baer et al., 2004). The following four subscales are measured by the KIMS: Observing, describing, acting with awareness, and accepting without judgment. In the present study each of the four KIMS subscales will be used to evaluate mindfulness.

Observing is defined as noticing or attending to a variety of stimuli, including internal phenomena, such as bodily sensations, cognitions, emotions, and external phenomena, such as sounds and smells. Describing is defined as labeling or noting of observed phenomena by covertly applying words. Acting with awareness involves engaging fully in one’s current activity with undivided attention or focusing with awareness on one thing at a time. Accepting or allowing without judgment includes being nonjudgmental or non-evaluative about present moment experience (Baer et al., 2004).

KIMS items are rated on a 5 point Likert-type scale ranging from 1 (never or very rarely true) to 5 (almost always or always true). Higher scores equate to self-reported higher levels of functioning of the multifaceted construct of mindfulness that consists of the following skills: Observing, describing, acting with awareness, and accepting without judgment. Baer et al. (2004) indicated that expert raters found the items to be a clear and well-written representation of mindfulness skills. For the 39 items, interrater agreement on assignment of skill categories ranged from 64% to 100%, with a mean of 86%. Internal consistency reliability estimates ranged from .76 to .91 for the four subscales (Baer et al., 2004). The coefficient alpha for this
instrument was .84 (total score), which is considered good internal consistency reliability. Test-retest reliability was conducted using a sample of 49 participants (Baer et al., 2004) who were tested 14 to 17 days apart. Test-retest correlations for the Observe, Describe, Act with Awareness, and Accept Without Judgment scores were .65, .81, .86, and .83, respectively, indicating adequate to good test-retest reliability. Paired sample t-tests showed no significant differences between scores at Time 1 and at Time 2. In the present study, the KIMS was used to measure mindfulness, as it has been determined to be a useful tool for researchers and clinicians working with mindfulness and its applications (see Appendix C).

Acceptance and Action Questionnaire-II

The Acceptance and Action Questionnaire (AAQ-II) is the most widely used measure of experiential avoidance and psychological inflexibility, or psychological flexibility when reverse scored (Hayes et al., 2004). The AAQ-II is a seven item scale developed to assess the same construct as the original AAQ (Bond et al., 2011). It is a shortened measure of psychological acceptance or the willingness to experience unwanted private experiences, such as bodily sensations, emotions, thoughts, memories, in the pursuit of one’s values and goals, also referred to as psychological flexibility (McCracken & Gutierrez-Martinez, 2011). Participants are asked to rate each of the seven statements on a scale from 1 (never true) to 7 (always true). Scoring of the AAQ-II is conducted by summation of the seven item scores, which result in a total score ranging from seven to 49. Higher scores equate to higher levels of psychological inflexibility, and lower scores indicate lower levels of psychological inflexibility.

Results from 2,816 participants across six samples indicate the satisfactory structure, reliability, and validity of AAQ-II (Bond et al., 2011). The AAQ-II scored high to moderate
consistency with a mean alpha coefficient across the six samples of .84, ranging from .78 to .88, and the 3- and 12-month test–retest reliability was .81 and .79, respectively (Bond et al., 2011). The coefficient alpha for the current study was .92 (total score), which is considered very good internal consistency reliability. Factor analyses of the AAQ-II across several samples provided data suggesting a one factor solution, indicating that the measure assesses a single psychological construct of psychological flexibility (Bond et al., 2011). Results indicate that AAQ-II scores concurrently, longitudinally, and incrementally predict a range of outcomes, from mental health to work absence rates that are consistent with its underlying theory. The AAQ-II also demonstrates appropriate discriminant validity. The AAQ-II appears to measure the same concept as the AAQ-I (r=.97) but with better psychometric consistency. In the present study, the AAQ-II will be used to measure psychological flexibility (see Appendix D), as it has been specifically tested with highly disabled chronic pain patients and to this point appears to perform adequately in this group (McCracken & Gutierrez-Martinez, 2011). Based upon the factor analyses that derived a one factor solution for the AAQ-II (Bond et al., 2011), the total score for psychological flexibility was used.

**Brief Emotional Intelligence Scale (BEIS-10)**

The Brief Emotional Intelligence Scale (BEIS-10) is a ten item self report instrument designed to assess the general unique factor of emotional intelligence using a 5 point rating scale that ranges from 1 = *strongly disagree* to 5 = *strongly agree* (Davies et al., 2010). The BEIS-10 (see Appendix E) is based upon the Schutte Self-Report Emotional Intelligence Scale (SSREI) which is a 33-item self-report instrument designed to measure the general construct of emotional intelligence using a 5-point rating scale that ranges from 1 = *strongly disagree* to 5 = *strongly agree* (Schutte et al., 1998). Originally Schutte et al. (1998) used a set of 62 items derived from
the model of Salovey and Mayer (1990). Exploratory factor analysis on data from 346 participants yielded a four factor model. By removing 29 items and reanalyzing the data, an adequate one factor solution was produced. Schutte et al. report that the internal consistency of the full measure was .87 to .90 and its test–retest reliability was .78 for the unidimensional scale. Although the data support the one-factor structure of this scale, Schutte et al. assert that this factor is composed of all three categories of Salovey and Mayer’s (1990) model of Emotional Intelligence: (a) appraisal and expression of emotions, (b) regulation of emotions, and (c) use of emotions in solving problems. The convergent validity of the SSREI was .63, .52, and .68, respectively, when correlated with the three subscales of the Trait Meta Mood Scale (i.e., Attention to Feelings, Clarity of Feelings, and Mood Repair). Discriminant validity was established by statistically insignificant relationship with Scholastic Aptitude Test scores (-.06), neuroticism (-.28), extraversion (.28), agreeableness (.26), and conscientiousness (.21).

Davies et al. (2010) sought to develop a brief instrument of emotional intelligence to be used in situations where brevity was important. The SSREI was assessed for content validity by three experts, who had all published research on emotional intelligence in peer referenced academic journals (Davies et al., 2010). The panel retained items for empirical analysis that satisfied the following criteria: affective content (the item had to contain a reference to emotion, feelings, or mood) and the item was consistent with the theoretical relevance in relation to Salovey and Mayer’s (1990) model. The panel determined that 17 of the items were not suitable for further analysis. A theoretically derived five factor solution (Appraisal of own emotions; appraisal of other’s emotions; regulation of own emotions; regulation of other’s emotions; and utilization of emotion) and a unidimensional model were subjected to confirmatory factor analysis. The results supported the multidimensional solution (comparative fix index = .91; non-
normed fit index = .89; and root mean square error of approximation = .06) (Davies et al., 2010). In order to produce a more parsimonious measure, the five factor model was respecified by retaining the two items with the most salient factor loading on their hypothesized factor. Confirmatory factor analysis on the ten item measure (BEIS-10) suggested an improved fit to the data (CFI=.97; NNFI = .94; and RMSEA = .06). Test-retest reliability of the measure over a two week period, ranged from 89.2% to 96.4% (Davies et al., 2010). The coefficient alpha for the current study was .84 (total score), which is considered good internal consistency reliability. In the present study, the total score of the BEIS-10 was used to measure the multidimensional construct of emotional intelligence based upon Davies et al.’s (2010) conclusion that the BEIS-10 is a valid and reliable measure that has particular utility in situations where brevity is important.

**Pain Disability Index**

The Pain Disability Index (PDI; Pollard, 1984) is a 7-item self-report inventory designed to assess the extent to which chronic pain interferes with physical and psychosocial functioning across seven broad domains of life activities: family/home responsibility, recreation, social activity, occupation, sexual behavior, self-care, and life support activity (see Appendix F). The seven items of the PDI are each rated from 0 (no disability) to 10 (total disability). The scores of the seven items are summed to generate a global disability total score ranging from 0 to 70 with greater scores reflecting a greater disability. Pollard’s definition of pain disability acknowledges that disability due to chronic pain arises from the interaction of psychosocial and pain-related factors and is conceptually distinct from physical impairment, which refers to a person’s incapacitation due to a medical condition with clear anatomic evidence (Tait et al., 1987).
Research has confirmed the validity of the PDI (Pollard, 1984; Tait et al., 1987). Studies have also demonstrated support for the measure’s construct validity (Tait et al., 1990). Patients with high PDI scores reported more psychological distress \( (p < 0.001) \), more severe pain characteristics \( (p < 0.001) \), and more restriction of activities \( (p < 0.001) \) than patients with low PDI scores (Tait et al., 1990). Originally Tait et al. (1987) suggested the measure may have a two-factor solution, with the first factor representing voluntary activities in the domains of family/home responsibility, recreation, social activity, occupation, and sexual behavior and the second factor representing essential activities of daily living in the domains of self-care and life support activity. However, subsequent studies have found a single-factor solution to be the most appropriate means of using the instrument (Tait et al., 1990). Therefore, one total score was utilized in the present study as a measure of daily functioning.

The PDI has adequate internal consistency reliability, with an alpha coefficient of .87 (Tait et al., 1990) in chronic pain samples, indicating high internal consistency, especially for a brief inventory. The coefficient alpha for the current study was .90 (total score), which is considered very good internal consistency reliability. Test-retest reliability for the PDI over a 2-month time period was significant. In the present study, the PDI was used to measure the construct of daily functioning level of chronic pain patients, as it has been determined to be a reliable and valid measure that assessed the extent to which chronic pain interferes with physical and psychosocial functioning.

*Pain Self-Efficacy Questionnaire*

The Pain Self-Efficacy Questionnaire (PSEQ) is a 10 item questionnaire addressing how confident the individual is to complete certain tasks or activities at the present time, despite their pain (see Appendix G). Each of the 10 items is scored on a scale of 0 (not at all confident) to 6
The 10 items were selected to reflect a wide variety of classes of activities and tasks, with indicative examples, commonly reported as problematic by patients with chronic pain (Nicholas, 2007). A total score is calculated by summing the scores for each of the 10 items, yielding a maximum possible score of 60. Higher scores reflect stronger self-efficacy beliefs.

