THE RELATIONSHIP OF GENERAL ADULT ATTACHMENT AND PHYSICIAN-PATIENT ATTACHMENT WITH EXPERIENCE AND EXPRESSION OF ANGER AMONG CHRONIC PAIN PATIENTS

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INTRODUCTION

The Relationship of General Adult Attachment and Physician-Patient Attachment with Experience and Expression of Anger Among Chronic Pain Patients

Historically, health concerns of psychologists have focused on mental health, particularly cognitive and emotional factors that contribute to psychopathology. Within the past forty years, the field of health psychology has emerged and illnesses with which psychologists are concerned have expanded to include those of the physical body. In particular, mental health care professionals have been influential in expanding conceptualization and assessment of physical pain to include emotional, behavioral, cognitive, sensory, cultural, and personality domains (Brown & Folen, 2005; Novy, 2004; Turk & Burwinkle, 2005). Healthcare providers are encountering increasing numbers of patients seeking relief from long-lasting pain. The prevalence of pain persisting longer than six months, commonly referred to as chronic pain, continues to increase despite major advances in research, technology, and management practices (e.g., physiology, neurobiology, pharmacology, psychology, surgical procedures, regional anesthesia, implantable drug delivery systems, rehabilitation, and alternative medical procedures; Turk & Burwinkle, 2005). Chronic pain is reported to be debilitating, expensive, and one of the top reasons for healthcare visits and work absences (World Health Organization, 2001).

A widely accepted definition of pain comes from the International Association for the Study of Pain (IASP). The IASP defines pain "as an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such

damage" (Merskey & Bogduk, 1994, p. 209). The sensory and affective components of pain sensation are subjective and often negative in nature. People suffering from chronic pain experience a number of psychosocial problems including depression, anxiety, anger, grief, loneliness; alterations in eating patterns, sleeping patterns, and activity level; decreases in mobility, daily functioning, work performance, and social interactions (Breen, 2002). A vast number of chronic pain patients report that severe pain has significant negative effects on their quality of life or emotional well-being (American Pain Society, 1999; Romano, 2001) and severely limits their participation in once-pleasurable activities (Romano, 2001). While depression and anxiety have been studied extensively with chronic pain patients, anger has emerged as another important emotional component of the pain experience (Fernandez & Turk, 1995).

Anger and Chronic Pain

Anger, hostility, aggression, and anger management style are similar constructs found in pain research. Spielberger (1999) theorizes that the experience of anger includes both an emotional state (state anger) that varies in intensity and as a dispositional trait (trait anger) that varies in frequency. The expression of anger is described in terms of external aggression (anger-out), internal suppression (anger-in), outward control (anger control-out), and inward control (anger control-in) (Spielberger, 1999). There is empirical support for anger as a salient feature of the chronic pain experience (Fernandez & Milburn, 1994; Fernandez & Turk, 1995; Kerns, Rosenberg, & Jacob, 1994; Wade, Price, Hamer, Schwartz, & Hart, 1990). Researchers investigating the relationship between anger and pain experience have included patients with chronic low back pain, chest pain, spinal cord injuries, cancer (Greenwood, Thurston, Rumble, Waters, & Keefe, 2003), and complex regional pain

syndrome (Bruehl, Chung, & Burns, 2003). The expression and experience of anger has been associated with the regulation of pain through biological (e.g., increasing muscle tension, malfunctioning natural opioid analgesia, and weakening immune system), behavioral (e.g., failure to adhere to activities that would lower pain and responding negatively to others and physicians), and emotional (e.g., increasing depression) pathways making this an essential construct to explore (Greenwood et al., 2003).

In a few studies (Burns, 1997; Burns 2006; Burns, Bruehl, & Quartana, 2006), anger induction, anger management styles, and hostility have been linked with increased pain severity and increased muscle tension in chronic pain patients. Specifically, researchers found that during anger induction, high anger suppressors who are also high in hostility reported increased muscle reactivity near the site of pain (Burns, 1997; Burns et al., 2006). Anger suppression (anger-in) (Gelkopf, 1997; Quartana & Burns, 2007) and anger aggression (anger-out) (Bruehl, Burns, Chung, Ward, & Johnson, 2002; Bruehl et al., 2003; Kerns et al., 1994; Lombardo, Tan, Jensen, & Anderson, 2005) have been positively associated with pain severity. Malfunctioning endogenous opioid release has been found to mediate the relationship between anger aggression and pain intensity (Bruehl et al., 2002; Bruehl, Chung, Burns, & Biridepalli, 2003; Burns & Bruehl, 2005; Burns, Bruehl, & Caceres, 2004). In one study, state anger and state anxiety were found to be more predictive of affective pain ratings than trait anger or trait anxiety (Gaskin, Greene, Robinson, & Geisser, 1992), implying that mood states influence pain more so than character tendencies. In summary, anger appears to influence the pain experience for patients.

Chronic pain patients are often hesitant to express feelings of anger toward others. Ambivalence about expressing anger may stem from apprehension of negative consequences

including fearing abandonment by doctors and feeling guilty after mismanaging anger in the presence of family or friends (Carson et al., 2007). Harboring anger or frustration can further lead to increased angry feelings and maladaptive anger management. Ambivalence over emotional expression has been found to be positively correlated with both affective and evaluative pain as well as state anger, trait anger, and anger suppression (Carson et al., 2007). Anger suppression among males has been associated with fewer improvements in general activity and depression, while anger expression among males has been associated with fewer improvements in lifting capacity (Burns, Johnson, Devine, Mahoney, & Pawl, 1998). In other studies, anger has been associated with increased pain disability and depression (Okifuji, Turk, & Curran, 1999), high systolic and diastolic blood pressure (Burns et al., 2006), and increased heart rate (Janssen, Spinhoven, & Arntz, 2004).

It has been suggested that anger contributes to disruptive relationships with healthcare professionals, significant others, family, friends, and co-workers. Anger can further interfere with treatment providers' efforts to implement pain management techniques to chronic pain patients (Greenwood et al., 2003). One researcher (Okifuji et al., 1999) found that chronic pain sufferers report anger at particular targets, most often themselves, treatment providers, and the casual agent of the accident or illness rather than as a general feeling. Another group of researchers (Burns, Higdon, Mullen, Lansky, & Wei, 1999) found that chronic pain patients who score high in both hostility and anger expression report a weak working alliance with their physical or occupational therapist. Anger researchers purpose that physicians' awareness of anger or anger management style in pain patients can affect the physician-patient relationship which is an important element of treatment (Greenwood et al., 2003).

Attachment and Chronic Pain

Help seeking from different treatment providers is common among chronic pain patients given the chronicity of their intractable pain. Frequent doctor visits mean more exchanges that are interpersonal which may lead to the development of patient-physician "bonds" or relationships. Kolb (1982) theorized that attachment theory can provide an understanding of chronic pain complaints and can offer treatment approach strategies to physicians and caretakers. According to Kolb, pain patients are initially compliant and respectful to treatment. As treatment progresses (i.e., increase in activity or reduction in medication), some patients feel threatened and respond by complaining, questioning, becoming clingy, or withdrawing. Treatment failure or rejection for treatment lead to frustration and leave the chronic pain sufferer seeking a variety of treatments in multiple settings with multiple doctors. Persisting pain complaints and increased questioning of pain and anger are forms of attachment behavior for eliciting a caretaker to gain security. Withdraw behaviors can be a signal that the pain patient has lost hope in the attachment figure or the pain management specialist's ability to satisfy security needs (Kolb, 1982). More recently, attachment theory has been proposed as part of an interpersonal-based model for explaining the development and experience of chronic pain (Mikail, Henderson, & Tasca, 1994).

Attachment is an affectionate relationship to particular others usually developed by maintaining proximity to or communication with a specific individual to reduce anxiety (Bowlby, 1969, 1973, 1980). Bowlby proposed that attachment relationships sustain throughout life while attachment behavior is active in certain situations, particularly when an attachment figure is unavailable or a threat is present (e.g., pain or loss). Attachment theory

initially focused on infant and child relationships with caregivers. Ainsworth, Blehar, Waters, & Wall (1978) were the first to describe secure, anxious-avoidant, and anxious-ambivalent attachment styles of infants. Examining attachment styles in adult relationships is more recent in the literature (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987; Simpson, Rholes, & Nelligan, 1992). Hazan and Shaver (1987) were the first to conceptualize romantic love between adults as an attachment process. The researchers applied a three group model of attachment styles (i.e., secure, anxious, and avoidant) to study adult love relationships. A four group model of adult attachment styles has also been described. Adult Attachments derive from dichotomous combinations of a positive or negative mental representation of self and a positive or negative mental representation of others that results in four possible attachment styles: secure, preoccupied, fearful, and dismissing (Bartholomew, 1990; Bartholomew & Horowitz, 1991). Individuals with secure attachment style maintain a positive image of self and others, view themselves as worthy of love, view others as caring and approachable, and value close relationships (Bartholomew & Horowitz, 1991). Preoccupied attachment style is characteristic of a person who adopts negative representations of self and positive representations of others, thus failing to believe the self is worthy of love while believing others are valuable (Bartholomew & Horowitz, 1991). Self-acceptance for preoccupied persons is contingent on feeling acceptance by others often leading to over involvement in close relationships (Bartholomew & Horowitz, 1991). Negative representations of both self and others is typical of a person with fearful attachment style, who perceive the self as undeserving of love or support and perceive others as untrustworthy and unaccepting (Bartholomew & Horowitz, 1991). Fearful individuals avoid expected rejection by avoiding close relationships (Bartholomew & Horowitz, 1991).

Positive images of self and negative images of others foster a dismissing attachment style characteristic of viewing the self as worthy of affection while viewing others as uncaring (Bartholomew & Horowitz, 1991). Dismissing individuals deemphasize close relationships with others to guard against disappointment. Dismissing persons try to appear autonomous and less susceptible to others feelings (Bartholomew & Horowitz, 1991).

Attachment is frequently categorized as secure or insecure (i.e., anxious, avoidant, preoccupied, fearful, and dismissing). Insecure attachment further varies along two attachment dimensions: anxiety (concern with accessibility to and responsiveness of others) and avoidance (discomfort with closeness). Securely attached individuals are low on both dimensions. Fearfully attached individuals are high on both dimensions. Preoccupied individuals are high in anxiety and low in avoidance, and dismissing individuals are low in anxiety and high in avoidance. For this study, chronic pain patients' general adult attachment style as well as their attachment to their physician will be investigated.

Several researchers have found significant relationships between insecure attachment, emotional distress, negative pain appraisals, catastrophizing, and lower pain self-efficacy (Ciechanowski, Sullivan, Jensen, Romano, & Summers, 2003; MacDonald & Kingsbury, 2006; Meredith, Strong, & Feeney, 2005, 2006a, 2007). Researchers have failed to find direct meaningful relationships between attachment variables and pain intensity or pain disability (Ciechanowski et al., 2003; Meredith et al., 2005, 2006a).

A few researchers have explored attachment and pain-related variables for pain-free and/or relatively healthy individuals (McWillams & Asmundson, 2007; Meredith et al., 2006b). Attachment anxiety has been associated with pain-related fear, hypervigilance, and catastrophizing, whereas attachment avoidance has been associated with catastrophizing

(McWillams & Asmundson, 2007). Attachment is significantly related to the acute pain experience including pain thresholds, control, catastrophizing, stress, and depression, (Meredith et al., 2006b). In a diabetic population, dismissing individuals have been found to be less adherent to self-care and to rate the patient-provider relationship less favorable than securely attached individuals (Ciechanowski, Russo, Katon et al., 2004).

In two studies with chronic pain patients, secure attachment style or high comfort with closeness has been associated with lower levels of depression (Ciechanowski et al., 2003; Meredith et al., 2007) while anxiety over relationships has been associated with higher levels of depression (Meredith et al., 2007). High comfort with closeness (low avoidance) was found to be a better predictor of post-treatment depression than age, gender, pain intensity, and pre-treatment depression (Meredith et al., 2007). Among patients recruited from a multidisciplinary pain program, those with fearful attachment style reported high levels of depression and catastrophizing while those with preoccupied attachment style were found to have greater health care utilization (Ciechanowski et al., 2003). In another study, fearful and preoccupied attachment styles were related to low self-efficacy and insecure attachment was related to high anxiety (Meredith et al., 2006a). Anxious attachment has been found to moderate the relationship between pain affect and both depression and anxiety (MacDonald & Kingsbury, 2006). The negative impact of insecure attachments on pain-related variables might be explained by negative appraisals of pain. In one study, anxiety over relationships was associated with threatening pain appraisals whereas comfort with closeness was associated with more positive pain appraisals (Meredith et al., 2005).

Statement of the Problem

In summary, researchers investigating negative affect in relation to pain experiences have focused primarily on depression and anxiety. To a lesser extent, anger has been linked to the experience of pain. Anger has been shown to aggravate pain levels or disability by increasing muscle reactivity, hampering endogenous pain relieving mechanisms, and contributing to depression. While it has been suggested that anger among persons with persisting pain negatively impacts social relationships and interferes with pain management, little empirical research has been done in this area. Only a few researchers have examined attachment in relation to pain severity, pain appraisals, pain self-efficacy, catastrophizing, control, pain threshold, and emotional distress related to pain. Attachment researchers propose that patients' responsiveness and adjustment to pain as well as physician responsiveness can be expressions of attachment and further suggest that considering attachment in treatment interventions can foster better understanding of patient needs, defenses, and mutual patient-caregiver interactions (Ciechanowski et al., 2003; Meredith et al., 2006a, 2007; Porter, Davis, & Keefe, 2007; Tan, Zimmermann, & Rodin, 2005; Thompson & Ciechanowski, 2003). Developing a trusting, expectant, and secure relationship between physician and pain patient appears to be essential in relieving distress (Kolb, 1982). Distress and helplessness experienced in times of illness or pain can heighten attachment responses (Thompson & Ciechanowski, 2003). A secure attachment between physician and patient can eliminate separation anxiety while fostering hope that security needs will be attended to (Kolb, 1982). Given evidence of associations between anger and pain experience and attachment and pain experience, it is meaningful to examine attachment variables in relation to anger and anger expression in chronic pain patients. Research on attachment styles

and anger experience and expression in a chronic pain population has been scant. Measures of attachment to romantic partners, parents, and close friends are available in the attachment literature. While measures of patient satisfaction and physician-patient communication exist, there are no current measures of physician-patient attachment.