The accumulated evidence from a number of published studies and a confirmatory analysis with a large cohort of heterogeneous chronic pain patients attending a pain management program provide support for the PSEQ’s original psychometric properties developed with a sample of chronic low back pain patients (Nicholas, 2001). Internal consistency reliability, Cronbach’s alpha coefficient, was calculated as 0.92. This value is very high and indicates the instrument has excellent internal consistency (Nicholas, 2007). Asghari and Nicholas (2001) established that test-retest correlation from baseline to 3 months was .73, indicating that the PSEQ has a high degree of test-retest reliability. The coefficient alpha for the current study was .94 (total score), which is considered very good internal consistency reliability. A principal components factor analysis with orthogonal rotation was conducted in order to investigate the factorial structure of the scale. A one-factor solution resulted from the imposition of the eigen-value-greater-than-one criterion, accounting for 58.6% of the total variance. All items had factor loadings above 0.64 (Nicholas, 2007). The PSEQ’s validity was reflected in high correlations with measures of pain-related disability and different coping strategies. The PSEQ’s validity was also supported (Gibson and Strong, 1996) by a high correlation with another, more activity-specific measure of self-efficacy beliefs (Self-Efficacy Scale). The Pain Self-efficacy Questionnaire has been used in a number of different clinical settings and in different countries (Nicholas, 2007). In the present study, the PSEQ was used to measure the construct of self-
efficacy among chronic pain patients, as it has been determined to be a reliable and valid measure that assesses individual’s confidence to complete certain tasks despite their pain condition.

Procedures

The principle investigator secured approval for the research design through the Institutional Review Board at the University of Akron. Next, approval for the study was sought from each of the separate pain management centers identified in a Midwestern State. In order to seek approval for research participation from pain management centers the principle investigator met with the director and/or administrator at each pain management center to review the study and the data collection procedures. For those sites that agreed to participate, the site administrator was responsible for distributing the research packets to each chronic pain patient seeking treatment at the pain management center over a specified period of time (e.g., two weeks). The packet included an informed consent script, demographic questionnaire, and five instruments measuring the three predictor variables and two criterion variables.

The informed consent script contained the name and contact information of the principle investigator, along with a brief description of the purpose of the study. The informed consent script also included the potential risks and benefits associated with participating in the study. Additionally, the informed consent script outlined how confidentiality would be maintained and how participation was voluntary. Participants were not asked to sign a formal informed consent form in order to maintain confidentiality. After receiving the informed consent script, those participants who volunteered to complete the study protocol completed the following self-report measures in hard copy (i.e., paper and pencil) format: Demographic Questionnaire; Kentucky Inventory of Mindfulness; Acceptance and Action Questionnaire-II; Brief Emotional Intelligence
Scale; Pain Disability Index; and Pain Self-Efficacy Questionnaire. Participants received and completed these instruments at the pain management centers in a waiting area prior to or following their scheduled medical appointments.

The principle investigator collected all completed research packets from each pain management center in person after the specified distribution period had elapsed (e.g., two weeks). The principle investigator maintained the completed research packets in a locked file cabinet and entered the data into Statistical Package for the Social Sciences (SPSS). Anonymity and confidentiality were protected by securing data collected and concealing the identity of the participants in all documents utilized in the study. No identifying information was be included in research packets in order to protect the confidentiality of the respondents.

Data Analyses and Research Design

A descriptive research design was used for the present study. The researcher utilized the Statistical Package for Social Sciences (SPSS) software for data entry and statistical analyses. First, descriptive statistics were obtained for all demographic, predictor, and criterion variables. Descriptive statistics included means, standard deviations, and ranges for all variables included in the study. In order to test null hypotheses one and two, multiple regression analyses was used. Multiple regression is a well established statistical method for studying the separate and collective contributions of one or more predictor variables to the variance of a criterion variable (Wampold & Freund, 1987). In essence, multiple regression can be used to describe how multiple predictor variables are related to a single “dependent” (criterion) variable (Heppner, Wampold, & Kivlighan, 2008). For the purposes of this current study, null hypothesis one has three predictor variables (mindfulness, psychological flexibility, and emotional intelligence) and one criterion variable (daily functioning level). Similarly, null hypothesis two has three
predictor variables (mindfulness, psychological flexibility, and emotional intelligence) and one
criterion variable (self-efficacy) leading to the need for multiple regression to analyze the data
for this study.

The relation between a “dependent” variable and a set of multiple “independent”
variables is expressed as the multiple correlation coefficient R, which is a measure of how well
the predictor scores correspond to the actual scores of criterion variables (Heppner, Wampold, &
Kivlighan, 2008). There are three basic methods for entering predictor variables in regression
equations: simultaneous, stepwise, and hierarchical. For the purposes of this study, hierarchical
regression will be used, whereby the order of entry of the predictor variables are based on a
rationale. Specifically, there were significant differences in daily functioning level and self-
efficacy according to level of education and gender. Therefore, level of education and gender
were controlled for in the hierarchical regression analysis prior to entering the predictor variables
for each hypothesis.

Summary of Methodology

The purpose of this study was to examine whether mindfulness (specifically observing,
describing, acting with awareness, & accepting without judgment), psychological flexibility, and
emotional intelligence are significantly related to better overall daily functioning level and
greater self-efficacy in chronic pain patients. Participants in this study were recruited from pain
management centers in a Midwestern State who have experienced continual chronic pain for
longer than three months in duration. Participants received an informed consent script and
completed a demographic questionnaire and the following measures: Kentucky Inventory of
Mindfulness (Baer et al, 2004); Acceptance and Action Questionnaire-II (Hayes et al, 2004);
Brief Emotional Intelligence Scale (Davies et al., 2010); Pain Disability Index (Pollard, 1984);
and the Pain Self-efficacy Questionnaire (Nicholas, 2001). Multiple regression analyses were conducted to statistically examine whether there was a significant relationship between mindfulness, psychological flexibility, and emotional intelligence and daily functioning among chronic pain patients. The multiple regression analysis also examined whether there was a significant relationship between mindfulness (specifically observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, and emotional intelligence and self-efficacy among chronic pain patients.
CHAPTER IV
RESULTS

Results of the research are presented in this Chapter. For the purposes of clarity and organization, the results have been separated into three major sections: pre-analysis data screening, descriptive statistics, and inferential statistics. The pre-analysis data screening section tested for missing data. The second part of this chapter presents the descriptive statistics of the measures used in the study. The third part of the chapter reports the inferential statistics that were utilized to test the research hypotheses. The chapter concludes with a summary of the results.

Pre-Analysis Data Screening

Before descriptive statistics generated, it was found that some participants had missing data which were analyzed. In reviewing all data of the 151 participants, it was determined that less than 5% of the data were missing. Missing data were random in nature. However, three participants were found to be missing a large amount of data and were subsequently eliminated from the study leaving 148 total participants. For other subjects who had missing data, the missing values (less than 1% of data on average) were substituted by estimating the overall item means using the available data. This method for replacing the missing values is deemed appropriate when the missing data are few and random in nature (Mertler & Vannatta, 2005).
Descriptive Statistics

KIMS items are rated on a 5 point Likert-type scale ranging from 1 (never or very rarely true) to 5 (almost always or always true). Higher scores equate to self-reported higher levels of functioning of the multifaceted construct of mindfulness that consists of the following skills: Observing, describing, acting with awareness, and accepting without judgment. The KIMS full scale has a total mean score of 130.0 (overall item mean of 3.3). The Describing subscale had the highest mean score 3.5, followed by the Accepting Without Judgment subscale which had a mean score of 3.4. The Observing subscale had a mean score of 3.3. The lowest mean score was for Acting with Awareness, which was 3.1.

The ten items that make up the AAQ-II are rated on a scale from 1 (never true) to 7 (always true). Scoring of the AAQ-II is conducted by summation of the 10 item scores, which result in a total score ranging from 10 to 70. Higher scores equate to higher levels of psychological inflexibility, and lower scores indicate lower levels of psychological inflexibility. The mean score for the AAQ-II was 21.7, indicating an overall lower level of psychological inflexibility among the participants. The standard deviation was 10.2 and the scores ranged from 6.0 to 49.0.

The Brief Emotional Intelligence Scale (BEIS-10) utilizes a 5 point rating scale that ranges from 1 = strongly disagree to 5 = strongly agree, resulting in a total score ranging from 10 to 50. Higher scores indicate a greater level of emotional intelligence. The mean score for BEIS-10 was 37.1.

The seven items of the Pain Disability Index PDI are each rated from 0 (no disability) to 10 (total disability). The scores of the seven items are summed to generate a global disability
total score ranging from 0 to 70 with greater scores reflecting a greater disability. The mean score for the PDI was 43.0 with a range of scores from 0 to 67. The Pain Self-Efficacy Questionnaire (PSEQ) 10 items are scored on a scale of 0 (not at all confident) to 6 (completely confident). A total score is calculated by summing the scores for each of the 10 items, yielding a minimum score of 0 and a maximum possible score of 60. Higher scores reflect stronger self-efficacy beliefs. The mean score for the PSEQ was 25.4.

Table 2 provides a summary of the descriptive statistics utilized to analyze the data in the present study.

Table 2
Frequency Distributions for Predictor and Criterion Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Inventory of Mindfulness Scale</td>
<td>130.0</td>
<td>18.2</td>
</tr>
<tr>
<td>Observing subscale</td>
<td>40.1</td>
<td>8.4</td>
</tr>
<tr>
<td>Describing subscale</td>
<td>27.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Acting with Awareness subscale</td>
<td>31.3</td>
<td>6.4</td>
</tr>
<tr>
<td>Accepting without judgment subscale</td>
<td>30.3</td>
<td>8.2</td>
</tr>
<tr>
<td>Acceptance and Action Questionnaire-II</td>
<td>21.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Brief Emotional Intelligence Scale-10</td>
<td>37.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Pain Disability Index</td>
<td>43</td>
<td>14.8</td>
</tr>
<tr>
<td>Pain Self Efficacy Questionnaire</td>
<td>25.4</td>
<td>14.0</td>
</tr>
</tbody>
</table>
Inferential Statistics

This section reviews the inferential statistical results as well as the findings in table form. The first phase of the data analysis procedure for inferential statistics involved generating a Pearson correlation coefficient analysis in order to determine whether the criterion and predictor variables were associated with one another. Secondly, all of the predictor variables that were significantly correlated with the criterion variable were included as variables in the multiple regression analysis. In order to ensure that the predictor variables predicted the criterion variable accurately, it was tested whether the criterion variable was significantly different depending upon demographic variables (age, gender, race, duration of chronic pain and education level). Lastly, if the criterion variable was found to be significantly different depending upon certain demographic factors, those demographic variables were controlled for through a hierarchical regression model (i.e., the primary inferential statistics used to test the research hypotheses).