The Physician-Patient Attachment Scale was developed for this study to measure patients' perceptions of the quality and nature of their relationships with their physicians, from an attachment perspective, with a focus on trust, communication, and alienation/connection. Researchers (Kolb, 1982; Mikail et al., 1994) have theorized and proposed that attachment theory could be useful in understanding patients' chronic pain experiences. However, there are no questionnaires available in the literature that assessed attachment to one's physician from the patient perspective. There are measures available to assess patients' satisfaction with their medical care/treatment and perceptions of medical staff members' involvement in their care, including their physicians' involvement (Pain Treatment Satisfaction Scale; Evans et al., 2004; Patient Reactions Assessment; Galassi, Schanberg, & Ware, 1992; Modified Version of Perceived Involvement in Care Scale; Smith, Winkel, Egert, Diaz-Wionczek, & DuHamel, 2006; Patient-Doctor Relationship Questionnaire; Van der Fektz-Cornelis, Van Oppen, Van Marwijk, De Beurs, & Van Dyck, 2004); however, these measures tend to assess how patients felt about the medical information they received about their condition, whether they were involved in making decisions about their medical treatment, and the attitude of the treatment provider(s).

While there is one measure of physician-patient relationships called the Patient-Doctor Relationship Questionnaire (Van der Fektz-Cornelis et al., 2004), it is a brief measure

of the helping alliance and does not assess the unique aspects of the helping relationship between physician and patient compared to the Physician-Patient Attachment Scale. The Physician-Patient Attachment Scale allows for an overall measurement of how attached or connected patients feel toward their physicians, and it also provides specific information regarding patients' feelings of trust, communication, and alienation toward their physicians, which is unique compared to other assessments.

There is evidence in the literature for the importance of the relationship between patient-provider in health outcomes for patients working with primary care physicians. In Stewart's (1995) meta-analysis study, effective patient-physician communication was found to have positive effects on health outcomes for patients, including emotional state, functional state, pain reduction, and symptom resolution. It was concluded that physicians can build meaningful relationships with patients by gathering enough information to understand the problem, provide information in a clear supportive manner, and involve patients in decision making and identifying the nature of the problem (Stewart, 1995).

It should be noted, however, that these studies were conducted with patients who were seeing primary care physicians and these findings may not reflect the experiences of chronic pain patients with their pain physicians and specialists. In addition, only physician-patient communication was explored, which is only one aspect of quality working relationships with physicians.

Purpose of the Study

The purpose of the study is to explore the relationship of general adult attachment and physician-patient attachment with experience and expression of anger among chronic pain patients. The research questions for this study include: 1) What is the linear relationship of

chronic pain patients' general adult attachment with their experience and expression of anger (i.e., state and trait anger, anger aggression and anger suppression, and anger control), 2) What is the linear relationship of physician-patient attachment with the experience and expression of anger among chronic pain patients (i.e., state and trait anger, anger aggression and anger suppression, anger control), and 3) Does physician-patient attachment contribute to the understanding of patients' experience and expression of anger, above and beyond what general adult attachment explains?

METHOD

Participants

A total of 62 chronic pain patients from four chiropractic offices in two different southwestern U.S towns participated in this study. Forty-one participants lived in a rural area and the remaining 21 lived in an urban area. The participants included 45 females (72.6%) and 17 males (27.4%), who ranged in age from 19 to 79 (*M* = 44.30 years, SD = 16.69). The majority of participants identified themselves as White/Non-Hispanic (77.4%, n = 48). Other racial or ethnic groups represented in the sample were Hispanic/Latino/a (11.3%, n = 7) and Native American (1.6%, n = 1). Approximately 60% of participants were married (62.9%, n = 39); 19.4 % were single (n = 12); 4.8 % were partnered or common law (n = 3); 9.7% were divorced (n = 6); and 3.2% were widowed (n = 2). Over half of the participants were employed (56.5%, n = 35); approximately 33.9% were unemployed (n = 21) and 9.7% were disabled (n = 6). The majority of participants were not receiving disability benefits (88.7%, n = 55) and were not taking prescription medication for pain (51.6%, n = 32). In terms of education, 38.7% had completed at least some college (n = 38.7); 14.5% earned a bachelors degree (n = 9); 11.3% earned a masters degree (n = 7); and 6.5% earned a doctoral degree (n = 4). Other participants earned a high school diploma (24.2%, n = 15) or equivalent (3.2%, n = 2). See Table 1 for demographics of this sample.

The participants reported experiencing chronic pain for a minimum of 8 months to a maximum of 528 months (*M* = 136.85 months, SD = 131.616). Pain by location was reported

for the low back (61.3%, n = 38), neck (53.2%, n = 33), shoulder (45.2%, n = 28), mid-back (27.4 %, n = 17), knee (25.8%, n = 16), head (21%, n = 13), wrist (19.4%, n = 12), upper back (19.4%, n = 12), hip (19.4%, n = 12), hand (14.5%, n = 9), foot (11.3%, n = 7), upper arm (9.7%, n = 6), elbow (9.7%, n = 6), knuckle (9.7%, n = 6), finger (8.1%, n = 5), ankle (6.5%, n = 4), toe (6.5%, n = 4), lower arm (4.8%, n = 3), jaw (4.8%, n = 3), chest (3.2%, n = 2), lower leg (3.2%, n = 2), upper leg (3.2%, n = 2), groin (1.6%, n = 1), and stomach (1.6%, n = 1). On average, participants identified experiencing pain at four locations in the body (sd = 2.93; range = 1 to 13).

Medical diagnoses associated with their chronic pain conditions included low back pain (40.3%, n = 25), arthritis, (30.6%, n = 19), osteoarthritis (11.3%, n = 7), myofacial pain syndrome (8.1%, n = 5), rheumatoid arthritis (6.5%, n = 4), carpal tunnel syndrome (6.5%, n = 4), complex regional pain syndrome (6.5%, n = 4), fibromyalgia (6.5%, n = 4), migraine headaches (6.5%, n = 4), osteoporosis (3.2%, n = 2), temporomandibular joint disorder (3.2%, n = 2), cancer (1.6%, n = 1), peripheral neuropathy (1.6%, n = 1), lupus (1.6%, n = 1), scoliosis (1.6%, n = 1), and tendonitis (1.6%, n = 1).

Procedures

Participants were recruited from four chiropractic offices in two southwestern towns in the United States. The inclusion criterion for participation was the experience of pain for at least six months (a.k.a, chronic pain).

Chiropractors in two southwestern towns were sent letters explaining the purpose of this study and inviting their practice to participate in this study. Follow-up calls and office visits were made. Four chiropractic physicians out of eight clinics consented to recruit patients for this study. The chiropractors and office staff were given packets of materials to

review including the informed consent form, measures, and resource list. Office staff was trained to the recruitment procedure which follows.

Patients were invited to participate in this study at their chiropractor's office when they checked-in for their appointment. Patients were informed that their choice to participate or not participate would in no way affect the services of their pain management care. Chronic pain patients who agreed to participate were given a packet containing an informed consent form and a survey (including the questionnaires for this study) to complete in the waiting room. Completion of the survey indicated their consent to participation in this study (no signature line on the informed consent form), thus ensuring that their names could not be linked with their survey responses. The participants placed their completed surveys in an envelope, sealed it, and returned it to the office staff. At that time, participants received three dollars for their participation.

Measures

Participants were given a survey which included a demographic page, the Attachment Style Questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994), the Physician-Patient Attachment Scale (PPAS; Sims & Winterowd, 2007), the State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999), Visual Analogue Scales (VAS; Turk & Melzack, 2001), the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991), and the Depression Anxiety Stress Scales 21 (DASS21; Lovibond & Lovibond, 1995). The ASQ, PPAS, and STAXI-2 scores were used in the analyses of this study. The other measures were collected as part of a larger study.

Demographic Page. Information on age, gender, martial status, race, employment status, education, medical diagnosis, pain location, duration of pain, and use of prescription medication was gathered.

Attachment Style Questionnaire (ASQ; Feeney et al., 1994). The ASQ is a 40-item self-report measure of adult attachment. Items are rated on a 6-point Likert-type scale (1 = totally disagree, 6 = totally agree). The original principle components analysis yielded a five-factor solution that accounted for 43.3% of the variance (Feeney et al., 1994). The five subscales of the ASQ include: Confidence (e.g., "I feel confident that other people will be there for me when I need them"), Discomfort with Closeness (e.g., "I worry about people getting too close"), Need for Approval (e.g., "It's important to me that others like me"), Preoccupation with Relationships (e.g., "I worry a lot about my relationships"), and Relationships as Secondary (e.g., "Achieving things is more important than building relationships"). In the normative adult sample, 10 week test-retest reliability estimates for the subscales were .74 for Confidence, .74 for Discomfort with Closeness, .78 for Need for Approval, .72 for Preoccupation with Relationships, and .67 for Relationships as Secondary (Feeney et al., 1994). Internal consistency reliability coefficients for the subscales were as follows: .80 for Confidence, .84 for Discomfort with Closeness, .79 for Need for Approval, .76 for Preoccupation with Relationships, .76 for Relationships as Secondary. The ASQ has adequate reliability and good convergent validity with other attachment measures, family functioning measures, and personality measures (Feeney et al.).

High scores on the Confidence subscale represent secure attachment while high scores on the other four subscales represent aspects of insecure attachment. Discomfort with Closeness is representative of avoidant attachment. Relationships as Secondary is

representative of dismissing attachment. Need for approval is representative of fearful and preoccupied attachment or anxious attachment and Preoccupation with Relationships is also representative of preoccupied or anxious attachment (Feeney et al., 1994).

Several groups of researchers have further derived two attachment dimensions from the ASQ (Alexander, Feeney, Hohaus, & Noller, 2001; Feeney et al., 1994; MacDonald & Kingsbury, 2006; Meredith et al., 2005, 2006a, 2006b, 2007; Strahan, 2005): Comfort with Closeness (low avoidance) and Anxiety Over Relationships (anxiety). Despite internal consistency reliability results for these dimensions across studies (.80 to .86 for Comfort with Closeness and .80 to .92 for Anxiety Over Relationships; Alexander et al., 2001; MacDonald & Kingsbury, 2006; Meredith et al., 2005, 2006a, 2006b, 2007; Strahan, 1995), it should be noted that the items significantly loading on each of these dimensions have not been consistent across the studies. Therefore, previous researchers have conducted their own factor analysis on the ASQ to determine the factor structure for their sample. Unfortunately, there were not enough participants in this study to conduct a factor analysis of the ASQ to assess whether these two attachment dimensions existed for this sample. Therefore, subscale scores were considered for use in the analyses for this study. The ASQ subscale scores have been used in other research studies and therefore were used for the purposes of the present study (Caltabino &Thorpe, 2007; Fossati, et al., 2005; Troisi, Massaroni, & Cuzzolaro, 2005).

Inspection of the internal consistency reliability estimates for the ASQ subscales revealed that two of the original five subscales were not reliable for this sample: Need for Approval (.56) and Preoccupation with Relationships (.56). The Cronbach alphas for the other subscales were as follows: .75 for Confidence, .87 for Discomfort with Closeness, and

.70 for Relationships as Secondary. Based on these findings, only the Confidence subscale score, Discomfort with Closeness subscale score, and Relationships as Secondary subscale score of the ASQ were used in the data analyses.

Physician-Patient Attachment Scale (PPAS; Sims & Winterowd, 2007). The PPAS is a measure of patient attachment to their physician and was developed for this study. The PPAS includes items adapted from the Peer Attachment subscale of the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987).

The IPPA was originally developed to measure older adolescents' perceptions of the positive and negative affective and cognitive facets in relationships with their mother, father, and peers. The original subscales of the IPPA (i.e., Trust, Communication, and Alienation) for mother, father, and peers were developed using factor analytic procedures (Armsden & Greenberg, 1987).

The PPAS includes 25 items that are rated on a 5-point Likert scale (1 = almost never or never true, 5 = almost always or always true). There are 10 items for the Patient Trust subscale, 8 items for the Patient Communication subscale, and 6 items for the Patient Alienation subscale. An example of a Patient Trust item is "My physician listens to what I have to say." An example of a Patient Communication item is "If my physician knows something is bothering me, they ask me about it." An example of a Patient Alienation item is "Talking over my problems with my physician makes me feel ashamed or foolish." Item 9, "I need to be in touch with my physician more often," loaded in a negative direction on the PPAS. The researchers decided to delete this item since chronic pain patients tend to have a lot of contact with their physicians and we did not feel that this particular item did not relate to them.

The internal consistency reliability estimate for the total score of physician-patient attachment for this sample was .92. Cronbach alphas for the PPAS subscales were .90 for patient Trust, .87 for patient Communication, and .71 for patient Alienation. The three physician-patient attachment subscale scores were used in the data analyses.

State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999). The STAXI-2 is a 57 item self-report measure of the experience, expression, and control of anger. Items are rated on 4-point Likert-type scales indicating intensity (i.e., 1 = not at all to 4 = very much so, for items 1 to 15) or frequency (i.e., 1 = almost never to 4 = almost always, for items 16 to 57) with which the statement relates to them. Six scale scores, five subscale scores, and an Anger Expression Index score can be calculated from the STAXI-2. The State Anger (S-Ang) scale consists of 15-items designed to measure the intensity of angry feelings in the moment. Scores can range from 15 to 60. Higher scores correspond to the presence of greater intensity of angry feelings at the time of administration. An example item from S-Ang is, "I am furious." The Trait Anger (T-Ang) scale consists of 10-items designed to measure general feelings of anger. Scores can range from 10 to 40. Higher scores correspond to a general experience of more frequent feelings of anger. An example item from T-Ang is, "I am quick tempered." The Anger Expression-Out scale (AX-O) consists of 8-items measuring overt verbal or physical anger. An example item from AX-O is, "I do things like slam doors." The Anger Expression-In (AX-I) scale consists of 8-items measuring suppression of anger. An example item from AX-I is, "I withdraw from people." The Anger Control-Out scale (AC-O) consists of 8-items measuring control of outward anger expression. An example item from AC-O is, "I keep my cool." The Anger Control-In scale (AC-I) consists of 8-items measuring anger control using methods like calming down or

cooling off. An example item from AC-I is, “I try to soothe my angry feelings.” Scores on AX-O, AX-I, AC-O, and AC-I can range from 8 to 32. Higher scores indicate higher frequency of anger expression, anger suppression, or anger control. The Anger Expression Index provides a general measure of anger expression derived from scores on AX-I, AX-O, AC-I, and AC-O. Internal consistency reliability estimates ranged from .73 to .94 on both anger experience scales and anger expression scales (Spielberger, 1999). For this sample, internal consistency reliability estimates were as follows: S-Ang (α = .94), T-Ang (α = .91), AX-O (α = .68), AX-I (α = .71), AC-O (α = .77), and AC-I (α = .82).

RESULTS

Correlational Analyses

Pearson product moment correlations were conducted to determine the bivariate relationships among the main study variables including general adult attachment (i.e., Confidence, Discomfort with Closeness, and Relationships as Secondary), physician-patient attachment (i.e., Trust, Communication, Alienation), and anger subscales (i.e., State and Trait Anger, Anger Expression-Out and -In, Anger Control-Out and –In). See Table 2 for the correlation matrix of main study variables.

Correlations among the anger subscales. First, the bivariate relationships among the anger subscales were explored for this chronic pain patient sample. Trait anger was significantly related to anger in the moment (S-Ang; $r = .64$, $p < .01$), anger aggression (AX-O; $r = .73$, $p < .01$), anger suppression (AX-I; $r = .52$, $p < .01$), and anger control efforts, particularly anger control out (AC-O; $r = -.43$, $p < .01$). Chronic pain patients in this sample who had felt anger across a variety of situations tended to also struggle with anger in specific situations, anger suppression and aggression, as well as have some difficulties controlling the outward expression of their anger.

Correlations among the general adult attachment subscales. Examination of the general adult attachment subscales of the ASQ revealed a significant negative relationship between Confidence and Discomfort with Closeness ($r = -.61$, $p < .01$). Chronic pain patients in this sample who felt confident getting close to others (i.e., secure attachment style in general) were less likely to report difficulties with avoidance or uneasiness about getting

close to others. Discomfort with Closeness and Relationships as Secondary ($r = .52$, $p < .01$), two indicators of insecure attachment style in general, were significantly and positively related. Chronic pain patients in this sample who had been more avoidant of relationships also tended to report being more dismissive of relationships and tended to prefer to rely on themselves instead of others.

Correlations among the physician-patient attachment subscales. Examination of the physician-patient attachment subscales of the PPAS revealed a significant positive relationship between Trust and Communication ($r = .84$, $p < .01$) and significant negative relationships between Trust and Alienation ($r = -.52$, $p < .01$) and Communication and Alienation ($r = -.31$, $p < .05$). Chronic pain patients in this sample who trusted their physician also experience good communication with their physician. In addition, chronic pain patients who had more trust in their physician and tended to communicate better with their physician also felt less alienated from their physician.

Correlations between the general adult and physician-patient attachment subscales. Among the general adult attachment subscales and physician-patient attachment subscales, there was a significant and positive correlation between Relationships as Secondary and Alienation ($r = .30$, $p < .05$). Chronic pain patients in this sample who had more insecure, dismissive attachment styles with people in general, tended to also experience more alienation with their physician.

Correlations between the general adult attachment and anger subscales. Some of the ASQ subscales were related to the anger subscales. Confidence was significantly and negatively related with anger suppression (AX-I; $r = -.35$, $p < .01$) and Confidence was significantly and positively related to anger control-out efforts (AC-O; $r = .37$, $p < .01$).

Chronic pain patients who tended to feel more confident in getting close to others in general (i.e., secure attachment) reported that they were less apt to hold their anger in but more likely to control the outward expression of their anger with others.

Discomfort with Closeness was significantly and positively related to chronic anger (T-Ang; $r = .37$, $p < .01$) and anger suppression (AX-I; $r = .37$, $p < .01$). Discomfort with Closeness was also significantly and negatively related to anger control-out efforts (AC-O; $r = -.44$, $p < .01$). Chronic pain patients who tended to feel uncomfortable getting close to people in general tended to report more chronic anger and anger suppression, and fewer efforts to control the outward expression of anger.

Relationships as Secondary was significantly and positively related to chronic anger (T-Ang; $r = .30$, $p < .05$). Chronic pain patients in this sample who tended to rely more on themselves than others and tended to be dismissive in their attachments with people in general also reported more anger experiences across situations.

Correlations between the physician-patient attachment and anger subscales. Some of the PPAS subscale scores were related to the anger scales. Trust in one's physician (Trust) was significantly and negatively correlated with anger suppression (AX-I; $r = -.29$, $p < .05$). Feeling alienated with one's physician (i.e., Alienation) was significantly and positively correlated with anger in the moment (S-Ang; $r = .25$, $p < .05$), chronic anger (T-Ang; $r = .36$, $p < .01$), and anger suppression (AX-I; $r = .43$ $p < .01$). Feelings of alienation (i.e., less connection) toward physicians were associated with more state and trait anger and more anger suppression among chronic pain patients in this sample. However, more trust in physicians was associated with less anger suppression.

Given the significant bivariate findings for general adult attachment and anger (experience and expression), as well as physician-patient attachment and anger (experience and expression), follow-up multiple regression analyses were conducted to explore how general adult attachment and physician-patient attachment (separately and collectively) are linearly related to the specific anger subscales of trait anger, anger suppression, and anger control-out.

Multiple Regression Analyses

A series of multiple regression analyses were conducted to explore the linear relationships of general adult attachment (i.e., Confidence, Discomfort with Closeness, and Relationships as Secondary) and physician-patient attachment (i.e., Trust, Communication, and Alienation) with the experience (i.e., trait anger) and expression of anger (i.e., anger expression-in and anger control-out).

Trait Anger. A multiple regression analysis was conducted with Confidence, Discomfort with Closeness, and Relationships as Secondary (i.e., general adult attachment) entered as the predictor variables and Trait Anger as the criterion variable. In combination, the general adult attachment variables predicted a statistically significant amount of variance ($R^2 = .156$; Adjusted $R^2 = .113$) in Trait Anger, $F (3, 58) = 3.58$, $p < .05$. The nature and quality of chronic pain patients' relationships with people in general explained 11.3% of the total variance in their experience of chronic anger. See Table 3.

A second multiple regression analysis was conducted with Trust, Communication, and Alienation (i.e., physician-patient attachment) entered as the predictor variables and Trait Anger as the criterion variable. In combination, physician-patient attachment predicted a statistically significant amount of variance ($R^2 = .177$; Adjusted $R^2 = .134$) in Trait Anger, F

(3, 58) = 4.15, p = .01. The nature and quality of chronic pain patients' relationships with their physician explained 13.4 % of the total variance in their experience of chronic anger. See Table 4.

A hierarchical multiple regression analysis was conducted to explore how both general adult attachment and physician-patient attachment subscales were linearly related to Trait Anger. The general adult attachment subscales (Confidence, Discomfort with Closeness, and Relationships as Secondary) were entered into the first block and the physician-patient attachment subscales (Trust, Communication, and Alienation) were entered into the second block to predict their contributions to the understanding of Trait Anger in chronic pain patients. The order in which these variables were entered as blocks was determined based on theoretical assumption that general adult attachment is pre-dispositional in nature whereas physician-patient attachment is situational in nature given this specific professional attachment relationship only occurs when an individual has interactions with their physician.

In the first model, the general adult attachment variables predicted a statistically significant amount of variance (R^2 = .156; Adjusted R^2 = .113) in Trait Anger, F (3, 58) = 3.58, p < .05. When Trust, Communication, and Alienation (i.e., physician-patient attachment) were added in the second block of the regression, all of the attachment subscales (general and physician-patient) accounted for 18.5% (R^2 = .265; Adjusted R^2 = .185) of the variance in Trait Anger scores, F (6, 55) = 3.31, p <.01. After controlling for general adult attachment, physician-patient attachment did not contribute significantly more to the overall relationship with chronic anger, R^2 change = .109, Adjusted R^2 change = .072, F change (3, 55) = 2.72, p > .05. See Table 5.

Anger In. A multiple regression analysis was conducted with Confidence, Discomfort with Closeness, and Relationships as Secondary (i.e., general adult attachment) entered as the predictor variables and Anger-In as the criterion variable. In combination, the general adult attachment variables predicted a statistically significant amount of variance ($R^2 = .163$; Adjusted $R^2 = .120$) in Anger-In, $F (3, 58) = 3.78$, $p < .05$. The nature and quality of chronic pain patients' relationships with people in general explained 12% of the total variance in their experience of anger suppression. See Table 6.

A second multiple regression analysis was conducted with Trust, Communication, and Alienation (i.e., physician-patient attachment) entered as the predictor variables and Anger-In as the criterion variable. In combination, physician-patient attachment predicted a statistically significant amount of variance ($R^2 = .226$; Adjusted $R^2 = .186$) in Anger-In, $F (3, 58) = 5.64$, $p < .01$. The nature and quality of chronic pain patients' relationships with their physician explained 18.6% of the total variance in their experience of anger suppression. See Table 7.

A hierarchical multiple regression analysis was conducted to explore how both general adult attachment and physician-patient attachment subscales were linearly related to Anger-In. The general adult attachment subscales (Confidence, Discomfort with Closeness, and Relationships as Secondary) were entered into the first block and the physician-patient attachment subscales (Trust, Communication, and Alienation) were entered into the second block to predict their contributions to the understanding of Anger-In in chronic pain patients.

In the first model, the general adult attachment variables predicted a statistically significant amount of variance ($R^2 = .163$; Adjusted $R^2 = .120$) in Anger-In, $F (3, 58) = 3.78$, $p < .05$. When Trust, Communication, and Alienation (i.e., physician-patient attachment)

were added in the second block of the regression, all of the attachment subscales (general and physician-patient) accounted for 24.8% (R^2 = .322; Adjusted R^2 = .248) of the variance in Anger-In scores, F (6, 55) = 4.35, p <.01. After controlling for general adult attachment, physician-patient attachment contributed significantly more to the overall relationship with anger suppression, R^2 change = .159, Adjusted R^2 change = .128**,** F change (3, 55) = 4.29, p < .01. See Table 8.

Anger Control-Out. A multiple regression analysis was conducted with Confidence, Discomfort with Closeness, and Relationships as Secondary (i.e., general adult attachment) entered as predictor variables and Anger Control-Out as the criterion variable. In combination, the general adult attachment variables predicted a statistically significant amount of variance (R^2 = .211; Adjusted R^2 = .170) in Anger Control-Out, F (3, 58) = 5.16, p < .01. The nature and quality of chronic pain patients' relationships with people in general explained 17% of the total variance in their experience of effort to control anger out. See Table 9.

A second multiple regression analysis was conducted with Trust, Communication, and Alienation (i.e., physician-patient attachment) entered as the predictor variables and Anger Control-Out as the criterion variable and. In combination, physician-patient attachment did not predict a significant amount of variance (R^2 = .037; Adjusted R^2 = -.012) in Anger Control-Out, F (3, 58) = 0.75, p >.05. The nature and quality of chronic pain patients' relationships with their physician failed to explain a substantial amount of variance in their experience of effort to control anger out. See Table 10.

A hierarchical multiple regression analysis was conducted to explore how both general adult attachment and physician-patient attachment subscales were linearly related to

Anger Control-Out. The general adult attachment subscales (Confidence, Discomfort with Closeness, and Relationships as Secondary) were entered into the first block and the physician-patient attachment subscales (Trust, Communication, and Alienation) were entered into the second block to predict their contributions to the understanding of Anger Control-Out in chronic pain patients.

In the first model, the general adult attachment variables predicted a statistically significant amount of variance ($R^2 = .211$; Adjusted $R^2 = .170$) in Anger Control-Out $F (3, 58) = 5.16$, $p < .01$. When Trust, Communication, and Alienation (i.e., physician-patient attachment) were added in the second block of the regression, all of the attachment subscales (general and physician-patient) accounted for 16% **(**$R^2 = .243$; Adjusted $R^2 = .160$) of the variance in Anger Control-Out scores, $F (6, 55) = 2.94$, $p < .05$. After controlling for general adult attachment, physician-patient attachment did not contribute significantly more to the overall relationship with Anger Control-Out (i.e., efforts to control the outward expression of anger), R^2 change = .032, Adjusted R^2 change = -.01**,** F change $(3, 55) = 0.77$, $p > .05$. See Table 11.