Results related to Hypothesis 1:

A Pearson correlation coefficient analysis was conducted to determine whether the criterion variable (daily functioning level, measured using the Pain Disability Index) was associated with the predictor variables that included the Kentucky Inventory of Mindfulness subscales (Observing, Describing, Acting with Awareness, and Accepting Without Judgment), the Brief Emotional Intelligence Scale, and the Acceptance and Action Questionnaire. Table 3 displays the bivariate correlational results. An alpha level of .05 was chosen to determine the significance of statistical results.
Table 3
Pearson Correlation Coefficient for Hypothesis 1

<table>
<thead>
<tr>
<th>Criterion Variables</th>
<th>Predictor Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KIMS</td>
</tr>
<tr>
<td></td>
<td>Observing</td>
</tr>
<tr>
<td>PDI</td>
<td>-.01</td>
</tr>
</tbody>
</table>

*p<.05  
**p<.01

KIMS: Kentucky Inventory of Mindfulness Scale
AAQ-II: Acceptance and Action Questionnaire II
BEIS: Brief Emotional Intelligence Scale-10
PDI: Pain Disability Index

The Kentucky Inventory of Mindfulness Describing Subscale was significantly related to the Pain Disability Index ($r = .16$, $p<.05$). The Kentucky Inventory of Mindfulness Accepting Without Judgment subscale was significantly related to the Pain Disability Index ($r = -.176$, $p<.05$). The Acceptance and Action Questionnaire was significantly related to the Pain Disability Index ($r = .32$, $p<.01$). The Brief Emotional Intelligence Scale is significantly related to the Pain Disability Index ($r = -.30$, $p<.01$). The Observing subscale and Acting with Awareness subscale of the KIMS were not found to be statistically significant with the Pain Disability Index.

The next step in the inferential statistics involved testing whether the criterion variables were significantly different depending upon participants’ demographic variables (age, gender,
race, duration of chronic pain, and education level). The first demographic variable that was analyzed was level of education, tested using MANOVA. Level of education was chosen as a demographic variable to further address the previous research (Sarda et al., 2009) that found a significant relation between education level and disability (among the Brazilian sample yet not the Australian sample in the study). The Box’s Test ($p = .107$) was not significant and indicates that homogeneity of variance-covariance was not problematic, and Levene’s Test of Equality of Variances indicated that there was equality of variances among the variables. Therefore, Mertler and Vannatta (2005) recommended the Wilks Lamda be conducted to interpret the MANOVA results. Factor interaction was then examined and revealed that there were differences according to education level ($\Lambda = .74$, $F(20, 461.96)=2.17$, $p < .01$, $\eta^2 = .07$). Specifically, it was found that differences in the Pain Disability Index scores differed according to participants’ education level ($F=4, 143) = 5.59$, $p<.001$, partial $\eta^2 = .14$. Therefore, level of education was controlled for in the hierarchical regression analysis.

Table 4
Means and Standard Deviations for Pain Disability Index and Level of Education

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper Bound</td>
</tr>
<tr>
<td>No High School Diploma</td>
<td>57.000</td>
<td>6.236</td>
<td>44.673</td>
</tr>
<tr>
<td>High School Diploma/GED</td>
<td>44.787</td>
<td>1.438</td>
<td>41.944</td>
</tr>
<tr>
<td>Associate’s Degree</td>
<td>44.105</td>
<td>3.199</td>
<td>37.782</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>38.136</td>
<td>3.199</td>
<td>31.992</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>27.545</td>
<td>4.204</td>
<td>19.235</td>
</tr>
</tbody>
</table>

126
The second demographic variable that was analyzed was gender, tested using MANOVA. Gender was chosen as a demographic variable to build upon previous research that has been inconsistent to date. Denison et al. (2007) found no significant differences in disability or self-esteem according to gender, while Osteras et al., 2006 found that females scored higher than males on pain intensity. The Box’s Test (p = .10) was not significant and indicates that homogeneity of variance-covariance was not problematic, and Levene’s Test of Equality of Variances indicated that there was equality of variances among the variables. Therefore, the Wilks Lambda was conducted to interpret the results. Factor interaction was then examined and revealed that there were significant differences in pain reported according to gender (Λ= .92, F(5, 142.000)=2.39, p = .041, η²=.08). Specifically, it was found that the differences in Pain Disability Index scores and gender were significant (F=1, 142) = 7.49, p<.01, partial η² = .05. Therefore, gender was controlled for in the hierarchical regression analysis.

Table 5
Means and Standard Deviations for Pain Disability Index and Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>47.36</td>
<td>13.90</td>
</tr>
<tr>
<td>Female</td>
<td>40.57</td>
<td>14.78</td>
</tr>
</tbody>
</table>

The third demographic variable that was analyzed was race, tested using MANOVA. Main results revealed that there were no differences in pain reported according to race (Λ= .846, F(25, 514.149)=.95, p = .54, η²=.03). Therefore, race was not controlled for in the hierarchical regression analysis.
The fourth demographic variable that was analyzed was duration of chronic pain, tested using multiple regression analysis. Regression results indicated that duration of chronic pain was not significantly correlated to any of the variables used in the study, $R^2=.04$, $R^2_{adj}=.01$, $F(5, 142)=1.32$, $p=.26$. Therefore, duration of chronic pain was not controlled for in the hierarchical regression analysis.

The fifth demographic variable that was analyzed was age of participant, tested using multiple regression analysis. Regression results indicated that age was not significantly correlated to any of the variables used in the study, $R^2=.02$, $R^2_{adj}=-.01$, $F(5, 142)=.62$, $p=.69$. Therefore, age was not controlled for in the hierarchical regression analysis.

In order to investigate the amount of variance that certain predictor variables contributed to the daily functioning level of chronic pain patients, a hierarchical regression analysis was conducted, controlling for the two demographic variables (level of education and gender) related to reported chronic pain during step one of the hierarchical regression analysis. All predictor variables that were previously found to be statistically significantly correlated with the criterion variable (KIMS Describing subscale, KIMS Accepting Without Judgment subscale, Acceptance and Action Questionnaire-II, and the Brief Emotional Intelligence Scale) entered in step two of the hierarchical regression analysis. Results indicated that after controlling for demographic factors (level of education and gender), mindfulness related constructs (KIMS Describing subscale, KIMS Accepting Without Judgment subscale, Acceptance and Action Questionnaire-II, and the Brief Emotional Intelligence Scale) predicted 20.5% of variance in the daily functioning scores, $R^2=.09$, $R^2_{adj}=.21$, $F(4, 141)=3.94$, $p<.01$. Additionally, 8.5% of variance in the daily functioning scores was accounted for by the predictor variables more than the demographic factors alone. A summary of regression coefficients is presented in Table 6 and indicates that the
Acceptance and Action Questionnaire II predicted the Pain Disability Index above and beyond the demographic factors. The results indicated that the AAQ-II was positively related to the PDI.

Tolerance was examined for multicollinearity, and was found not to be problematic in the regression analysis because all tolerance levels were greater than .1 for all of the predictor variables (Mertler & Vannatta, 2005).

Table 6
Summary of Hierarchical Multiple Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>42.054</td>
<td>.201</td>
<td>10.748</td>
<td>.000</td>
</tr>
<tr>
<td>Level of Education</td>
<td>-4.725</td>
<td>-.323</td>
<td>-4.216</td>
<td>.000</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>5.246</td>
<td>.171</td>
<td>2.291</td>
<td>.023</td>
</tr>
<tr>
<td>Level of Education</td>
<td>-3.905</td>
<td>-.267</td>
<td>-3.356</td>
<td>.001</td>
</tr>
<tr>
<td>KIMS Describing subscale</td>
<td>.253</td>
<td>.110</td>
<td>1.200</td>
<td>.23</td>
</tr>
<tr>
<td>KIMS Accepting Without Judgment subscale</td>
<td>.018</td>
<td>.010</td>
<td>.115</td>
<td>.91</td>
</tr>
<tr>
<td>Brief Emotional Intelligence Scale-10</td>
<td>-.364</td>
<td>-.173</td>
<td>-1.915</td>
<td>.06</td>
</tr>
<tr>
<td>Acceptance &amp; Action Questionnaire</td>
<td>.353</td>
<td>.244</td>
<td>2.723</td>
<td>.007*</td>
</tr>
</tbody>
</table>

*p<.05
Results related to Hypothesis 2:

A Pearson correlation coefficient analysis was conducted to determine whether the criterion variable (Self-Efficacy) was associated with the predictor variables that included the Kentucky Inventory of Mindfulness Subscales (Observing, Describing, Acting with Awareness, and Accepting Without Judgment), the Brief Emotional Intelligence Scale, and the Acceptance and Action Questionnaire. Table 7 displays the bivariate correlational results. An alpha level of .05 was chosen to determine the significance of statistical results.

Table 7
Pearson Correlation Coefficients for Hypothesis 2

<table>
<thead>
<tr>
<th>Criterion Variables</th>
<th>Predictor Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KIMS Observing</td>
</tr>
<tr>
<td></td>
<td>KIMS Describing</td>
</tr>
<tr>
<td></td>
<td>KIMS Acting with Awareness</td>
</tr>
<tr>
<td></td>
<td>KIMS Accepting Without Judgment</td>
</tr>
<tr>
<td></td>
<td>AAQ-II</td>
</tr>
<tr>
<td></td>
<td>BEIS-10</td>
</tr>
<tr>
<td>PSEQ</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td>.34**</td>
</tr>
<tr>
<td></td>
<td>.23**</td>
</tr>
<tr>
<td></td>
<td>.29**</td>
</tr>
<tr>
<td></td>
<td>-.42**</td>
</tr>
<tr>
<td></td>
<td>.44**</td>
</tr>
</tbody>
</table>

*p<.05
**p<.01

KIMS: Kentucky Inventory of Mindfulness Scale
AAQ-II: Acceptance and Action Questionnaire II
EIS: Emotional Intelligence Scale
PSEQ: Pain Self-Efficacy Questionnaire

The Kentucky Inventory of Mindfulness Describing Subscale was significantly related to the Pain Self-Efficacy Questionnaire (r = .34, p<.01). The Kentucky Inventory of Mindfulness Acting with Awareness subscale was significantly related to the Pain Self-Efficacy.
Questionnaire (r = .23, p<.01). The Kentucky Inventory of Mindfulness Accepting Without Judgment subscale was significantly related to the Pain Self-Efficacy Questionnaire (r = .29, p<.01). The Acceptance and Action Questionnaire was significantly related to the Pain Self-Efficacy Questionnaire (r = -.42, p<.01). The Brief Emotional Intelligence Scale was significantly related to the Pain Self-Efficacy Questionnaire (r = .44, p<.01). The Observing subscale of the KIMS was not found to be statistically significant with the Pain Self-Efficacy Questionnaire.