DISCUSSION

This study extends the work of previous researchers in that general alliance and communication with physicians as well as experiences of trust and connection/alienation were explored with the Physician Patient Attachment Scale in a sample of chronic pain patients. In addition, chronic pain patients' general approach to relationships with other people was also explored. Both general and specific attachment experiences were explored in relation to anger experience and expression in chronic pain patients. This study is also unique in that the quality and nature of chronic pain patients' relationships with their chiropractors, as physicians, was explored. Chiropractic care is considered to be alternative or complimentary treatment for chronic pain and there is evidence that chronic pain patients have benefited from chiropractic care and use their services. A national health survey found that the use of complementary and alternative medicine, particularly for musculoskeletal conditions and chronic pain is high among American women (40%), with 14% utilizing chiropractic care or massage (Upchurch et al. 2007). One group of researchers found that 26% of Whites, 18% of Hispanics, and 14% of African-Americans had consulted a chiropractor for pain (Nguyen et al., 2005). Another study showed that patients receiving chiropractic care for low back pain reported more satisfaction when compared with patients receiving medical care for low back pain (Hertzman-Miller et al., 2002). There is also support for chiropractic care for chronic low back pain to decrease disability and pain intensity greater than pain-clinic care (Wilkey, Gregory, Byfield, & McCarthy, 2008). The

majority of participants in this study were suffering from low back and/or neck pain. Patients with these problems seek chiropractic care for manipulation or alignment therapy related to musculoskeletal, spinal joint and/or nerve damage conditions for pain relief.

In the present study, chronic pain patients' emotional bonds with their physicians and their general approach toward relationships with people in general were explored in relation to their experience and expression of anger. This study is exploratory in nature. A few researchers have explored anger among chronic pain patients (Bruehl et al., 2002; Burns, 1997; Burns, 2006; Burns et al., 2006; Fernandez & Milburn, 1994; Fernandez & Turk, 1995; Gelkopf, 1997; Greenwood et al., 2003; Kerns et al., 1994; Wade et al., 1990; Quartana & Burns, 2007) and a few researchers have explored attachment issues for chronic pain patients (Ciechanowski, et al., 2003; MacDonald & Kingsbury, 2006; Meredith et al., 2005, 2006a, 2006b, 2007), yet none have looked at both attachment and anger among chronic pain patients. It is important to note that anger experience and anger expression was investigated using a well-established reliable and valid measure known as the STAXI-2 compared to previous studies.

The results of the present study indicate that chronic pain patients who experience chronic anger problems appear to struggle with anger aggression and anger suppression. It is not clear from this correlational study as to whether anger preceded the onset of chronic pain or if chronic pain preceded feeling angry. While the specific reasons associated with anger experience and expression were not the focus of the present study, more research is needed in this area. Results of this study indicate a link between chronic pain patients feeling angry and struggling with how to deal with their feelings in specific situations or across situations, including their anger aggression and suppression. Mismanagement of angry feelings,

aggression or suppression, can be detrimental to relationships and needs to be explored further. While anger can be adaptive, for example, alerting an individual to a real threat or danger; chronic anger has few benefits and can influence the experience of pain sensations and can result in increased muscle tension, malfunctioning natural opioid analgesia, weakened immune system, failure to adhere to treatment regimes that would lower pain, and responding negatively to others and physicians; Greenwood et al., 2003).

In this study, specific aspects of attachment in general and attachment with physician were explored in relation to anger experience and expression among chronic pain patients. Chronic pain patients who reported more anger experiences across situations tended to feel uncomfortable getting close to people in general and tended to rely more on themselves than others. Anger suppression among chronic pain patients was associated with feeling less confident in relationships with others in general and with feeling more uncomfortable getting close to others in general. Chronic pain patients who tended to feel uncomfortable getting close to people in general reported fewer efforts to control the outward expression of anger. In terms of their relationships with physicians, chronic pain patients who trusted their physician more were more likely to report better communication and connection with their physician and were less likely to suppress their feelings of anger in general. Chronic pain patients who felt alienated from their physician were more likely to report feeling situational and dispositional anger and anger suppression. Confidence, discomfort with closeness, and reliance on support from others significantly predicted the experience and expression of anger in chronic pain patients, particularly their levels of trait anger, anger suppression, and anger control efforts. In addition, patients' level of trust, communication, and sense of connection with their physicians were also significant predictors of anger experience and

expression in chronic pain patients, particularly their levels of trait anger and anger suppression. However, physician-patient attachment did not add significantly to the understanding of anger in chronic pain patients when accounting for general attachment tendencies, except in the case of anger suppression. General attachment and physician-patient attachment significantly predicted whether chronic pain patients will hold their anger in or not.

These meaningful relationships offer support for chronic pain patients with secure attachments to likely have an easier time developing and maintaining bonds while also sharing feelings of anger in a socially acceptable, nonthreatening manner. In other research studies, anger suppression has been related to pain severity (Gelkopf, 1997; Quartana & Burns, 2007), pain disability, depression (Okifuji et al.,1999), high blood pressure (Burns et al., 2006), and increased heart rate (Janssen et al., 2004). Therefore, it is beneficial for chronic pain patients to share their anger with others, including their physicians, which hopefully will help reduce their pain severity and disability and enhance their moods and overall health.

While some researchers have posited that chronic pain patients may be ambivalent about expressing their anger in the presence of their physician for fear of abandonment or in the presence of significant others for fear of feeling guilt (Carson et al., 2007), this does not appear to be the case according to the results of this study. Chronic pain patients may not feel the need to hold back their frustrations and struggles with their physicians or others in general if they have a good working relationship based on trust, communication, and connection or feel they can get close to others.

Chronic pain patients who reported more positive, secure working relationship to their physician may feel freer to share their anger and frustration in general, which could be very beneficial for their pain management and physical health. It is important for physicians to know what is working and what is not. A positive relationship between patient and physician can reduce anxiety while supporting security needs of the patient (Kolb, 1982), thus making patients feel as though they can express anger without risking the loss of the relationship.

Chronic pain patients in this sample, who felt more uneasy about getting close or depending on others (a.k.a., more avoidant in their attachments) tended to report more chronic anger and anger suppression, yet felt less control over their outward anger expression. Chronic pain patients with insecure, particularly avoidant attachment styles in general, tend to experience frequent anger and may behave in ways that could threaten the loss of relationships by mismanaging their anger. Feeling angry and holding it in will likely result in feeling less control over urges to express anger outwardly, which can create muscle tension, resulting in more chronic pain. Are these patients angry because they feel uneasy or are they uncomfortable with help and support? Or do they feel uneasy and afraid to get close to others because they are deeply angered and hurt by events in their life, including the development of their chronic pain condition and its impact on their lives? While there is research to support that insecure attachments with others are related to emotional distress, negative pain appraisals, and catastrophizing among chronic pain patients (Ciechanowski et al., 2003; MacDonald & Kingsbury, 2006; McWillimas & Asmundson, 2007; McWilliams et al., 2000; Meredith et al., 2005, 2006a, 2007), more research is needed to explore these questions mentioned above. In particular, how anger and discomfort with closeness are

related and how these experiences influence help-seeking behaviors in chronic pain patients—not only with their physicians, but also with significant people in their lives, is an important area for further exploration.

Chronic pain patients in this sample who viewed their relationships with others as secondary to achievement and self-sufficiency (i.e., working things out on their own as much as possible; one aspect of dismissiveness) tended to report more chronic anger and less connection to their physician. This finding is similar to a previous study done with a diabetic population wherein dismissing patients rated their relationship with their doctor as less favorable than secure patients (Ciechanowski et al., 2004).

It is unclear if chronic pain patients tended to avoid or dismiss close relationships prior to the onset of chronic pain or if they developed an insecure attachment style while adjusting to pain. There are theoretical arguments for attachments to form in childhood (Ainsworth et al., 1978) and attachment behavior to change when facing a threat or loss, such as pain (Bowlby 1973). Dismissing individuals deemphasize relationships to guard against disappointment (Bartholomew & Horowitz, 1991). For the majority of chronic pain patients, their level of activity and productivity decreases and never returns to the level that it was before chronic pain, thus they may fear disappointment even if they never did before. It is also unclear whether those who are dismissive of relationships in general and those who felt alienated from their physician experienced a negative incident with significant others or physicians that negatively impact their efforts to get close with others, or if it is simply a reflection of their values system/orientation toward helping. Regardless of the intention, it appears as though valuing self-sufficiency, feeling uncomfortable with intimacy and/or not as confident in their relationships with others, in addition to experiencing chronic pain and its

psychosocial consequences, can result in patients feeling frustrations across a variety of situations and may limit their ability to share these frustrations with others.

Chronic pain patients who reported feeling more alienated from their physician tended to report feeling angrier in the moment and across situations, but yet were more likely to engage in anger suppression. Conversely, participants who felt less alienated from their physician tended to report less anger and anger suppression. These results point to the importance of connections between patients and healthcare providers and patients' overall emotional well-being, particularly in terms of their anger experience and expression. More research is needed to confirm these findings for chronic pain patients who are treated by other medical doctors besides chiropractors including generalists and specialists.

General attachment experiences, in particular experiences of insecurity, lack of confidence, and avoidance (being dismissive) are meaningful aspects of attachment issues that relate to the understanding of trait anger, anger suppression, and anger control efforts among chronic pain patients. It appears as though the way in which chronic pain patients relate to and create bonds with others, including family members, friends, significant others, and co-workers, contributes to the understanding of their chronic anger, anger suppression, and outward control of anger.

Chronic pain patients' relationships with their physician, in particular experiences of trust, communication, and connection, were meaningful in understanding experiences of chronic anger and anger suppression. However, after controlling for general adult attachment, physician-patient attachment had an additive contribution in explaining anger suppression only. This finding is meaningful in understanding that in addition to relationships with others in general, relationships with physicians can be an important factor in predicting anger

suppression among chronic pain patients. When exploring relationships with chronic pain patients and how these relationships relate with anger suppression, it might be helpful to examine connections to others and to physicians.

Physician-patient attachment did not have a significant relationship with chronic anger above what it shared with general adult attachment. This finding suggests that general adult attachment and physician-patient attachment overlap when looking at chronic anger and perhaps looking at general attachment experiences is sufficient when interested in predicting chronic anger in chronic pain patients.

The relationship a patient has with their physician did not contribute in any meaningful way to understanding anger control-out efforts. Keeping one's cool was better predicted by general adult attachment. There remains some variance in chronic anger, anger suppression, and anger control out that was not explained by attachment which can be followed up with in future studies.

In summary, chronic anger, anger suppression, and less effort to control anger out among chronic pain patients were associated with insecure attachment with people in general and alienation from their physicians. In addition, chronic pain patients were less likely to suppress their anger and more likely to control their anger outwardly if their working relationships with physicians were stronger, that is, higher levels of attachment in terms of trust, and connection and their relationships with others in general were stronger, that is, more confident getting close to others. Emotional bonds or attachments with physicians as well as people in general seem to be uniquely and collectively related to anger suppression, whereas attachments with physicians was not uniquely related to chronic anger or anger control out above what general attachment explained.

Implications for Practice

More than ever, people are living longer and their chances of experiencing pain will be greater. While innovations in pain treatments, medical or complimentary, provide management of pain sensation, chronic pain is resistant to treatment for unknown reasons. Patients experiencing chronic pain will likely battle emotional issues, behavioral changes, and social problems as they learn to adapt their lifestyle for living with pain (Breen, 2002). The nature of these issues is psychological and behavioral for which chronic pain patients may benefit from seeking help from mental health clinicians. In one study (American Pain Society, 1999), 22% of severe chronic pain patients had sought psychological counseling for help dealing with their pain. Mental health providers offer therapeutic services to chronic pain patients and there is already a treatment model for working with this population (Winterowd, Beck, & Gruener, 2003). Therapists provide direct psychological services with the goal of improving quality of life and provide indirect services to chronic pain patients by advocating for patients needs and services as part of multidisciplinary treatment teams. This study supports the usefulness of exploring relationships in general and with physicians as well as anger in psychotherapy.

In this study, there is evidence that chronic pain patients benefit from a strong bond with their physician given that patients with stronger attachments tended to feel less chronically angry and were less likely to suppress anger. Given the relationship between anger and pain severity and disability, it is very likely that the physician-patient bond can serve as a protective factor in helping chronic pain patients manage their moods, including their anger regarding their life given this pain as well as the psychosocial impact of pain on their lives. The results of the present study also provided evidence that chronic pain patients

benefit when their connection to others in general is strong. Stronger connections with others in general was linked to less anger suppression and more control over anger expression. Mental health providers can use this knowledge to encourage patients to build strong attachments with their physician based on trust, communication, and connection, and with others in general based on confidence, closeness, and involvement. Mental health providers can explore with patients ways to promote the development of such bonding, so that chronic pain patients maintain good relationships with others while sharing frustrations as well as developing skills for outward control of anger. Conversely, there is evidence that chronic pain patients do not benefit from weaker bonds with their physician based on alienation and with others in general based on feeling uncomfortable with closeness and valuing achievement over relationships, given that weaker bonds were associated with more anger and more anger suppression. Psychotherapy can provide chronic pain patients with an avenue to explore underlying causes and factors that maintain dispositional anger. It is important for therapists not to assume that chronic pain patients express their anger to their physicians and to others in the same way.

Limitations

While the results of these findings have important implications for educational and advocacy interventions for patients and their physicians, families, and friends, as well as implications for counseling and psychotherapy in terms of anger expression and management in relation to physicians and others, the results of this study must be interpreted with caution. Limitations of this study include demographics of the sample and the sample size. Due to a small sample of convenience, the results may not generalize to other chronic pain patients. The majority of participants were female and Caucasian. There were no African-American or

Asian American patients who participated in this study and there were only a few Hispanic/Latino(a) and Native American patients who participated in this study. One explanation for the lack of African-American participants could be that when seeking help for treatment of pain, African-Americans feel they have been discriminated against (Nguyen, Ugarte, Fuller, Haas, & Portenoy, 2005). One study found that Hispanics seek help for pain from a healthcare provider less often than Whites (Nguyen et al., 2005). When surveyed**,** African-Americans and Hispanics perceived access to physicians who could treat their pain as difficult (Nguyen et al., 2005).