The next step in the inferential statistics involved testing whether the criterion variables were significantly different depending upon participants’ demographic variables (age, gender, race, duration of chronic pain, and education level). Level of education was chosen as a demographic variable to further address the previous research (Sarda et al., 2009) that addressed education level as one of the mediating variables in examining the relation between self-efficacy and depression to disability and work status in chronic pain patients. MANOVA was used for this analysis. The first demographic variable that was analyzed was level of education. The Box’s Test (p = .11) was not significant and indicates that homogeneity of variance-covariance is fulfilled, and Levene’s Test of Equality of Variances indicated that there was equality of variances among the variables. Therefore, Mertler and Vannatta (2005) recommended the Wilks Lamda be conducted to interpret the MANOVA results. Factor interaction was then examined and revealed that there were differences according to education level (Λ=.74, F(20, 461.961)=2.18, p < .01, η²=.07). Specifically, it was found that the differences in Pain Self-Efficacy scores and were dependent on education level (F=4, 143) = 5.71, p<.001, partial η² = .14. Therefore, level of education was controlled for in the hierarchical regression analysis.
Table 8
Means and Standard Deviations for Pain Self-Efficacy Questionnaire and Level of Education

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>No High School Diploma</td>
<td>10.80</td>
<td>5.880</td>
<td>.822</td>
<td>-.222</td>
<td>22.422</td>
</tr>
<tr>
<td>High School Diploma/GED</td>
<td>23.68</td>
<td>1.356</td>
<td>21.000</td>
<td>26.361</td>
<td></td>
</tr>
<tr>
<td>Associate’s Degree</td>
<td>25.26</td>
<td>3.016</td>
<td>19.301</td>
<td>31.225</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>29.68</td>
<td>3.016</td>
<td>23.722</td>
<td>35.646</td>
<td></td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>39.72</td>
<td>3.964</td>
<td>31.892</td>
<td>47.563</td>
<td></td>
</tr>
</tbody>
</table>

The second demographic variable that was analyzed was gender. Gender was chosen as a demographic variable to build upon previous research (Denison et al., 2007) that found no significant differences in disability or self-esteem according to gender. MANOVA was used for this analysis. The Box’s Test (p = .10) was not significant and indicates that homogeneity of variance-covariance is fulfilled, and Levene’s Test of Equality of Variances indicated that there was equality of variances among the variables. Therefore, the Wilks Lamda was conducted to interpret the MANOVA results. Factor interaction was then examined and revealed that there were differences according to gender (Λ = .92, F(5, 142.000)=2.39, p = .04, η²= .08). Specifically, it was found that the differences in Pain Self Efficacy scores and gender were significant (F=1, 146) = 10.07, p<.01, partial η² = .07. Therefore, gender was controlled for in the hierarchical regression analysis.
Table 9
Means and Standard Deviations for Pain Self-Efficacy Questionnaire and Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20.68</td>
<td>47.36</td>
</tr>
<tr>
<td>Female</td>
<td>28.05</td>
<td>13.45</td>
</tr>
</tbody>
</table>

The third demographic variable that was analyzed was race, tested using MANOVA. Main results showed that there were no differences in self-efficacy according to race ($\Lambda = .85$, $F(25, 514.149)=.95$, $p = .54$, $\eta^2 = .03$). Therefore, race was not controlled for in the hierarchical regression analysis.

The fourth demographic variable that was analyzed was duration of chronic pain, tested using a multiple regression analysis. Regression results indicate that duration of chronic pain was not significantly correlated to any of the variables used in the study, $R^2=.04$, $R^2_{adj}=.01$, $F(5, 142)=1.32$, $p=.26$. Therefore, duration of chronic pain was not controlled for in the hierarchical regression analysis.

The fifth demographic variable that was analyzed was age of participants, tested using a multiple regression analysis. Regression results indicate that age was not significantly correlated to any of the variables used in the study, $R^2=.02$, $R^2_{adj}=.13$, $F(5, 142)=.62$, $p=.69$. Therefore, age was not controlled for in the hierarchical regression analysis.

In order to investigate the amount of variance that certain predictor variables contributed to the self-efficacy of chronic pain patients, a hierarchical regression was conducted. In the first step of the analysis the two demographic variables (level of education and gender) were inputted as control variables. In the second step all predictor variables that were previously found to be
statistically significantly correlated with the criterion variable (KIMS Describing subscale, KIMS Awareness subscale, KIMS Accepting Without Judgment subscale, Acceptance and Action Questionnaire-II, and Brief Emotional Intelligence Scale) were inputted. Results indicated that after controlling for demographic factors (level of education and gender), mindfulness related constructs (KIMS Describing subscale, KIMS Accepting Without Judgment subscale, Acceptance and Action Questionnaire-II, and the Brief Emotional Intelligence Scale) predicted 32.3% of variance in self-efficacy scores, $R^2=.19$, $R^2_{adj}=.32$, $F(5, 140)=8.06$, $p<.001$. Additionally, 18.6% of the variance in the self-efficacy scores was accounted for by the predictor variables more than the demographic factors alone. A summary of regression coefficients is presented in Table 10 and indicates that the Acceptance and Action Questionnaire II predicted the Pain Self-Efficacy Questionnaire above and beyond the demographic factors. Results indicated that the AAQ-II was negatively related to the PSEQ. The BEIS was found to be significantly positively related to the PSEQ. Lastly, tolerance was examined for multicollinearity and deemed not to be problematic because all tolerance levels were greater than .1 for all of the predictor variables.
Table 10
Summary of Hierarchical Multiple Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Level of Education</td>
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<td>4.290</td>
<td>.000</td>
</tr>
<tr>
<td>Step 2</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-5.238</td>
<td>-.180</td>
<td>-2.610</td>
<td>.010</td>
</tr>
<tr>
<td>Level of Education</td>
<td>2.653</td>
<td>.192</td>
<td>2.531</td>
<td>.012</td>
</tr>
<tr>
<td>KIMS Describing subscale</td>
<td>.032</td>
<td>.015</td>
<td>.170</td>
<td>.87</td>
</tr>
<tr>
<td>KIMS Awareness subscale</td>
<td>.070</td>
<td>.032</td>
<td>.387</td>
<td>.70</td>
</tr>
<tr>
<td>KIMS Accepting Without Judgment subscale</td>
<td>.100</td>
<td>.058</td>
<td>.714</td>
<td>.48</td>
</tr>
<tr>
<td>Brief Emotional Intelligence Scale-10</td>
<td>.497</td>
<td>.251</td>
<td>2.968</td>
<td>.004*</td>
</tr>
<tr>
<td>Acceptance &amp; Action Questionnaire</td>
<td>-.333</td>
<td>-.244</td>
<td>-2.827</td>
<td>.005*</td>
</tr>
</tbody>
</table>

*p<.05

Summary of Results

Research hypothesis number one stated that mindfulness (specifically observing, describing, acting with awareness, and accepting without judgment), psychological flexibility,
and emotional intelligence are significantly related to the degree of daily functioning among chronic pain patients. The results showed that psychological flexibility was significantly related to the daily functioning of chronic pain patients. Specifically, the more psychologically inflexible an individual was, the greater their disability related to daily functioning (above and beyond the influence of demographic factors).

Research hypothesis number two stated that mindfulness (specifically observing, describing, acting with awareness, and accepting without judgment), psychological flexibility, and emotional intelligence are significantly related to the degree of self-efficacy among chronic pain patients. The results showed that emotional intelligence was significantly related to the self-efficacy of chronic pain patients. Specifically, the more emotional intelligence chronic pain patients reported, the more self-efficacy they reported (above and beyond the influence of demographic factors). Additionally, psychological flexibility was found to be significantly related to self-efficacy. Specifically, the more psychologically inflexible an individual was, the lower their self-efficacy (above and beyond the influence of demographic factors).
CHAPTER V

DISCUSSION

This chapter discusses the results of the study. This chapter is organized into four sections: descriptive summary and interpretation of statistical results, implications of results for counseling practice, implications of results applied to counselor education/supervision, and limitations of study and recommendations for future research.

Descriptive Summary and Interpretation of Statistical Results

The purpose of this exploratory study was to investigate the predictors of daily functional outcomes and self-efficacy among persons with chronic pain. Specifically, this study investigated whether mindfulness (observing, describing, acting with awareness, and accepting without judgment), psychological flexibility, and emotional intelligence predicted overall physical daily functioning, psychosocial functioning, and self-efficacy among chronic pain patients. Participants in the study completed a demographic questionnaire and the following instruments: Kentucky Inventory of Mindfulness (Baer et al., 2004) to measure mindfulness; Acceptance and Action Questionnaire-II (Hayes et al., 2004) to measure psychological flexibility; Brief Emotional Intelligence Scale (Davies et al., 2010) to measure emotional intelligence; Pain Disability Index (Pollard, 1984) to measure daily functioning; and the Pain Self-efficacy Questionnaire (Nicholas, 2001) to measure self-efficacy.
Statistical results indicated that the KIMS Describing subscale, KIMS Accepting without judgment subscale, Acceptance and Action Questionnaire-II, and the Brief Emotional Intelligence Scale were significantly correlated with the Pain Disability Index. KIMS Describing subscale, KIMS Awareness subscale, KIMS Accepting Without Judgment subscale, Acceptance and Action Questionnaire-II, and Brief Emotional Intelligence Scale) were significantly correlated with self-efficacy. As part of the general demographic questionnaire, variables including age, race, gender, level of education, and duration of pain were included. Previous research regarding these variables and their relation to chronic pain was rather limited and inconsistent leading to their inclusion in the demographic questionnaire. Through statistical analyses, only gender and level of education were shown to be significantly related to the criterion variables leading them to be controlled for in the hierarchical regression analysis. By using a hierarchical model in which education level and gender were controlled for, the researcher was able to perform a more stringent test of the relation between the predictor variables and criterion variables. The results showed that:

1. Psychological flexibility was significantly related to daily functioning in that the more psychologically inflexible an individual was, the greater their disability related to physical and psychosocial functioning. Mindfulness and emotional intelligence were not significantly related to the degree of daily functioning among chronic pain patients;

2. Emotional intelligence and psychological flexibility were significantly related to self-efficacy in that the greater the emotional intelligence and psychological flexibility of the chronic pain patient, the higher their self-efficacy. Mindfulness was not significantly related to self-efficacy.
Discussion of Results Compared to Related Research and Theory

Regarding hypothesis one, the most significant finding was the relation between psychological flexibility and daily functioning level of chronic pain patients. This was consistent with the previous research conducted by Vowles and McCracken (2010) that found changes in psychological flexibility were related to improvements in functioning of chronic pain patients. In a study investigating processes of acceptance, mindfulness, and values-based action in a sample of patients with chronic pain in a primary care setting, McCracken and Velleman (2009) found that there were significant relations between the components of psychological flexibility and measures of emotional, physical, and social functioning. Similarly, in a study by McCracken and Vowles (2008) the results indicated that acceptance of pain and values based action were associated with pain severity, pain-related distress, pain related anxiety and avoidance, depression, and depression-related interference with functioning.

In the present study, mindfulness (observing, describing, acting with awareness, and accepting without judgment) was not found to be significantly related to the daily functioning level of chronic pain patients. There was no previous research identified that specifically addressed the construct of mindfulness and its relation to the daily functioning level of chronic pain. The present findings, however, seem inconsistent with prior research showing that mindfulness based stress reduction programs were effective in reducing symptoms of pain and improving quality of life for chronic pain patients (Carlson et al., 2003; Morone, Greco, & Weiner, 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000). It is important to reiterate that none of these prior studies controlled for other variables that may have influenced the results (i.e., demographic factors), nor did these studies specifically measure the construct of mindfulness.
Regarding emotional intelligence and daily functioning among chronic pain patients, there was no previous research that specifically addressed this topic. However, previous research addressed the relation between emotional intelligence and overall health. Specifically, research has shown how emotional intelligence can be taught, learned, and may be useful in reducing stress and improving health, well being, and performance (Slaski & Cartwright, 2003). The research has shown how emotional intelligence has been positively related to life satisfaction (Austin et al., 2005), rational coping (Saklofske et al., 2006), good health and psychological adjustment (Augusto-Lando and Montes-Berges, 2009; Ciarrochi et al., 2002; Tsaousis and Nikolaou, 2005). In the literature review, when measured as a trait, emotional intelligence was found to be more strongly associated with health, than when it was measured as an ability. The present study utilized the Brief Emotional Intelligence Scale-10 that measured emotional intelligence as an ability or state, which may have resulted in differing results from prior studies in related areas. Ultimately, the present findings demonstrating no significant relation between emotional intelligence and daily functioning among chronic pain patients is somewhat inconsistent with prior treatment-related research, however previous studies did not specifically investigate the relation between these variables. Rather, based on theory they seemed to have assumed such an association prior to testing treatment-related outcomes.

Regarding hypothesis two, a significant finding was the relation between emotional intelligence and self-efficacy. This finding builds upon the research that found significant relations between emotional intelligence and occupational self-efficacy, specifically teacher self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008); leader self-efficacy (Magyar et al., 2007); and counselor self-efficacy (Easton et al., 2008). Results of the present research support the underlying components linked to the self-efficacy of chronic pain patients. It is
inferred that through reported regulation of one’s feelings, effectively problem solving, developing intrapersonal and interpersonal skills, accepting of challenging tasks, and demonstrating persistence in the face of obstacles, those individuals who have struggled with a chronic pain condition report being more confident in their ability to complete important daily functioning tasks.

Psychological flexibility was also found to be significantly related to the self-efficacy of chronic pain patients in the present study. There were no studies identified in the literature that specifically addressed these two constructs. Psychological flexibility is a construct that includes six overlapping components: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes et al., 2006). The findings of the present study support a related study by Sarda et al., (2009) that found acceptance to be significantly associated with self-efficacy. This current study builds upon research in the understanding of the relation between psychosocial variables and daily functioning and self-efficacy among the chronic pain population.

In the present study mindfulness (observing, describing, acting with awareness, and accepting without judgment) was not found to be significantly related to self-efficacy in chronic pain patients. This result was in contrast to the findings of Cusens et al. (2010), a pilot study that found marginally significant interactions on the Breathworks Pain Management program and pain self-efficacy. Their results suggested that mindfulness may assist chronic pain patients in developing greater confidence in their ability to complete certain tasks while experiencing pain. However, the results of the Cusens et al. (2010) are interpreted with caution as this was a pilot study that involved 33 participants. In addition, similar to other studies cited above, the Cusens et al. (2010) research did not investigate whether mindfulness and self-efficacy were related
theoretically. Rather, they tested whether treatment outcomes affected self-efficacy after assuming a theoretical relation between mindfulness and self-efficacy without controlling for demographic variables and other related constructs (e.g., emotional intelligence, psychological flexibility) as in the present study. There were no other studies identified in the literature review that specifically addressed mindfulness and self-efficacy.

Previous research identified in the literature review provided a strong argument for considering the mindfulness related constructs in determining the daily functioning level and self-efficacy of persons with chronic pain. Overall, the prior studies in the literature review were more outcome-based regarding these constructs and health in general. The research on mindfulness was based upon an assumed theoretical relation among these constructs and the studies tested the impact of the specific interventions on the overall well being of chronic pain patients. An example of this was the extensive literature on mindfulness based stress reduction programs and the effectiveness in reducing symptoms of pain and improving quality of life among the chronic pain population (Carlson et al., 2003; Morone et al., 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000). None of the studies researched the relation among all these constructs while controlling for demographic factors. The current study has indicated that a strong empirical relation between mindfulness (observing, describing, acting with awareness, and accepting without judgment) and daily functioning and self-efficacy in chronic pain patients may not be accurate. There was no statistically significant relation among these constructs in the current study.

Based upon results of the current study, it is implied that an individual’s ability to be mindful regarding their pain condition is not enough to positively impact their daily functioning or self-efficacy. There is more to managing pain than merely being aware of their chronic pain
condition. Pain has been defined as a complex perceptual experience that involves physical, cognitive, and emotional aspects, and causes a person distress. Through this complex system of experiencing pain, there are numerous factors that contribute to managing a chronic pain condition more than the identified mindfulness subscales identified in the study (accurately observing, describing, acting with awareness, and accepting without judgment). Building upon mindfulness, is the construct of psychological flexibility, that not only includes the qualities of acceptance and mindfulness, but also the capacity of the individual to take committed and values-directed or goals directed action (McCracken, Vowles, & O’Brien, 2010).

However, findings of the current study provided additional support to the theory that the construct of psychological flexibility was significantly related to both daily functioning level and self-efficacy of chronic pain patients. It is not merely the severity of pain or other symptoms in isolation that influences patient functioning, but also psychological relations between these symptoms and behavior (McCracken & Gutierrez-Martinez, 2010). The current study provided further support in the six components that make up psychological flexibility (acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action) are significantly related to the daily functioning level of chronic pain patients. Acceptance and cognitive defusion delineate the so called “acceptance and mindfulness skills,” values and committed action are related to the “commitment and behavior change skills,” and the remaining two, contact with the present moment and self-as context, contribute to the delineation of the categories of skills (Hayes, 2004). The more psychologically flexible an individual is, the more likely they will be able to effectively manage their chronic pain condition to avoid catastrophizing their condition and becoming disabled.
The current study also provided additional support to the theory that psychological flexibility was related to self-efficacy (Sarda, 2009). As the core components of psychological flexibility are increased, it is logical that the individual’s confidence in their ability to perform daily tasks would also increase. The findings of the current study clarified the relation between these two constructs that was assumed in other studies that specifically addressed the effectiveness of Acceptance and Commitment Therapy in building the self-efficacy of the participants in the study (Wicksell et al., 2010). Additionally, the current study advanced previous research that was based on samples in the United Kingdom by expanding the research on this construct to other populations, specifically chronic pain patients in the United States.

In contrast, the current study found that the construct of emotional intelligence may not be strongly related to the daily functioning level of chronic pain patients. Emotional intelligence involves the ability to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth (Mayer, Salovey, and Caruso, 2004). The findings of the current study indicate that the construct of emotional intelligence is more of a cognitive process that impacts thinking but not necessarily the physical functioning ability of chronic pain patients. When addressing the relation between emotional intelligence and self-efficacy, two cognitive processes, the current study indicated a significant relation between the two.

Personal mastery experiences (or task master), vicarious mastery experiences, verbal persuasion, and physiological and affective states are the four factors that determine the level of an individual’s self-efficacy (Bandura, 1986; Bandura, 1997). Theoretically, it is clear how these constructs are related to one another, as self-efficacy research has emphasized self-
awareness and self-regulation as factors influencing the development of self-efficacy beliefs. Similarly, in the emotional intelligence research, those individuals who experience higher emotional intelligence are more likely to experience performance related success, task mastery, than individuals who exhibit lower emotional intelligence (George, 2000; Schutte et al., 1998). The current study further strengthened the relation between these constructs within the chronic pain population.

Figure 4, depicts the graphic relations between daily functioning level, self-efficacy, and the predictor variables studied based on present results. As summarized, when mindfulness,
emotional intelligence, and psychological flexibility were taken into account, and significantly correlated demographic factors were controlled for, only psychological flexibility showed a statistically significant link with daily functioning level. Similarly, only emotional intelligence and psychological flexibility showed a statistically significant link with self-efficacy.

Implications for Counseling Practice

More than 76 million Americans struggle with chronic pain (American Osteopathic Association, 2010). The literature (Dersh, Polatin, & Gatchel, 2002) has indicated that many individuals who struggle with chronic pain also suffered from depression, 17-29% had an anxiety disorder, 15-28% had a substance abuse disorder, and 31-81% had a personality disorder. Additionally, chronic pain patients are at greater risk for suicide (Gilbert et al., 2009). The distress or impairments to daily living can take many different forms. Chronic pain patients experience changes in the following areas: their family and interpersonal relationships; work/employment leading to loss of income and/or defining role; daily functioning including energy, appetite, sleep, and regular activities of daily living (Roy, 2008). In a study by Renshaw (2007), chronic pain patients were found to be at greater risk to experience divorce, alcoholism, drug abuse, family violence, absenteeism, job loss, depression, and suicide. Lewandowski et al. (2007) found that 83% of persons who have a spouse with chronic pain, report significant depressive symptomatology. The research has clearly identified the needs of those individuals who struggle with chronic pain and their family members.

With the knowledge that approximately 57% of Americans reported experiencing recurrent or chronic pain in the past year (American Academy of Pain Management, 2003), counselors are encouraged to assess for health conditions of their clients during their routine
biopsychosocial assessments. Often the presenting issue that brings an individual to counseling may be depression, anxiety, marital difficulty etc., yet this study highlights the importance of assessing for a pain condition that may significantly play a role in the individual’s current presentation of mental health issues. Within the assessment process, counselors typically assess for risk of harm to self or others. For the chronic pain population, there is an even greater suicide risk compared to other populations, reinforcing the importance for counselors to assess this level of risk.

In the present study, psychological flexibility was found to be significantly related to the daily functioning level and self-efficacy of chronic pain patients. Based upon this study and other research (McCracken & Velleman, 2009; McCracken & Vowles, 2008; Vowles & McCracken, 2010) that identifies the significant role that psychological flexibility plays in the treatment of chronic pain patients, counselors are encouraged to focus their efforts on assisting those who struggle with chronic pain in building the factors that make up psychological flexibility. Psychological flexibility is made up of six overlapping components: acceptance, contact with the present moment, cognitive defusion, self-as context, values, and committed action (Hayes et al., 2006). One therapeutic approach for counselors to consider is Acceptance and Commitment Therapy (ACT). One of the primary goals of ACT is the strengthening of the six overlapping components that make up psychological flexibility. From an ACT perspective, what is needed to free the individual to pursue life directions is not the removal of pain but abandonment of the struggle to avoid or reduce pain, disentanglement from pain-related thought, deepened conscious contact with the present moment, and the construction of larger and larger patterns of effective action linked to chosen values (Hayes et al., 2006). Put another way, the approach of ACT, in contrast with other cognitive behavioral approaches that focus on the
reduction or control of symptoms, promotes acceptance of negative private experiences of chronic pain.