Related to the small sample size, the ASQ items could not be analyzed to determine the dimensions of attachment (discomfort with closeness and relationship anxiety) using factor analytic procedures as other researchers have done when using this measure in their attachment research with chronic pain patients. Researchers in other areas have readily used ASQ subscale scores as this study has done (Caltabiano et al., 2007; Fossati et al., 2005; Troisi et al., 2005). Two of the five subscales, Need for Approval and Preoccupation with Relationships, were not reliable in terms of internal consistency of the items in measuring these constructs for this sample of chronic pain patients. These two subscales represent anxious aspects of insecure attachments with others in general. In reviewing the frequency distributions for item responses related to the items in these two subscales, chronic pain patients in this sample were very similar in responding to some aspects of need for approval, in particular, feeling that they are good, wanting to be liked by others and avoiding rejection (e.g., “It’s important to me to avoid doing things that others won’t like.”) and were very similar in responding to some aspects of preoccupation with relationships, in particular, perceptions of other people’s reluctance to get close to them (i.e., “I find that others are

reluctant to get as close as I would like.") and feeling included. Further research is needed to better understand the unique aspects of anxious attachment concerns of chronic pain patients. It is possible that is sample responded in a unique way to these subscales compared to other chronic pain patients in general.

Another limitation of this study is that data was gathered at four chiropractic offices in two separate U.S cities. Therefore, these results may not apply to chronic pain patients who seek services from other pain management physicians, primary care physicians, and rehabilitation physicians. While physician-patient attachment was assessed between chronic pain patients and their chiropractors, patients may also have unique bonds with other treatment providers, assuming they have more than one physician involved in their chronic pain management.

Suggestions for Future Research

Further research is needed to understand how anger experience and expression as well as other emotional experiences for chronic pain patients may be related to their unique relationship bonds with physicians, friends, and family as well as others in their personal and professional worlds including but not limited to nurses, physical therapists, specialists, psychologists and counselors as well as employers, coworkers, and acquaintances. Given the number of treatment providers chronic pain patients are seeking treatment from concurrently, more research is needed to explore the impact of these patient-provider relationships on chronic pain patients' well-being. In addition, further research is also need to test for the impact of physician-patient attachments on a variety of emotional experiences and health outcomes including pain severity and disability as well as quality of life and life adjustment issues.

Exploring patients' attachment style and experience and expression of anger can promote understanding of how patients utilize their physician for management of pain and to help physicians' better approach patients when treating their pain. This study needs to be replicated with more patient recruitment in pain management clinics to examine how specific attachment styles (i.e., secure, fearful, dismissing, preoccupied, anxious, avoidant,) and/or dimensions (i.e., anxiety over relationships; comfort with closeness) relate to chronic pain patients emotional state and how they approach their relationship with their physician. Another area of interest to pursue would be the prevalence of attachment styles in a chronic pain population as compared to the population in general.

There has been a recent movement in health care promoting collaboration and communication between medical providers and patients to increase patient contribution in treatment decision-making (Frantsve & Kerns, 2007). An area for future study may be to explore how physician-patient attachment relates to shared medical decision making for chronic pain patients (Frantsve & Kerns, 2007).

In the present study, data was collected from the patient perspective. In the future, it would be interesting to collect data to learn about physicians' attachment styles and perceptions of their working relationships with chronic pain patients. While no researchers have explored physician-patient attachment from the physician's perspective, there appears to be some evidence that attachment styles even influence the type of training medical students seek as their specializations. In one study, medical students who identified themselves as securely attached chose to pursue primary care**,** where one would expect longer more intensive relationships with patients, whereas medical students who identified as

cautious or self-reliant chose non-primary care (Ciechanowski, Russo, Katon, & Walker, 2004).

Summary

Anger among chronic pain patients has been shown to be an important factor in physical experiences of pain, emotional responses of pain, and can interfere with both personal and therapeutic relationships. Attachment styles and dimensions among chronic pain patients have also been associated with pain levels, anxiety, and coping responses. Anger researchers have emphasized how anger can interrupt working alliances with treatment providers and attachment researchers have emphasized how attachment styles of chronic pain patients' may contribute to how patients approach and respond to treatment providers. This was the first study where researchers explored the experience and expression of anger among chronic pain patients in relation to physician-patient bonds as well as patients' relationships with others in general. The relationships or attachments that chronic pain patients' form with others and with their physician accounts for some of their experience of chronic anger, anger suppression, and anger control out efforts.

APPENDIX A: Data Tables

Table 1

Demographics of the Sample (N = 62)

Age	m = 44.3	sd = 16.69	range = 19 – 79
Gender		n	%
Female		45	72.6
Male		17	27.4
Race		n	%
African American/Black		0	0
American Indian/Native		1	1.6
Asian/Asian American		0	0
Hispanic/Latino(a)		7	11.3
White/Caucasian		48	77.4
Missing		3	4.8
Marital Status		n	%
Single		12	19.4
Partnered/Common Law		3	4.8
Married		39	62.9
Divorced		6	9.7
Widowed		2	3.2
Employment Status		n	%
Employed		35	56.5
Unemployed		21	33.9
Disabled		6	9.7
Receive Disability Benefits		n	%
Yes		6	9.7
No		55	88.7

Table 1 (Continued)

Demographics of the Sample (N = 62)

Education	n	%
Did Not Complete High School	1	1.6
GED or Equivalent	2	3.2
Graduated High School	15	24.2
Some College	24	38.7
Bachelors Degree	9	14.5
Masters Degree	7	11.3
Doctoral Degree	4	6.5
Pain Duration in Months	m = 135.85	sd = 131.62 range = 8 – 528
Medical Diagnosis	n	%
Low Back	25	40.3
Arthritis	19	30.6
Osteoarthritis	7	11.3
Myofacial Pain Syndrome	5	8.1
Rheumatoid Arthritis	4	6.5
Complex Regional Pain Syndrome	4	6.5
Fibromyalgia	4	6.5
Carpel Tunnel	4	6.5
Migraine Headaches	4	6.5
Osteoporosis	2	3.2
Temporomandibular Joint Pain	2	3.2
Cancer	1	1.6
Peripheral Neuropathy	1	1.6
Lupus	1	1.6
Scoliosis	1	1.6
Tendonitis	1	1.6

Table 1 (Continued)

Demographics of the Sample (N = 62)

Location of Pain	n	%
Lower Back	38	61.3
Neck	33	53.2
Shoulder	28	45.2
Middle Back	17	27.4
Knee	16	25.8
Head	13	21.0
Upper Back	12	19.4
Hip	12	19.4
Wrist	12	19.4
Hand	9	14.5
Foot	7	11.3
Upper Arm	6	9.7
Elbow	6	9.7
Knuckle	6	9.7
Finger	5	8.1
Toe	4	6.5
Ankle	4	6.5
Lower Arm	3	4.8
Jaw/Teeth	3	4.8
Upper leg	2	3.2
Lower Leg	2	3.2
Chest	2	3.2
Groin	1	1.6
Stomach	1	1.6
Number of Pain Locations	m = 3.98	sd = 2.93 range = 1 - 13
Prescription Medication for Pain	n	%
Yes	24	38.7
No	32	51.6

Table 2

Correlation Matrix of Main Study Variables including Adult Attachment Subscales, Physician Attachment Subscales, and Anger Subscales

	CONF	DISCO	RELS	TRUST	COMM	ALIEN	SANG	TANG	AXO	AXI	ACO	ACI
CONF	1.00											
DISCO	-.61**	1.00										
RELS	-.20	.52**	1.00									
TRUST	.12	.10	-.12	1.00								
COMM	-.01	.16	-.01	.84**	1.00							
ALIEN	-.17	.22	.30*	-.52**	-.31*	1.00						
SANG	-.11	.12	.22	-.12	.08	.25*	1.00					
TANG	-.17	.37**	.30*	-.10	.07	.36**	.64**	1.00				
AXO	-.15	.23	.15	-.22	-.07	.19	.48**	.73**	1.00			
AXI	-.35**	.37**	.22	-.29*	-.09	.43**	.46**	.52**	.52**	1.00		
ACO	.37**	-.44**	-.26	.15	.08	-.17	-.29*	-.43**	-.50**	-.30*	1.00	
ACI	.21	-.21	-.14	.18	.15	-.07	-.25	-.24	-.34**	-.25	.73**	1.00

CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ. Trust = Trust subscale of PPAS. Comm = Communication subscale of PPAS. Alien = Alienation subscale of PPAS. SANG = State Anger. TANG = Trait Anger. AXO = Anger Expression-Out. AXI = Anger Expression-In. ACO = Anger Control-Out. AXI = Anger Control-In. PPAS = Physician Attachment Style Total.

*p < .05 **p <.0

Table 3

Multiple Regression Findings for General Adult Attachment on Trait Anger

	B	Beta	Std. Error	F	R^2	Adjusted R^2
T-ANG				3.58	.156*	11.3*
CONF	.080	.066	.188			
DISCO	.258	.345	.133			
RELS	.164	.132	.178			

Note: T-ANG = Trait Anger. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ.
*p < .05 **p < .01

Table 4

Multiple Regression Findings for Physician-Patient Attachment on Trait Anger

	B	Beta	Std. Error	F	R^2	Adjusted R^2
T-ANG				4.12	.177**	.134**
TRUST	-.260	-.252	.261			
COMM	.401	.389	.234			
ALIEN	.629	.348*	.261			

Note: T-ANG = Trait Anger. TRUST = Trust subscale of the PPAS. COMM = Communication subscale of the PPAS. ALIEN = Alienation subscale of the PPAS.
*p < .05 **p < .01

Table 5

Multiple Regression Findings for General Adult Attachment and Physician-Patient Attachment on Trait Anger

	B	Beta	Std. Error	F change	R^2 change	Adjusted R^2 Change
T-ANG				3.58	.156*	
CONF	.08	.066	.188			
DISCO	.258	.345	.133			
RELS	.164	.132	.178			
T-ANG				2.72	.109	.072
CONF	.174	.144	.190			
DISCO	.273	.365	.138			
RELS	.043	.035	.178			
TRUST	-.367	-.356	.268			
COMM	.392	.381	.232			
ALIEN	.408	.226	.267			

Note: T-ANG = Trait Anger. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ. TRUST = Trust subscale of PPAS. COMM = Communication subscale of PPAS. ALIEN = Alienation subscale of PPAS.
*p < .05 **p < .01

Table 6

Multiple Regression Findings for General Adult Attachment on Anger Expression-In

	B	Beta	Std. Error	F	R^2	Adjusted R^2
AX-I				3.78	.163*	.120*
CONF	-.164	-.210	.121			
DISCO	.098	.202	.086			
RELS	.058	.072	.115			

Note: T-ANG = Trait Anger. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ.
*p < .05 **p < .01

Table 7

Multiple Regression Findings for Physician-Patient Attachment on Anger Expression-In

	B	Beta	Std. Error	F	R^2	Adjusted R^2
T-ANG				5.64	.226*	.186**
TRUST	-.279	-.418	.164			
COMM	.239	.360	.147			
ALIEN	.383	.327*	.163			

Note: T-ANG = Trait Anger. TRUST = Trust subscale of the PPAS. COMM = Communication subscale of the PPAS. COMM = Communication subscale of the PPAS. ALIEN = Alienation subscale of the PPAS.
*p < .05 **p < .01

Table 8

Multiple Regression Findings for General Adult Attachment and Physician-Patient Attachment on Anger Expression-In

	B	Beta	Std. Error	F change	R^2 change	Adjusted R^2 change
AX-I				3.78	.163*	
CONF	-.164	-.210	.121			
DISCO	.098	.202	.086			
RELS	.058	.072	.115			
AX-I				4.23	.159**	.128**
CONF	-.070	-.089	.118			
DISCO	.139	.288	.085			
RELS	-.052	-.064	.111			
TRUST	-.294	-.440	.166			
COMM	.201	.302	.144			
ALIEN	.278	. 238	.166			

Note: AX-I = Anger Expression In. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ. TRUST = Trust subscale of PPAS. COMM = Communication subscale of PPAS. ALIEN = Alienation subscale of PPAS.

*p < .05 **p < .01

Table 9

Multiple Regression Findings for General Adult Attachment on Anger Control-Out

	B	Beta	Std. Error	F	R^2	Adjusted R^2
AC-O				5.16	.211**	.170**
CONF	.135	.168	.121			
DISCO	-.165	-.331	.086			
RELS	-.009	-.011	.115			

Note: T-ANG = Trait Anger. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ.
*p < .05 **p < .01

Table 10

Multiple Regression Findings for Physician-Patient Attachment on Anger Control-Out

	B	Beta	Std. Error	F	R^2	Adjusted R^2
AC-O				0.75	.037	-.012
TRUST	.139	.202	.188			
COMM	-.081	-.118	.168			
ALIEN	-.118	-.098	.187			

Note: T-ANG = Trait Anger. TRUST = Trust subscale of the PPAS. COMM = Communication subscale of PPAS. ALIEN = Alienation subscale of the PPAS.
*p < .05 **p < .01

Table 11

Multiple Regression Findings for General Adult Attachment and Physician-Patient Attachment on Anger Control-Out

	B	Beta	Std. Error	F change	R^2 change	Adjusted R^2 change
AC-O				5.16	.211**	
CONF	.135	.168	.121			
DISCO	-.165	-.331	.086			
RELS	-.009	-.011	.115			
AC-O				0.77	.032	-.01
CONF	.079	.098	.129			
DISCO	-.213	-.423*	.093			
RELS	.033	.039	.120			
TRUST	.165	.240	.181			
COMM	-.023	-.033	.157			
ALIEN	.058	.048	.181			

Note: AC-O = Anger Control-Out. CONF = Confidence subscale of ASQ. DISCO = Discomfort with Closeness subscale of ASQ. RELS = Relationships as Secondary subscale of ASQ. TRUST = Trust subscale of PPAS. COMM = Communication subscale of the PPAS. ALIEN = Alienation subscale of PPAS.