In ACT treatment, exposure to previously avoided situations is considered to be the core intervention, emphasizing acceptance of what cannot be directly changed (thoughts, emotions, bodily sensations) as a way of engaging activities that are meaningful but possibly painful or fear provoking (Wicksell, Ahlqvist, Bring & Olsson, 2008). ACT is a ‘third wave’ cognitive behavioral therapy that targets experiential avoidance and cognitive fusion as core elements of psychopathology (Coyne et al., 2011) and it harnesses several therapeutic techniques that specifically target these processes, and as its overarching treatment goal seeks to promote psychological flexibility in the pursuit of a meaningful, valued life, in the presence of psychological or physical pain. Counselors are encouraged to learn more about ACT therapy and intervention techniques as a means to more effectively assist those individuals who struggle with a chronic pain condition.

In the present study, emotional intelligence was also found to be significantly related to self-efficacy of chronic pain patients. The implications for counselors is to learn more effective means to increase the emotional intelligence of chronic pain patients. Emotional intelligence involves an individual’s ability to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth (Mayer, Salovey & Caruso, 2004). By enhancing emotional intelligence, research suggests that individuals will be more apt to recognize emotions in others that can lead to greater empathy and success in developing healthy relationships with others.
Goleman (1995) identified that self-awareness is the cornerstone of emotional intelligence, and self-confidence and self acceptance are key factors in its development. Counselors can assist their clients in gaining an increased self-awareness that will assist them in detaching from events and learning more effective coping skills to better regulate their emotions. Counselors are aware of the potentiality of catastrophizing among chronic pain patients. Through their interventions, counselors will assist chronic pain patients to gain greater awareness of their emotions that will avoid catastrophizing their pain condition that often leads to the exacerbation of adverse symptoms and lead to a greater disabling condition.

Counselors who provide marital or family counseling are encouraged to assess the health conditions of the participants. The research has been clear in establishing the strains on marital and familial relationships and changing family dynamics that often surface when one of the family members has a chronic pain condition (Renshaw, 2007; Roy, 2008). In working with these families, counselors need to be aware of the greater likelihood for drug abuse, family violence, and alcohol abuse. Through increasing the emotional intelligence of the chronic pain patient and their family members in counseling, they will have a greater awareness of their own emotions and those of others in the family that will in turn assist the family members in more effectively managing stress in the home and effectively resolving conflict that surfaces. In applying these methods, couples will feel heard and understood leading to greater intimacy in the relationship.

Mayer and Salovey (1997) advocated for an ability based conceptualization of emotional intelligence and developed a four branch model that assesses and measures the following four sets of skills: Perceiving emotions, the ability to perceive emotions in oneself and others, as well as in objects, art, stories, music, and other stimuli; Facilitating thought, the ability to generate,
use, and feel emotions to communicate feelings or use them in other cognitive processes;

Understanding emotions, the ability to understand emotional information, how emotions combine progress through relationship transitions, and to appreciate such emotional meanings;

and managing emotions, the ability to be open to feelings and to modulate them in oneself and others so as to promote personal understanding and growth.

The research has been encouraging in demonstrating that it is possible to enhance the emotional intelligence of individuals through deliberate training (Groves, 2005; McEnrue et al., 2007; Slaski & Cartwright, 2003). This research was primarily conducted in occupational settings as part of workforce development programs that focused on developing the emotional intelligence of managers. The training programs were based upon the four basic skill sets that comprise emotional intelligence.

Another approach in building emotional intelligence in individuals is through social and emotional learning programs. Social and emotional learning is the process through which children and adults acquire the knowledge, attitudes, and skills to: Recognize and manage their emotions; set and achieve positive goals; demonstrate caring and concern for others; establish and maintain positive relationships; make responsible decisions; and handle interpersonal situations effectively. The Collaborative for Academic, Social, and Emotional Learning (SEL) (2005) identified the following five groups of inter-related core social and emotional competencies that social emotional learning programs should address: self-awareness, self-management, social relationships, relationship skills, and responsible decision making. The short-term goals of SEL programming are to promote students’ social-emotional skills and positive attitudes, which, in turn, should lead to improved adjustment and academic performance as reflected in more positive social behaviors, fewer conduct problems, less emotional distress,
and better grades and achievement and test scores. SEL programs have proven successful in schools to enable children to calm themselves when angry, initiate friendships and resolve conflicts respectfully, make ethical and safe choices, and contribute constructively to their community (Collaborative for Academic, Social, and Emotional Learning, 2005; Elias et al., 1997).

In a study by Nelis et al. (2009), a four week emotional intelligence training program that focused on emotional intelligence was shown to significantly increase the emotion identification and emotion management abilities in the training group. Follow-up measures after 6 months revealed that these changes were persistent. No significant change was observed in the control group. The treatment group consisted of the four following topics for each training session: Understanding emotion, identifying emotion, expressing and using emotion, and managing emotions. Homework assignments were provided to the participants as part of their treatment. The study (Nelis et al., 2009) was promising as it suggested that, with a proper methodology relying on the latest scientific knowledge about emotion and emotion processing, emotional intelligence can be enhanced.

The common theme of the research is the focus of interventions on the core elements of emotional intelligence (self-awareness, self-regulation, awareness of others, regulation of others). Counselors can assist their clients struggling with chronic pain in each of these core areas as a means of increasing their self-efficacy despite their current pain condition. This knowledge, in addition to the findings of the current research, is promising to the counseling field in the role that counselors can play in building emotional intelligence in their clients.

The growing number of chronic pain patients will provide additional opportunities for professional counselors in medical settings for employment. Hospitals and pain management
centers utilize counselors to assess the mental health needs of chronic pain patients as a means to screen the appropriateness for medical treatment approaches. An example of this would be the need for a presurgical psychological evaluation that is required prior to surgery for a spinal cord stimulation or intrathecal drug therapy. The presurgical psychological evaluation addresses the risk factors that contribute to poor outcomes such as substance abuse, history of psychological disturbance; chronic and/or reactive depression; anger; anxiety; and a pathological depression profile (Heckler et al., 2007). There are growing opportunities in the medical setting for counselors to utilize their clinical skills to provide these mental health assessments and for ongoing supportive treatment in conjunction with the medical provider as part of their treatment for chronic pain.

Implications for Counselor Education and Supervision

In terms of implications for counselor education and training, it is important for counselor educators and supervisors to be knowledgeable about the prevalence of chronic pain and the subsequent adverse effects in order to properly educate and train counseling students and supervisees. Counselors need to be aware of the special needs of this population to provide effective therapeutic services to individuals with chronic pain and their families.

Counselor preparation will need to better assist supervisees in gaining better awareness of the needs of this population, including the higher prevalence for depression, anxiety, suicide, drug and alcohol abuse, domestic violence, and relational difficulties. Education and training should include expanding knowledge on the awareness of dependence to pain medication and the prevalence of chronic pain patients self-medicating, substituting drugs or alcohol as a means to manage their pain. Counselor preparation should also address effective means of screening for substance use/abuse of clients as some of the pain medications prescribed are highly addictive.
The Council for Accreditation of Counseling and Related Educational Programs (CACREP) ensures that counseling programs implement the highest standards of educational quality in counselor preparation programs. Each of the eight common core curricular areas that are required for each student can be enhanced through the addition of the knowledge that was gained from this current study. Those core areas include: Professional orientation and practice; social and cultural diversity; human growth and development; helping relationships; group work; assessment; and research and program evaluation. The professional orientation and practice standard would address how the landscape of employment opportunities for professional counselors continues to change. According to the Bureau of Labor Statistics, the profession of counseling is expected to grow 37% from 2010 to 2020 (Occupational Outlook Handbook, 2012) due to the increased demand in counselors in mental health, hospitals, and colleges. Graduate programs will need to better prepare counseling students in working with professionals from different backgrounds in a variety of different settings to best meet the needs of their clients and to ensure continuity of care among medical professionals. Internship and practicum opportunities will need to be expanded to include experiences in these different settings for counselors outside of the traditional mental health clinics.

Building upon this need to advance the understanding of the chronic pain population, the Human Growth and Development standard (CACREP, 2009) specifically addresses studies that provide an understanding of the nature and needs of persons at all developmental levels and in multicultural contexts, including an understanding of developmental crises, disability, psychopathology, and situational and environmental factors that affect both normal and abnormal behavior. Counselor educators can use a variety of different approaches to assist their students in
learning the impact of chronic pain on the individual through the use of case examples to assist in accurately conceptualizing the needs of the client.

The Human Growth and Development standard also includes theories for facilitating optimal development and wellness over the lifespan. The helping relationship standards that address the counseling process, review the models/theories of counseling that are consistent with current professional research and practice to help the student develop a personal model of counseling. The current study reinforces the need for counselor educators to review the evidence based practices in working with chronic pain patients that include cognitive behavioral therapy and acceptance and commitment therapy. Through these theories and interventions, counselor educators can identify the specific interventions to implement that will build the emotional intelligence and psychological flexibility of chronic pain patients.

The CACREP assessment standards address studies that provide an understanding of individual and group approaches to assessment and evaluation in a multicultural society. Counselor educators are encouraged to teach their students effective ways of thoroughly completing a biopsychosocial assessment that will take into consideration the biological, psychological, and social history of each individual at the onset of therapy. In gathering the biological history of the client, the counselor will assess health concerns of the client and significant family members. This health history will include chronic pain and the subsequent treatment that the individual received along with the receptiveness of the individual to the treatment approaches. By assessing the duration and intensity of the individual’s pain condition, the counselor will be more apt to guide the chronic pain patient in their treatment and recovery.

Research and program evaluation addresses studies that provide an understanding of research methods, statistical analysis, needs assessment, and program evaluation. Counselor
educators can assist their students by teaching them how to utilize research to enhance their counseling practice. There clearly is a growing body of literature on the treatment of chronic pain and the development of evidence based practices in treating individuals who are struggling with a chronic pain condition. Students will learn the principles, models, and applications of needs assessment, program evaluation, and the use of findings to effect program modifications. In using research methods, counselor educators can teach their students the effectiveness of treatment modalities versus other approaches. Through these efforts, the counselors in training will not only assist their clients in building self-efficacy, but they also will grow in self-efficacy in working with this specialized population.

The American Counseling Association (ACA) recognizes the link between depression and chronic pain. Trainings provided through ACA would benefit this growing population, assisting current licensed counselors and those counselors in training of the special needs of this population and identifying best practices. Through training conferences, webinars, and other resources, the ACA can advance the profession of counseling through the clearly established need for therapeutic services that will benefit chronic pain patients in conjunction with their medical treatment. Additionally, the ACA can remain a viable source of support and education to professional counselors by including the current research on chronic pain and the therapeutic approaches and interventions that are evidence based in assisting individuals in more effectively managing their chronic pain condition and building self-efficacy.

Research has shown how comprehensive and interdisciplinary approaches are the most effective way to treat pain (Institute of Medicine, 2011). An example of how this knowledge has been implemented nationwide, the Substance Abuse and Mental Health Services Administration (SAMSHA) and the Health Resources and Services Administration (HRSA) currently fund the
Center for Integrated Health Solutions (CIHS) that promotes the development of integrated and behavioral health services to better address the needs of individuals with mental health and substance use conditions (SAMSHA, 2012). The Center provides training and technical assistance to 94 community behavioral health organizations as well as to community health centers and other primary care and behavioral health organizations. The overarching goal of this initiative to help prevent and reduce chronic disease and promote wellness by educating mental health providers on evidence-based treatment approaches. These efforts recognize the limitations of the previous medical model approach to assisting chronic pain patients (National Institute of Medicine, 2011).

Counseling supervisors can assist their supervisees in developing their skills to assess the needs of their clients through ensuring that a quality biopsychosocial assessment is completed. Through this supervisory relationship, the counseling supervisor may assume the role of educator, consultant, and counselor to enhance the clinical development of their supervisees. In individual supervision, the clinical supervisor can assist their supervisee in how they conceptualize the needs of their clients. If the client has struggled with chronic pain or has a significant other that has struggled with chronic pain, the clinical supervisor can assist the counselor in being aware of factors that may be related to the individual’s experience with chronic pain (higher risk for suicide, depression, substance/alcohol abuse, strain in relationships). Emphasis will be placed on empowering clients, building upon their strengths to build their self-efficacy and to minimize the impact of their chronic pain on their daily functioning. Through the use of video tape, the supervisee can review their sessions with their supervisor to receive constructive feedback to aid in their development as a counselor.
Counselors in training benefit from the ongoing monitoring by their supervisor to ensure that there is a congruence between the identified needs of the client and the goals of treatment. Counselor supervisors can assist their supervisee’s theoretical orientation and application of interventions and techniques in counseling. Based upon the findings of the current study, counselor supervisors can introduce their supervisees to interventions that build psychological flexibility and emotional intelligence of their clients. These interventions are based upon acceptance and commitment therapy and other cognitive behavioral approaches that are related to the daily functioning level and self-efficacy of chronic pain patients. Lastly, counselor supervisors can assist their supervisees on effectively collaborating with other medical providers to ensure the continuity of care for the chronic pain patients.

Limitations and Recommendations

The first limitation of the study was due to the participants from pain management centers in a Midwestern State, thereby limiting the generalizability of the findings. It would be interesting to compare the results of the findings of the current study to those individuals who were not currently in treatment at a pain management center to see if there were any differences. Additionally, the current study was rather limited in the representation from minority populations, as only 12% of the participants identified as African American. The current study did not control for religion or nationality, as there has been research that has indicated that there are cross cultural differences among emotional intelligence scores (Ghorbani et al., 2002; Hystad et al., 2010; Margavio et al., 2012). Future research should further explore these cross cultural differences by controlling for religion or nationality in the research design when measuring the
relation between these mindfulness based constructs and daily functioning level and self-efficacy of chronic pain patients.

Another limitation in the study was found in the self-report measures that were used, and therefore subject to all of the limitations imposed on self-report measures. Those limitations include social desirability bias, whereby the participants respond to questions in a manner that will be looked upon favorably by others, was not controlled for in the current study (Heppner, Wampold, and Kivlighan, 2008). Future research should take this into consideration within the research design and control for social desirability. Another disadvantage in using self-report measures is that an assumption is made that participants will have sufficient insight into their experience such that they are able to accurately convey information about it to others through conscious terms (Heppner, Wampold, and Kivlighan, 2008).

The sample used in the current study was a sample of convenience, whereby only those chronic pain patients who were willing to participate in the study did so. Achieving true random selection is difficult in the social sciences and although random selection eliminates systematic bias, there is no guarantee that a random sample will be representative of the population (Heppner, Kivlighan, & Wampold, 1999). Additionally, it is inferred that those individuals who participated in the study would be more internally motivated than those individuals who refused to participate. Based upon the current study, it is expected that individuals will refuse to participate in future studies, making the sample less than random in nature. One approach to counter this would be to randomly sample the total number of chronic pain patients that are seen at each center.
The current study did not control for the method or duration of treatment for each of the chronic pain patients that may have influenced the results of the study. It is likely that those individuals who are at the intake level of their treatment compared to those who are near the completion of their treatment would respond differently toward the instruments in the current study. Previous research has acknowledged the effectiveness of mindfulness based stress reduction therapeutic groups on the treatment of chronic pain (Carlson et al., 2003; Morone, Greco, & Weiner, 2007; Reibel et al., 2010; Rosenzweig et al., 2010; Speca, 2000). These studies evaluated the effectiveness of their interventions on the overall health/disability of the chronic pain patients and displayed significant progress from the start of the therapeutic groups to the completion of the groups on reducing pain symptoms and overall quality of life.

The findings of this study also have significant implications for future research. The present exploratory study investigated the relation between mindfulness (observing, describing, acting with awareness, accepting without judgment), psychological flexibility, and emotional intelligence on the daily functioning and self-efficacy of chronic pain patients. Based upon the literature review, no previous studies had addressed these three mindfulness related constructs on daily functioning and self-efficacy among the chronic pain population. Additionally, there was no research identified in the literature review that examined the relation between emotional intelligence and daily functioning and self-efficacy among the chronic pain population. Lastly, it is recommended that future research further explore the bidirectional relation between daily functioning level and self-efficacy, while also addressing differences according to gender and level of education. The counseling profession can benefit from the results of the current study and by future studies that further examine these factors.
Summary of Discussion and Implications

The present exploratory study was designed to examine whether mindfulness (observing, describing, acting with awareness, & accepting without judgment), psychological flexibility, emotional intelligence predicted overall daily functioning level and self-efficacy among chronic pain patients. The results of the study indicated that psychological flexibility was significantly related to the daily functioning and self-efficacy of chronic pain patients. These results were consistent with previous research (McCracken and Velleman, 2009; McCracken and Vowles, 2008; Vowles and McCracken, 2010) that found psychological flexibility was significantly related to physical and psychosocial functioning of chronic pain patients. Emotional intelligence was also found to be significantly related to self-efficacy among chronic pain patients. The findings of the current study build upon previous research that found significant relations between emotional intelligence occupational self-efficacy, specifically teacher self-efficacy (Chan, 2004; Chan, 2008; Di Fabio & Palazzeschi, 2008); leader self-efficacy (Magyar et al., 2007); and counselor self-efficacy (Easton et al., 2008). The current study advanced the understanding of the different factors that are related to the daily functioning level and self-efficacy of chronic pain patients.

This study has several implications for counselor educators and supervisors that are grounded in the need to enhance the knowledge regarding the prevalence of chronic pain and the subsequent adverse effects in order to properly educate and train counseling students and supervisees. This study suggests the need to enhance counselor preparation and supervision to better assist supervisees in gaining better awareness of the needs of this population, specifically the higher prevalence for depression, anxiety, suicide, drug and alcohol abuse, domestic violence, and relational difficulties.
In summary, the counseling field can benefit from this growing body of literature on the treatment of chronic pain and the development of evidence based counseling practices. Through this knowledge, counselors can better assist their clients to more effectively regulate their feelings, enhance problem solving skills, develop interpersonal and intrapersonal skills, accept challenging tasks, and demonstrate persistence in the face of obstacles, with the ultimate goal of empowering clients to more effectively manage their chronic pain condition and maintain an active lifestyle. Additional research is needed to further advance the findings of the current study and to advance the understanding of the biopsychosocial nature of chronic pain.
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166
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APPENDICES
APPENDIX A

INFORMED CONSENT SCRIPT

Dear Participant,

You are being asked to participate in a research study addressing the impact of mindfulness on titled “The Relations Among Mindfulness Based Constructs to Daily Functioning and Self-Efficacy in Chronic Pain Patients”. This study is being conducted as part of my doctoral degree at The University of Akron. The purpose of this study is to improve the understanding of what approaches may help people struggling with chronic pain.

If you agree to participate, you will be asked to complete a demographic questionnaire and five questionnaires related to self-awareness, confidence in ability to complete daily tasks, and daily functioning. The survey should take approximately 15-20 minutes to complete. You will not receive compensation for participating in this study.

Your participation in this study is voluntary. You are free to refuse to participate or to withdraw at any time, without negative consequences. There are no known risks or discomforts expected for those who participate in this study. All information will remain anonymous. No identifying data will be collected, and your anonymity is further protected by not asking you to sign and return an informed consent document. Confidentiality will be maintained using a number code system that will be assigned to the questionnaire packets.

If you have any questions about this study, please contact Joseph Rizzo by emailing him at jmr39@uakron.edu or calling him at 330-715-1252. You can also contact Dr. Robert Schwartz, Ph.D., Dissertation Chair, at The University of Akron, in Akron, Ohio, at rcs@uakron.edu, or by calling him at 330-972-8155. This study was approved by the Institutional Review Board for Protection of Human Services Subjects at The University of Akron. Any questions regarding the IRB approval may be directed, via postcard, to the Institutional Review Board, The University of Akron, 44325-2102. Thank you for your assistance.

Sincerely,

Joseph Rizzo
APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE

Please read each statement or question carefully. Please fill in the blank or click the circle next to the choice that provides the answer that fits for you. Thank you for your participation.