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

APPENDIX B: Review of Literature

The importance and effectiveness of pain management is just recently gaining recognition among healthcare providers, policy makers, the general public, and the media. Increased awareness for persisting pain has come about in part due to the changing nature of terminal illnesses and diseases. Advances in medical technology have led to improved antibiotics, vaccinations, prenatal care, nutrition, and surgical procedures that have slowed mortality rates. Overcoming acute, infectious diseases such as poor sanitation, poor public health, and tuberculosis means more frequently people are living longer with chronic diseases (e.g., heart disease, cancer, hypertension, stroke, and behavioral choices). The extended life span of humans has increased one's chances of having to deal with chronic symptoms of disease or illness.

People have a tolerance for and tendency to ignore minor symptoms of physical illness. However, when physical symptoms of pain are experienced, people are alerted to visit their health care provider for relief. The majority of people dread having to feel pain and this instills fear or anger in situations where pain cannot be avoided or medical treatment is unsuccessful. A number of factors can affect how a person defines and communicates their pain including depressive or anxious affect, perception of control, attention, meaning of pain, expectations, self-efficacy, locus of control, age, sex, early childhood recollections, ethnic background, personality characteristics of neuroticism, acceptance of the sick role, and body consciousness (DiMatteo & Martin, 2002).

Despite recent attention, pain continues to be untreated, improperly treated, or under treated (Turk & Nash, 1993). Approximately 10 to 30% of Americans live with the burden of enduring symptoms of intractable malignant or non-malignant chronic pain. Over 11.7 million Americans suffer with severe impairments and 2.6 million are ceaselessly hindered

with back pain alone (Turk & Nash, 1993). According to the World Health Organization, "chronic pain is debilitating and costly, ranking among the top reasons for health care visits and health-related work absences" (WHO, 2001, p. 8). Chronic pain negatively impacts chronic pain patients' physical and psychological well-being as well as their financial well-being given its impact on work productivity, money, health care expenditures, disability compensations, and tax revenues (Turk, 2001). Estimates for annual spending on specialized treatment for pain exceeds 1.5 billion (Turk, 2001). Chronic symptoms of pain are a concern for health practitioners and researchers due to increasing prevalence rates, expensive health care costs, and negative impacts to patients' physical, psychological, social, and emotional well-being.

Chronic Pain and Anger

Definition of Pain

A widely accepted definition of pain comes from the International Association for the Study of Pain (IASP). The IASP defines pain "as an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage" (Merskey & Bogduk, 1994). Two types of pain exist: acute and chronic. Acute pain has duration lasting seconds to months and is typically the result of an identifiable origin including tissue damage from an infection, injury, inflammation, or surgery. The majority of acute pain experiences are nociceptive in nature meaning sensory receptors (nociceptors) located on select peripheral nerve endings detect noxious stimuli and send pain messages to the brain (Nicholson, 2003; Woolf & Mannion, 1999). Acute pain can be relieved with treatment, medication, and healing of tissue.

There is some disagreement on the duration of pain before it can be described as chronic. Originally, the criterion for chronic pain was pain persisting 6 months or longer. Some researchers continue to use the 6 month period while others define chronic pain as pain persisting longer that the usual recovery time for injury or illness. Unrelenting suffering and distress often accompany the complex nature of chronic pain. Chronic pain arises from nocieptive pain, neuropathic pain, or a combination of both. Neuropathic pain stems from a lesion or malfunction in the nervous system often in the peripheral nerve, the dorsal root ganglion, or the central nervous system (Nicholson, 2003; Woolf & Mannion, 1999). The origin of chronic pain is not always identifiable or treatable. Pain relieving medications referred to as analgesics are widely used to control pain by manipulating the frequency, path, or interpretation of pain messages (Swanson, 1999).

Pain sensations can function to protect and warn the individual of imminent or actual tissue damage. Experiences of pain elicit reflexive and behavioral movements to minimize the extent of damage to tissue. When damage is unpreventable, the peripheral and central nervous systems act to aid in the healing of the tissue by making the inflamed area hypersensitive and painful to ensure the individual will leave the tissue alone to heal without interrupting the process (Woolf & Mannion, 1999). In summary, acute or short-lived pain protects and warns against further damage whereas chronic or long-lasting pain typically does not offer any benefits as a protection or warning system (Woolf & Mannion, 1999).

There is no accurate objective test to measure the severity of pain. The perception and reporting of pain is subjective. Clinicians rely heavily on self-report measures of pain including Visual Analogue Scales, Numerical Rating Scales, and Verbal Rating Scales (Turk & Melzack, 2001). An individual's reaction to pain is unique and varies with differences in

biological, psychological, and sociocultural components. Living with persisting pain has been associated with psychological distress including depression, anger, anxiety, grief, isolation and behavioral changes in eating, sleeping, and activity patterns (Breen, 2002). The majority of previous research findings indicate a positive association between pain-related variables and negative affect such as depression and anxiety. The relationship between anger and the experience of pain has received little attention (Fernandez & Turk, 1995).

Conceptualization of Anger

According to Deffenbacher (1999), the onset, experience, and expression of anger are regulated by neurological, temperament, endocrine, and physiological processes. Anger responses are also invoked by a combination of eliciting events (external, internal, memories, or images), pre-anger states (transitory or enduring from cultural), and appraisals. External triggers of anger can include identifiable situations in which the person feels they should not be involved, behavior of others or oneself**,** and malfunctioning objects. Internal triggers of anger can include brooding or ruminating thoughts and negative affect. Negative appraisals leading to anger can include viewing circumstances as unfair, undeserved, intentional, preventable, or blameworthy (Deffenbacher, 1999). Anger, theorized as emotional, cognitive, and physiological states, does not imply behavioral expression. Anger as an affective state can range in severity from mild annoyance to rage and fury. Physiological responses to anger can range in sympathetic arousal level, muscle reactivity, and hormone release. Cognitive factors of anger include subjective information processing and negative attributions (Deffenbacher, 1999).

Spielberger (1999) conceptualizes anger in terms of anger experience and anger expression. The experience of anger is described as both an emotional state (state anger) that

varies in intensity and as a dispositional trait (trait anger) that varies in frequency. The expression of anger is described in terms of external aggression (anger-out), internal suppression (anger-in), outward control (anger control-out), and inward control (anger control-in) of angry feelings (Spielberger, 1999). Expressed anger can either be adaptive (e.g., assertiveness, conflict management, problem solving, or disengagement) or maladaptive (e.g., physical or verbal assault, reckless driving, or alcohol consumption) (Deffenbacher, Oetting, Lynch, & Morris, 1996).

Correlates of Anger and Chronic Pain

Anger has long been associated with physical health issues including hypertension, coronary heart disease, ulcers, headaches, asthma, dermatological eruptions, and poor health habits (see Fernandez & Turk, 1995). Recently, there is empirical support for anger as a salient feature in the experience of chronic pain (Fernandez & Milburn, 1994; Fernandez & Turk, 1995; Kerns, Rosenberg, & Jacob, 1994; Wade, Price, Hamer, Schwartz, & Hart, 1990). The relationship between anger and pain experience has been explored in patients with chronic low back pain (CLBP), chest pain, spinal cord injuries, cancer (Greenwood, Thurston, Rumble, Waters, & Keefe, 2003), and complex regional pain syndrome (Bruehl, Chung, & Burns, 2003).

Anger and Pain. A number of researchers have examined associations between anger, anger management style and pain variables. In one study, researchers examined anger-out and anger-in as predictors of treatment outcome among male and female chronic pain patients (Burns, Johnson, Devine, Mahoney, & Pawl, 1998). Participants were 101 patients attending a multidisciplinary pain program for musculoskeletal pain. Anger management style was measured with the Anger Expression Inventory (Spielberger et al., 1985). Other

measures completed both pre- and post-treatment included the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbough, 1961), the Pain Severity subscale and General Activities subscale of the Multidimensional Pain Inventory (MPI; Kerns, Turk, & Rudy, 1985), the Progressive Isoinertial Lifting Evaluation (PILE; Mayer et al., 1988), and a treadmill walking endurance activity. Males scoring high on anger-out demonstrated fewer improvements in lifting capacity than males scoring low on anger-out. Males scoring high on anger-in demonstrated fewer improvements in general activity and depressed mood than males scoring low on anger-in (Burns et al., 1998).

A group of researchers conducted a study to investigate the associations between anger management style and pain and to test moderation effects of self-efficacy (Lombardo, Tan, Jensen, & Anderson, 2005). Veterans (n = 564) with chronic pain were recruited for this study. Participants completed the Pain Severity subscale of the West Haven-Yale Multidimensional Pain Inventory (WHYMPI; Kerns et al., 1985), a modified version of the Arthritis Self-Efficacy Scale (Lorig, Chastain, Ung, Shoor, & Holman, 1989), and the Anger Expression Scale (Spielberger et al., 1985). Higher Total Anger Scores were considered to indicate a more maladaptive anger management style. Overall, pain intensity was positively related to maladaptive anger management style, while self-efficacy was negatively related to anger management style. Veterans who reported high pain self-efficacy and high pain severity scored higher on maladaptive anger management style than did veterans who reported high self-efficacy and low pain severity (Lombardo et al., 2005).

Other researchers have explored the pain experience in relation to affective dimensions including anger. The purpose of one study was to predict overall pain from sensory and affective variables and to further explore specific emotions relating to the pain

experience (Fernandez & Milburn, 1994). Forty patients attending a pain management program were recruited for this study. Pain, physical sensation, and emotional distress were each rated on Visual Analogue Scales (VAS) ranging from "nothing" to "extremely high". Anger, fear, sadness, guilt, shame, disgust, contempt, surprise, interest, and joy were also rated using the VAS. A multiple regression procedure resulted in a linear additive equation of affective distress and physical sensations, contributing to overall pain experience. Anger, fear, and sadness were found to contribute most to the affective component accompanying pain (Fernandez & Milburn, 1994). Anger and frustration were also significantly related to the chronic pain experience in a different sample of chronic pain patients (69 men and 74 women; Wade et al., 1990). Participants completed a personality instrument, a depression inventory, and seven VASs for assessment of unpleasantness, pain intensity, anxiety, frustration, fear, anger, and depression (Wade et al., 1990). These two sets of research findings indicate that while a variety of emotional variables are measured in relation to pain, anger/frustration appears to be a significant predictor of chronic pain.

In a study with arthritis and fibromyalgia patients (22 men and 38 women recruited from support groups), depression, anxiety, and anger were assessed in relation to pain experiences (Gaskin, Greene, Robinson, & Geiser, 1992). Participants completed a depression inventory, a personality inventory, anger expression inventory, and pain questionnaire. Depression, anxiety, and anger were used as criterion variables to predict pain. State anger and state anxiety were found to be the best predictors of affective pain ratings. State anxiety predicted both sensory pain ratings, and miscellaneous pain ratings. Depression was found to be the best predictor of present pain index and evaluative pain rating index. Gaskin et al. (1992) concluded that emotional states as opposed to traits are more meaningful

to pain ratings suggesting that pain influences mood rather than character tendencies influencing pain.

Chronic pain patients feel ambivalent about expressing anger for several reasons one being apprehension of negative consequences that might include abandonment by doctors, or feeling guilty after mismanaging their anger with family or friends. Harboring anger or frustration can lead to increased angry feelings and maladaptive anger management. In a study with 61 chronic low back pain patients, Carson et al. (2007) tested the hypothesis that ambivalence over emotional expression (AEE) would be positively correlated with both pain and anger. Participants recruited from a pain and palliative care center and the community completed the Ambivalence of Emotional Expression Questionnaire (King & Emmons, 1990), the McGill Pain Questionnaire (MPQ; Melzack, 1975), and the State-Trait Anger Expression Inventory-II (STAXI-II; Spielberger, 1999). Chronic pain patients who are ambivalent about expressing their emotions reported more pain, anger, and anger suppression (Carson et al., 2007).

In experimentally-induced acute pain studies, researchers have found significant relationships between anger and pain, in particular, anger-in and pain sensitivity (Quartana & Burns, 2007), anger and failure to control pain (Janssen, Spinhoven, & Arntz, 2004), and anger suppression and pain ratings, anxiety, and increased heart rate (Gelkopf, 1997).

Several researchers have also examined how anger or anger management style contributes to pain severity through biological mechanisms. Researchers have discovered that anger is associated with symptom specific muscle reactivity, malfunctioning endogenous opioid release, and immune system deficiencies. In one study, anger management style and hostility were examined for effects on specific muscle reactivity during stress (Burns, 1997).

CLBP patients (n = 102) were asked to complete a mental arithmetic task and an anger recall induction interview while measures of heart rate, blood pressure, and reactivity in lower paraspinal (low back) and trapezius (neck, shoulders, upper back) muscles were recorded. Participants also completed the Cook-Medley Hostility Scale (Cook & Medley, 1954) and the AEI (Spielberger et al., 1985). Results showed that during anger recall interviews, patients reporting high anger-in and high hostility, and men high on anger-out had increased reactivity in lower paraspinal muscles. These findings suggest that anger management style and hostility are associated with increased pain severity and reactivity in lower paraspinal muscles located near the source of pain in CLBP (Burns, 1997).