1. Age: __________

2. Gender (circle one):
   a. Female
   b. Male
   c. Transgender

3. Race (circle one):
   a. Asian / Asian American / Pacific Islander
   b. Native American / American Indian / Alaskan Native
   c. Black / African American
   d. Hispanic / Latin American
   e. Middle Eastern / Arabic American
   f. White / European American
   g. Multi-Racial (please explain): ____________________________
   h. Other (please explain): ________________________________

4. Duration of chronic Pain in months (how many months have you endured your current chronic pain): _______________

5. Level of Education (circle one):
   a. High School Diploma/GED
   b. Associate’s Degree
   c. Bachelor’s Degree
   d. Master’s Degree
   e. Doctoral Degree
## APPENDIX C

**KENTUCKY INVENTORY OF MINDFULNESS SCALE (KIMS)**

*Please rate each of the following statements using the scale provided. Circle the number that best describes your own opinion of what is generally true for you.*

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<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
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<td><strong>Never or Very Rarely True</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td><strong>Rarely True</strong></td>
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<td><strong>Sometimes True</strong></td>
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<tr>
<td><strong>Very Often or Always True</strong></td>
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</tbody>
</table>

I notice changes in my body, such as whether my breathing slows down or speeds up.................................................................1 2 3 4 5

I’m good at finding the words to describe my feelings.................................1 2 3 4 5

When I do things, my mind wanders off and I’m easily distracted………………1 2 3 4 5

I criticize myself for having irrational or inappropriate emotions………………1 2 3 4 5

I pay attention to whether my muscles are tense or relaxed……………………1 2 3 4 5

I can easily put my beliefs, opinions, and expectations into words……………..1 2 3 4 5

When I’m doing something, I’m only focused on what I’m doing, nothing else………………………………………………………………1 2 3 4 5

I tend to evaluate whether my perceptions are right or wrong…………………..1 2 3 4 5

When I’m walking, I deliberately notice the sensations of my body moving.................................................................1 2 3 4 5

I’m good at thinking of words to express my perceptions, such as how things taste, smell, or sound........................................1 2 3 4 5

I drive on “automatic pilot” without paying attention to what I’m doing.................................................................1 2 3 4 5

I tell myself that I shouldn’t be feeling the way I’m feeling......................1 2 3 4 5
When I take a shower or bath, I stay alert to the sensations of water on my body…………………………………………………………………………………...1 2 3 4 5

It’s hard for me to find the words to describe what I’m thinking………………1 2 3 4 5

When I’m reading, I focus all my attention on what I’m reading……………..1 2 3 4 5

I believe some of my thoughts are abnormal or bad and I shouldn’t think that way……………………………………………………………………...1 2 3 4 5

I notice how foods and drinks affect my thoughts, bodily sensations, and emotions……………………………………………………………………………1 2 3 4 5

I have trouble thinking of the right words to express how I feel about things………………………………………………………………………………1 2 3 4 5

When I do things, I get totally wrapped up in them and don’t think about anything else……………………………………………………………………1 2 3 4 5

I make judgments about whether my thoughts are good or bad……………..1 2 3 4 5

I pay attention to sensations, such as the wind in my hair or sun on my face……………………………………………………………………………1 2 3 4 5

When I have a sensation in my body, it’s difficult for me to describe it because I can’t find the right words……………………………………………1 2 3 4 5

I don’t pay attention to what I’m doing because I’m daydreaming, worrying, or otherwise distracted…………………………………………………………1 2 3 4 5

I tend to make judgments about how worthwhile or worthless my experiences are………………………………………………………………………………1 2 3 4 5

I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing………………………………………………………………………………1 2 3 4 5

Even when I’m feeling terribly upset, I can find a way to put it into words……1 2 3 4 5

When I’m doing chores, such as cleaning or laundry, I tend to daydream or think of other things………………………………………………………………………………1 2 3 4 5

I tell myself that I shouldn’t be thinking the way I’m thinking…………………………………………………………………………………………1 2 3 4 5

I notice the smells and aromas of things………………………………………………………………………………………………………………………………………………1 2 3 4 5
I intentionally stay aware of my feelings...............................................................1 2 3 4 5

I tend to do several things at once rather than focusing on one thing at a time......................................................................................................................1 2 3 4 5

I think some of my emotions are bad or inappropriate and I shouldn’t feel them..................................................................................................................1 2 3 4 5

I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.................................................................1 2 3 4 5

My natural tendency is to put my experiences into words............................1 2 3 4 5

When I’m working on something, part of my mind is occupied with other topics, such as what I’ll be doing later, or things I’d rather be doing........................................1 2 3 4 5

I disapprove of myself when I have irrational ideas.....................................1 2 3 4 5

I pay attention to how my emotions affect my thoughts and behavior..........1 2 3 4 5

I get completely absorbed in what I’m doing, so that all my attention is focused on it..................................................................................................1 2 3 4 5

I notice when my moods begin to change...................................................1 2 3 4 5

APPENDIX D

ACCEPTANCE AND ACTION QUESTIONNAIRE II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

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</thead>
<tbody>
<tr>
<td>Never True</td>
<td>Very Seldom True</td>
<td>Seldom True</td>
<td>Sometimes True</td>
<td>Frequently True</td>
<td>Almost Always True</td>
<td>Always True</td>
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1. My painful experiences and memories make it difficult for me to live a life that I would value.
   1 2 3 4 5 6 7

2. I’m afraid of my feelings.
   1 2 3 4 5 6 7

3. I worry about not being able to control my worries and feelings.
   1 2 3 4 5 6 7

4. My painful memories prevent me from having a fulfilling life.
   1 2 3 4 5 6 7

5. Emotions cause problems in my life.
   1 2 3 4 5 6 7

6. It seems like most people are handling their lives better than I am.
   1 2 3 4 5 6 7

7. Worries get in the way of my success.
   1 2 3 4 5 6 7

APPENDIX E

BRIEF EMOTIONAL INTELLIGENCE SCALE

Please rate each of the following statements using the scale provided (ranging from 1=Strongly Disagree to 5=Strongly Agree). Circle the number that best describes your own opinion of what is generally true for you.

1. I arrange events others enjoy.

1 2 3 4 5
Strongly Disagree Strongly Agree

2. I seek out activities that make me happy.

1 2 3 4 5
Strongly Disagree Strongly Agree

3. By looking at their facial expressions, I recognize the emotions people are experiencing.

1 2 3 4 5
Strongly Disagree Strongly Agree

4. I know why my emotions change.

1 2 3 4 5
Strongly Disagree Strongly Agree

5. When I am in a positive mood, I am able to come up with new ideas.

1 2 3 4 5
Strongly Disagree Strongly Agree

6. I have control over my emotions.

1 2 3 4 5
Strongly Disagree Strongly Agree

7. I easily recognize my emotions as I experience them.

1 2 3 4 5
Strongly Disagree Strongly Agree
8. I help other people feel better when they are down.

   1   2   3   4   5
Strongly Disagree                           Strongly Agree

9. I use good moods to help myself keep trying in the face of obstacles.

   1   2   3   4   5
Strongly Disagree                           Strongly Agree

10. I can tell how people are feeling by listening to the tone of their voice.

    1   2   3   4   5
Strongly Disagree                           Strongly Agree

APPENDIX F

PAIN DISABILITY INDEX

Pain Disability Index: The rating scales below are designed to measure the degree to which aspects of your life are disrupted by chronic pain. Respond to each category by indicating the overall impact of your life, not just when the pain is at its worst.

Please circle the number on the scale that describes the level of disability you typically experience. A score of 0 means no disability at all, and a score of 10 signifies that all of the activities in which you would normally be involved have been totally disrupted or prevented by your pain.

Family/Home Responsibilities: This category refers to activities of the home or family. It includes chores or duties performed around the house (e.g. yard work) and errands or favors for other family members (driving the children to school).

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

Recreation: This disability includes hobbies, sports, and other similar leisure time activities.

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

Social Activity: This category refers to activities, which involve participation with friends and acquaintances other than family members. It includes parties, theater, concerts, dining out, and other social functions.

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

Occupation: This category refers to activities that are part of or directly related to one’s job. This includes non-paying jobs as well, such as that of a housewife or volunteer.

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability
Sexual Behavior: This category refers to the frequency and quality of one’s sex life.

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

Self Care: This category includes activities, which involve personal maintenance and independent daily living (e.g. Taking a shower, driving, getting dressed, etc.)

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

Life-Support Activities: This category refers to basic life supporting behaviors such as eating, sleeping, and breathing.

No disability 0 1 2 3 4 5 6 7 8 9 10 Total disability

APPENDIX G

PAIN SELF-EFFICACY QUESTIONNAIRE (PSEQ)

Please rate how confident you are that you can do the following things at present, despite the pain. 0=not at all confident and 6=completely confident.

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can to them at present, despite the pain.

1. I can enjoy things, despite the pain.

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2. I can do most of the household chores (eg. Tidying-up, washing dishes, etc.) despite the pain.

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3. I can socialize with my friends or family members as often as I used to do, despite the pain.

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4. I can cope with my pain in most situations.

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5. I can do some form of work, despite the pain ("work" includes housework, paid and unpaid work).

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6. I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.

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7. I can cope with my pain without medication.

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8. I can still accomplish most of my goals in life, despite the pain.

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9. I can live a normal lifestyle, despite the pain.

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10. I can gradually become more active, despite the pain.

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APPENDIX H

INSTITUTIONAL REVIEW BOARD LETTERS
March 12, 2012

Joseph Rizzo
3357 Crestwood Circle
Cuyahoga Falls, Ohio 44223

From: Sharon McWhorter, IRB Administrator

Re: IRB Number 20120309 “The Relations among Mindfulness Based Constructs to Daily Functioning and Self-Efficacy in Chronic Pain Patients”

Thank you for submitting your Exemption Request for the referenced study. Your request was approved on March 12, 2012. The protocol represents minimal risk to subjects and matches the following federal category for exemption:

☐ Exemption 1 – Research conducted in established or commonly accepted educational settings, involving normal educational practices.

☐ Exemption 2 – Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 3 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior not exempt under category 2, but subjects are elected or appointed public officials or candidates for public office.

☐ Exemption 4 – Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 – Research and demonstration projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 – Taste and food quality evaluation and consumer acceptance studies.

Annual continuation applications are not required for exempt projects. If you make changes to the study’s design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact me to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. This office will hold your exemption application for a period of three years from the approval date. If you wish to continue this protocol beyond this period, you will need to submit another Exemption Request. If the research is being conducted for a master’s thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

☑ Approved consent form/s enclosed

Cc: Robert C. Schwartz - Advisor
Cc: Stephanie Woods - IRB Chair

Office of Research Services and Sponsored Programs
Akron, OH 44325-2102
330-972-7066 • 330-972-6281 Fax

The University of Akron is an Equal Education and Employment Institution
May 24, 2012

Gary Sipps, PhD, ABPP
1900 23rd Street
SWRH
Cuyahoga Falls, OH 44223

Dear Dr. Sipps,

The IRB has received and reviewed your proposal and associated documents for the study entitled:

**RP#12031  The Relations Among Mindfulness Based Constructs to Daily Functioning and Self-Efficacy in Chronic Pain Patients**

The IRB has reviewed and determined that the above project is "exempt from IRB review". **This exemption is approved May 24, 2012.** This review and exemption approval was processed in accordance with federally defined categories of exempt review per 45 CFR 46.

Annual renewals/progress reports are not required for exempted projects. However, should your project change, please contact our office prior to initiating any of these changes.

We appreciate the opportunity to evaluate this research and wish you success with the project.

Sincerely,

Jessica Conrad, MS, CIP
Human Subjects Protection Program Manager