A group of researchers examined interaction effects of anger management style and hostility in predicting specific muscle tension reactivity during anger recall or sadness recall (Burns, Bruehl, and Quartana, 2006). Data was collected from 94 CLBP patients completing the Cook-Medley Hostility Scale (Cook & Medley, 1954), the AEI (Spielberger et al., 1985), and the Trait Anger Scale (TAS; Spielberger, Jacobs, Russell, & Crane, 1983). Baseline measures of blood pressure, heart rate, and tension in the lower paraspinals and trapezius muscles were recorded before and after anger recall and sadness recall interviews. During anger recall, CLBP patients who suppress anger and who are high in hostility report increased muscle tension near the site of pain and increases in both systolic and diastolic blood pressure (Burns et al., 2006).

In a third study, 94 CLBP patients and 79 healthy controls participated in an anger recall interview and a sadness recall interview to examine muscle reactivity (Burns, 2006). Muscle activity near the site of low back pain (lower paraspinal) was compared to muscle activity away from the site of pain (trapezius). Results indicate that CLBP patients exhibit

more muscle tension in the lower paraspinal area during anger induction and report slower recovery than controls (Burns, 2006).

In summary, when CLBP patients experience anger, the lower back muscles which are the source of the pain become more reactive and pain intensifies. Muscles away from the site of pain such as in the upper back and shoulders do not increase in reactivity when they experience anger.

The association between anger and pain severity has led to further investigation of natural pain-relieving mechanisms (opioid functioning) being involved. Preliminary findings indicate that the effects of anger expression on pain severity are mediated by malfunctioning opioid systems such that pain patients who show more anger-out also have impaired opioid regulating systems. The nature of the relationships between anger, pain intensity, and opioid functioning are still being examined.

One group of researchers studied the role of natural opioids in trait anger, anger management styles, and pain sensitivity among 43 chronic pain patients and 45 healthy controls (Bruehl, Burns, Chung, Ward, & Johnson, 2002). Participates received either naloxone solution (opioid blockade) or saline solution (placebo) intravenously before undergoing a finger pressure pain task followed by a resting period and then an ischemic pain task. Blood pressure and verbal pain ratings were recorded throughout the procedure. Pain ratings from the placebo condition were subtracted from the blockade condition to determine positive or negative drug effects, this served as a measure of opioid function. Positive drug effects (increased pain after receiving opioid blockade) were an indication of opioid pain relieving function. The procedure was repeated one week later with the same participants. Other measures included the McGill Pain Questionnaire-Short Form (Melzack, 1987), the

AEI (Spielberger et al., 1985), the TAS (Spielberger et al., 1983), and the BDI (Beck et al., 1961). Trait anger, anger-out, and anger-in were positively associated with pain intensity. Higher anger-out scores were associated with an absence of opioid pain relieving functioning in both acute pain tasks (Bruehl et al., 2002).

As an extension to the Bruehl et al. (2002) study, another group of researchers tested the hypothesis that the relationship between anger-out and pain intensity is influenced by impaired drug effects of endogenous opioids (Breuhl, Chung, Burns, & Biridepalli, 2003). Participants were 71 CLBP patients undergoing similar procedures as the above study. Findings indicate anger-out is related to smaller drug effects (impaired opioid antinociception) and increased pain severity (Breuhl et al., 2003).

Given the findings that opioid dysfunction mediates the relationship between anger-out and pain levels, Burns & Bruehl (2005) predicted that chronic pain patients taking opioid medications would experience their anger and pain differently than those who did not take opioid medications. One hundred thirty six chronic pain patients completed measures for pain severity, anger management style, depression, anxiety, and use of opioid or antidepressant medications. An interaction effect for opioid use and pain intensity was found, thus the relationship between anger-out and pain intensity was only significant for non-opioid users (Burns & Bruehl, 2005).

Anger and Relationships, including Treatment. There is also empirical support as well as conclusions from researchers that anger may negatively affect social relationships, patient-physician relationships, and treatment. Researchers warn that the social undesirability of anger may contribute to chronic pain patients' denying the experience of angry feelings or suppressing angry feelings. Chronic pain patients have several targets to direct their feelings

of anger some including co-workers, insurance companies, treatment providers, legal entities, a higher power, world, self, friends, family, and causal agent of pain (Fernandez & Turk, 1995). Okifuji and Turk (1999) investigated anger targets and intensity among male and female chronic pain patients. Participants included 52 men and 44 women being evaluated at a university pain center. After an interview with a licensed psychologist, participants were administered the Targets of Anger Scale (TAS; Fernandez, Moon, Urrutia, Saliaas, & Johnson, 1996), the MPI (Kerns et al., 1985), the Center for Epidemiological Study-Depression Scale (CES-D; Radloff, 1977), and the Oswestry Disability Inventory (ODI; Fairbank, Couper, Davies, & O'Brien, 1980). In this study, the majority of pain patients reported some angry feelings. Further, they reported being most angry with themselves (74%) and treatment providers (62%). Male and female participants did not differ significantly in frequency or intensity of angry feelings towards different targets. Angry feelings towards oneself were significantly related to pain severity and depression while overall anger was associated with disability. Chronic pain patients report anger at particular targets, most often themselves, treatment providers, and the casual agent of the accident or illness rather than as a general feeling (Okifuji & Turk, 1999).

In another study, researchers investigated associations between patient hostility, anger expression, depressed mood, and working alliance with their physical or occupational therapist (Burns, Higdon, Mullen, Lansky, & Wei, 1999). Participants were 71 men suffering from musculoskeletal pain, who completed the BDI (Beck et al., 1961), the MPI (Kerns et al., 1985), the Hostility scale (Cook & Medley, 1954), the AEI (Spielberger et al., 1985), and the Working Alliance Inventory (WAI; Tracey & Kokotovic, 1989). Patient's perception of

the working alliance with their rehabilitation therapist was negatively correlated with hostility and anger expression (Burns et al., 1999).

To date, only a few studies have been conducted to explore the relationship between anger and support systems/relationships, including treatment, for chronic pain patients. Researchers have found that chronic pain patients reported to be most angry with themselves and their treatment providers. Pain patients who admitted to feelings of hostility and anger perceived their relationship with their rehabilitation therapist poorly. Relationships or bonds between patients, others, and physicians can be viewed as attachments.

Attachment

Attachment theory is a conceptual framework for "the propensity of human beings to make strong affectional bonds to particular others and of explaining the many forms of emotional distress and personality disturbance, including anxiety, anger, depression and emotional detachment, to which unwilling separation and loss give rise" (Bowlby, 1980, p. 39). Healthy attachment to others usually develops by maintaining proximity to or communication with a specific individual to reduce anxiety (Bowlby, 1969, 1973, 1980). Attachment behavior is active in certain situations including, the unavailability of an attachment figure or the presence of threat (e.g., pain or loss). In situations where attachment figures are accessible and responsive children may perform visual or audio behavioral checks for caregiver presence. Unchallenged relationships or renewal of relationships serves as security factors. In situations where bonds are endangered attachment behaviors that can be elicited include following, clinging, calling, crying, or angry coercion. Children develop internalized working models of attachment figures based on experiences and perceptions of the responsiveness of attachment figures. Children also develop internalized working models

of self-based on judgments of how others will respond to them (Bowlby, 1973). Ainsworth, Blehar, Waters, & Wall (1978) were the first to describe secure, anxious-avoidant, and anxious-ambivalent attachment styles of infants. Securely attached children greet caretakers, seek proximity, and can be comforted. Anxious children show ambivalence towards caretakers and are difficult to comfort. Avoidant children do not greet or seek proximity to caretakers.

Attachment theorists initially focused on affectionate bonds developed between infants, children, and their caregivers to explain emotional distress, detachment, and personality disturbance in response to separation or loss (Bowlby, 1973). Bowlby emphasized that attachment relationships sustain throughout life. According to Ainsworth (1989), affectional bonds span the entire life cycle and develop beyond the infant-mother attachment bond to include bonds with others. Affectional relationships or attachments have been extended to explain intimate bonds between adults (Brennan & Shaver, 1995; Hazan & Shaver, 1987; Shaver & Hazan, 1988).

Adult Attachment

Three group model (secure, anxious and avoidant). Hazan and Shaver (1987) were the first to conceptualize romantic love between adults as an attachment process. The researchers applied secure, anxious, and avoidant attachment styles first identified in child-caregiver relationships to study adult love relationships. The researchers believed that an adult sample would parallel children in the percent that identify as secure (approximately 60 %), avoidant (approximately 20 %), and anxious/ambivalent (approximately 20 %). Hazan and Shaver hypothesized that each of the three attachment groups would characterize their relationships differently, view themselves and others differently, and report different

relationship histories. Adults with secure attachment styles were thought to characterize their relationships as having the potential to be long lasting, trusting, friendly, and to be filled with positive emotions. Secure individuals were expected to view others as trustworthy and themselves as likable. Secure adults were expected to report having dependable, responsive, and caring mothers. Adults with avoidant attachment styles were thought to characterize their relationships as less durable, lacking trust, and being fearful of closeness. Avoidant individuals should report the ability to be happy without being in a romantic relationship as an attempt to hide their loneliness and report that their mothers were cold and rejecting. Anxious/ambivalent adults were thought to characterize their love relationships as preoccupying, in that they fall in love easily but not deeply. Anxious/ambivalent adults were expected to have self-doubts and report both positive and negative interactions with their mothers.

In two studies, Hazan and Shaver (1987) explored adult romantic love as an attachment forming process. In the first study, 205 men and 412 women responded to a newspaper questionnaire. Participants were classified as secure, avoidant, or anxious/ambivalent attachment types based on their response to a brief paragraph describing each attachment style. Participants answered 56 questions on the Love-Experience Scales about their most important past or current love relationship and questions about their childhood relationships with their parents. In the second study, 38 male and 70 female undergraduate students completed the questionnaires. Results from both studies indicated that secure, avoidant, and anxious/ambivalent attachment styles first labeled in childhood are prevalent in adulthood at the same rate found in children. Secure individuals rated their love relationship as friendly, happy, and trusting. Avoidant individuals described their love

relationship by fear of closeness, emotional ups and downs, and jealousy. Anxious/ambivalent individuals identified their love relationship as a desire for reciprocation, emotional ups and downs, and jealousy (Hazan and Shaver, 1987).

A few other studies have provided support for three attachment styles in adults. Among dating couples, those with secure attachment styles were found to seek support from others at times of heightened anxiety or threat, whereas avoidant individuals tended to withdraw from their partner to reduce fear of closeness (Simpson, Rholes, & Nelligan, 1992). Secure attachment has been associated with extraverted traits (warm and gregarious) and agreeableness, whereas avoidant individuals tend to be low on agreeableness, high in neuroticism (especially depression), and low on openness to feelings (Shaver & Brennan, 1992). In addition to three attachment styles identified in adults, a four group model of adult of adult attachment had been proposed.

Four group model (secure, fearful, preoccupied, and dismissing). Bartholomew (1990) further divided adult avoidance behaviors into motivation for avoiding attachments out of fear or lack of interest. Bartholomew (1990) and Bartholomew and Horowitz (1991) propose that attachment styles develop in terms of adopting a positive or negative mental model or representation of self and positive or negative mental representation of others. A positive self-view fosters feelings of being worthy of love and support. A negative self-view fosters feelings of not deserving love and support. A positive view of others implies that others are trustworthy and available. A negative view of others implies that others unreliable and rejecting. Four patterns of adult attachment style are derived from these dichotomous working models of self and others: secure, preoccupied, fearful, and dismissing.

Individuals with secure attachment style maintain a positive image of self and others. Secure individuals view themselves as worthy of love and view others as caring and approachable (Bartholomew & Horowitz, 1991). A preoccupied attachment style is characteristic of a person who views themselves negatively and views others positively. Preoccupied individuals fail to see themselves as worthy of love but see others as valuable. Self-acceptance for preoccupied persons is contingent on being accepted by others (Bartholomew & Horowitz, 1991). A negative representation of both self and others is typical of a person with fearful attachment style. Fearful individuals perceive themselves as undeserving of love or support and perceive others as untrustworthy and unaccepting. It is common for fearful individuals to avoid expected rejection by staying away from others (Bartholomew & Horowitz, 1991). Dismissing attachment style is maintained by positive images of self and negative images of others. Dismissing individuals sense themselves as worthy of affection but sense others as uncaring (Bartholomew & Horowitz, 1991). Like fearful individuals, dismissing individuals avoid relationships with others to guard against disappointment. Dismissing persons try to appear autonomous and less susceptible to others feelings (Bartholomew & Horowitz, 1991).

Bartholomew and Horowitz (1991) conducted a study designed to test the four-category model of adult attachment. Attachment styles were measured in 77 college students by semi-structured interviews along with self ratings and friend ratings of attachment on the Relationship Questionnaire (Bartholomew & Horowitz, 1991). Participants also completed a personal demographic questionnaire, a friendship questionnaire, a self-esteem inventory, a self-acceptance scale, and an inventory of interpersonal problems. Results showed that the secure group scored high on coherence, intimacy, balance of power in friendships,

involvement in romantic relationships, and self-confidence. Dismissing individuals ranked high on self-confidence and low on emotional responsiveness, warmth, caregiving, self-disclosure, romantic relationships, dependence on others, and use of others as a secure base. Preoccupied attachment style was positively related to elaboration, emotional expressiveness, romantic relationships, reliance on others, use of others as a secure base, and caregiving. Preoccupied identification was negatively related to balance of power in friendships, coherence, and self-confidence. The fearful group ranked low on self-confidence, self-disclosure, involvement in romantic relationships, intimacy , reliance on others, use of others as a secure base, and balance of control with friends and significant others.

Interpersonally, a secure style is related to warmth, a dismissing style is related to hostility, a preoccupied style is related to warmth accompanied by dominance, and a fearful style is related to passivity and social shyness (Bartholomew & Horowitz, 1991). In the literature, fearful, dismissing, preoccupied, anxious/ambivalent, and avoidant attachment styles are discussed broadly as insecure attachment. Secure and insecure attachment styles can be viewed as dimensions of attachment.

Attachment dimensions. Secure, preoccupied, fearful, dismissing, avoidant, and anxious/ambivalent typologies are categorical in nature. It has been suggested that attachment is better explained by continuous dimensions (Fraley & Waller, 1998; Brennan & Shaver, 1995). Researchers have consistently found two major dimensions of insecure attachment: anxiety (concern with accessibility and responsiveness of others) and avoidance (discomfort with closeness) (Brennan & Shaver, 1995; Brennan et al., 1991; Feeney, Noller, & Hanrahan, 1994; Griffin & Bartholomew, 1994; Sanford, 1997; Scharfe & Bartholomew, 1994; Simpson et al., 1992).

In a comparison of the three group attachment model (Hazan & Shaver, 1987) with the four group attachment model (Bartholomew, 1990), Brennan, Shaver, and Tobey (1991) found two dimensions underlying both models and reported that the models are related. Individuals categorized as secure by Hazan and Shaver's (1987) model are also categorized as secure by Bartholomew's (1990) model. Preoccupied (Bartholomew, 1990) individuals come from the anxious/ambivalent (Hazen & Shaver, 1987) group. Dismissing and fearful (Bartholomew, 1990) individuals come from the avoidant (Hazen & Shaver, 1987) group. According to Brennan et al. (1991), the two dimensions of both models are level of avoidance (secure to fearful) and level of anxiety/ambivalence (preoccupied to dismissing).

Collins and Read (1990) developed an 18-item continuous measure of adult attachment based on Hazen and Shaver's (1987) three categorical (secure, avoidant, and anxious/ambivalent) model. Factor analysis revealed three attachment dimensions: Depend (trust and depend on others), Anxiety, and Close (comfort with closeness). The Depend and Close factors were moderately correlated (Collins & Read, 1990). In a follow up study, Collins (1991) combined the Depend and Close scales suggesting that two dimensions Anxiety and Closeness define adult attachment.

In another study on dimensions of adult attachment, factor analysis of seven (Trust, Ambivalence, Self-Reliance, Proximity Seeking, Frustration with Partners, Jealously/Fear of Abandonment, and Anxious Clinging to Partners) 10 item attachment scales (Brennan, Shaver, & Hazen, 1989) revealed two factors: Insecurity which is related to avoidance and Preoccupation with Attachment which is related to anxious/ambivalence (Brennan & Shaver, 1995).

In a study to develop the 40 item Attachment Style Questionnaire (Feeney et al., 1994), discriminant function analysis showed two underlying dimensions of attachment: Anxiety Over Relationships, defined by preoccupation with relationships, need for approval, and low confidence; and Discomfort (avoidance), defined by discomfort with closeness and relationships as secondary (high avoidance). Securely attached individuals are low on both anxiety and avoidance dimensions. Fearfully attached individuals are high on both dimensions. Preoccupied individuals are high in anxiety and low in avoidance, and dismissing individuals are low in anxiety and high in avoidance (Feeney et al., 1994). In one study, these two attachment dimensions labeled Comfort with Closeness (low avoidance) and Anxiety Over Relationships (anxiety) were validated by exploratory factor analysis (Strahan, 1995).

In summary, attachment researches have argued for secure and insecure dimensions of attachment further two underlying dimensions of insecure attachment that typically relate to anxiety and avoidance have been discussed. Several groups of researchers have consistently derived two attachment dimensions from the ASQ (Alexander, Feeney, Hohaus, & Noller, 2001; MacDonald & Kingsbury, 2006; Meredith, Strong, & Feeney, 2005, 2006a, 2006b, 2007) to be used when examining adult attachment in chronic pain patients.

Correlates of Attachment and Chronic Pain

In general, insecure attachments have been associated with emotional distress, negative pain appraisals, catastrophizing, and lower pain self-efficacy among chronic pain patients. Secure attachment has been associated with positive appraisals of pain, pain self-efficacy, and lower emotional distress among chronic pain patients. One group of researchers investigated associations between attachment variables, pain appraisals, pain self-efficacy,

pain intensity, disability, anxiety, and depression among chronic pain patients (Meredith et al., 2005, 2006a, 2007).

In one study, investigators recruited 141 participants from pain rehabilitation programs to examine adult attachment variables and appraisals of chronic pain (Meredith et al., 2005). Participants completed the Oswestry Disability Index (Fairbank & Pynsent, 2000), Visual Analogue Scales(VAS; Turk & Melzack, 2001), the Depression Anxiety Stress Scales 21(DASS21; Lovibond & Lovibond, 1995), the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991), the Attachment Style Questionnaire (ASQ; Feeney et al., 1994), the Pain Appraisal Inventory (PAI; Unruh, 1998), and the Catastrophizing subscale of the Coping Strategies Questionnaire (CSQ-Cat; Rosenstiel &Keefe, 1983). Results indicated that the anxiety over relationships attachment dimension was positively associated with threat appraisals of chronic pain, fearful attachment, preoccupied attachment, catastrophizing, anxiety, depression, and stress. The comfort with closeness attachment dimension was positively associated with challenge appraisals of chronic pain and secure attachment, while negatively associated with anxiety over relationships, fearful attachment, anxiety, and depression. Relationships between attachment variables, pain intensity, and disability were not significant. The group of researchers demonstrated that the PAI is a reliable instrument for use with chronic pain patients and concluded that securely attached chronic pain patients make more positive appraisals of pain.

In another study, Meredith et al. (2006a) examined adult attachment, anxiety, and pain self-efficacy as predictors of pain intensity and disability. In this study, 152 individuals receiving pain treatment at one of two pain clinics completed self-report measures. Measures included the Pain Self-Efficacy Questionnaire (PSEQ; Nicholas, 1994), Anxiety subscale of

the DASS21 (Lovibond & Lovibond, 1995), the RQ (Bartholomew & Horowitz, 1991), the ASQ (Feeney, et al., 1994), VAS (Turk & Melzack, 2001), and Oswestry Disability Index (Fairbank & Pynsent, 2000). The researchers used the RQ to determine attachment styles: secure, preoccupied, fearful, dismissing. The ASQ was used to determine two dimensions of attachment: comfort with closeness and anxiety over relationships. Results showed that fearful and preoccupied attachments were related to low scores on pain self-efficacy, while comfort with closeness was significantly related to pain self-efficacy, especially for males. Anxiety was positively correlated with insecure forms of attachment, whereas anxiety was negativity correlated with closeness with comfort. Compared to other variables pain self-efficacy was a better predictor of pain intensity and disability. Comfort with closeness moderated relationships between pain self-efficacy, disability, pain intensity, and anxiety. No direct meaningful relationships were found between attachment variables and pain intensity or disability. These findings suggest that anxiety and self-efficacy issues influence disability and pain intensity among chronic pain patients with insecure attachments. The researchers concluded that is it meaningful to conceptualize chronic pain from a framework of attachment theory (Meredith et al., 2006a).

In a recent study, Meredith et al. (2007) conducted a study examining adult attachment dimensions (comfort with closeness and relationship anxiety) as predictors of pre- and post- treatment depression. The researchers hypothesized that in a sample of 99 patients receiving treatment for chronic pain those with high comfort with closeness and low anxiety about relationships (secure attachment) would report lower levels of depression compared to those with low comfort with closeness (avoidant attachment) and high anxiety about relationships (anxious attachment). Prior to entering a two or three week pain treatment

program participants filled out a demographics questionnaire and rated pain intensity on four Visual Analogue Scales (VAS; Turk & Melzack, 2001). Two dimensions of adult attachment (comfort with closeness and anxiety over relationships) were measured with the Attachment Style Questionnaire (ASQ; Feeney et al., 1994). Pre-and post-treatment depression was measured with the 7-item Depression Subscale of the Depression Anxiety Stress Scales 21 (DASS21; Lovibond & Lovibond, 1995). Meredith et al. (2007) found that comfort with closeness was associated with lower levels of depression both pre- and post- treatment and was a better predictor of post-treatment depression than gender, prior depression, or pain intensity. Relationship anxiety was positively related to depression and was a better predictor of pre-treatment depression than gender, post-treatment depression, or pain intensity. These findings suggest that chronic pain patients with secure attachment style will be less susceptible to depressive symptoms. While pain patients with insecure attachments particularly fearful (high anxiety/low comfort) may be vulnerable to depression. The researchers suggested that attachment variables be considered in chronic pain treatment interventions (Meredith et al., 2007).

Another group of researchers conducted a study with 111 individuals seeking treatment at a pain clinic to examine the relationship of attachment styles with pain, depression, catastrophizing, disability, and health care utilization at the start of treatment and 12 months after treatment (Ciechanowski, Sullivan, Jensen, Romano, & Summers, 2003). Attachment in close personal relationships was measured with the Relationship Scale Questionnaire (RSQ; Griffin & Bartholomew, 1994). The RSQ is an 18-item measure scored on a 5-point Likert type scale to produce secure, preoccupied, fearful, and dismissing attachment subscales scores. Catastrophizing was assessed with the CSQ-Cat; Rosenstiel &

Keefe, 1983). Depression was assessed with the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) and physical ability was measured with the Roland-Morris Disability Questionnaire (RMDQ; Roland & Morris, 1983). Participants were asked to report average pain intensity based on a scale ranging from 0 = no pain to10 = intense pain, and to report pain-related health care visits. Attachment style was not related to pain intensity or pain disability. Results showed that at baseline and at 12 months follow up secure attachment was associated with lower levels of depression. Fearful attachment was associated with higher levels of depression at baseline and follow up and catastrophizing at follow up. Post-treatment health care visits were utilized most by preoccupied individuals. These findings are important for understanding pain responsiveness using attachment models and incorporating care-seeking behavior into chronic pain treatment programs.

One study examined attachment dimensions, pain affect, and emotional distress (MacDonald & Kingsbury, 2006). Physical pain affect was defined as the average level of tolerance and suffering resulting from pain. Pain tolerance and suffering were measured using self-report rating scales. Attachment dimensions were measured with the ASQ (Feeney et al., 1994) and depression and anxiety were measured with the DASS (Lovibond & Lovibond, 1995). Participants were 64 patients with persisting pain and 92 community volunteers. Anxious attachment was associated with increased pain affect and found to partially mediate the relationship between pain affect and emotional distress.

Even among people experiencing acute pain or no pain at all, insecure attachment variables have been associated with pain-related fear, hypervigilance, catastrophizing, emotional distress, lower pain threshold, and diminished control. McWilliams and Asmundson (2007) investigated the relationship of adult attachment styles to pain-related

fear, hypervigilance, and catastrophizing. This study was based on the idea that insecure attachment (anxiety and avoidance) is related to inflated negative evaluations, thus insecure attachment might serve as a developmental basis of heightened apprehension of pain. The researchers recruited 278 undergraduate college students absent of chronic pain. Pain free individuals were selected for the purpose of examining whether associations between attachment and pain-related variables precede the onset of chronic pain. Presence or absence of persisting pain symptoms was determined through use of short demographics questionnaire inquiring about both current and past pain. Attachment was measured with the Experiences in Close Relationships Questionnaire (ECR; Brennan, Clark, & Shaver, 1998). Although the ECR is designed for romantic attachment, McWilliams and Asmundson (2007) intended for attachment styles to generalize beyond the realm of romantic partnerships. Other measures completed include the Fear of Pain Questionnaire-III (McNeil & Rainwater, 1998), the Pain Vigilance and Awareness Questionnaire (McCraken, 1997), and the Pain Catastrophizing Scale (Sullivan, Bishop, & Pivik, 1995). Individuals with negative models of self (anxiety) reported more pain-related fear, hypervigilance, and catastrophizing than individuals with positive models of self. This finding suggests that people adopting negative views of themselves potentially view themselves as less able to cope with pain or unworthy of others care during moments of pain. The model of others (avoidance) attachment dimension was positively correlated with catastrophizing but not related to fear or hypervigilance. This finding may be related to exaggerated communication of pain in order to get the attention of others usually perceived as unsupportive. One implication of the McWilliams and Asmundson (2007) study is that finding that insecure attachment is related to pain constructs.

In a study of 58 pain free individuals, Meredith et al., (2006b) investigated the association of adult attachment to emotion, catastrophizing, control, threshold and tolerance in response to acute pain. Pain was experimentally induced as participants completed a coldpressor task (plunging their forearm in 2 °C water). Pain threshold was measured as the amount of time spent in the coldpressor task (four minute ceiling) before reporting pain. Pain tolerance was calculated as the amount of time the individual remained submerged in the cold water. Pain intensity ratings were recorded at 20 second intervals and overall pain was recorded as 0 = no pain and 10 = intense pain. Emotional distress was measured with the DASS21 (Lovibond & Lovibond, 1995) which consists of seven item depression, anxiety, and stress subscales. The anxiety scale was not included in data analysis due to low reliability in this study. General relationship attachment styles were reported by completing the RQ (Bartholomew & Horowitz, 1991) in which an individual selects a paragraph describing themselves as either secure, preoccupied, fearful, or dismissing. Discomfort with closeness and anxiety over relationships attachment dimensions were measured with the ASQ (Feeney et al., 1994). The CSQ-Cat (Rosenstiel & Keefe, 1983) was also completed. Those with secure attachment reported lower levels of depression, less catastrophizing, and more control over pain. Those with anxiety over relationships reported more stress, depression, pre-task catastrophizing, and less perceived control over pain, ability to decrease pain, and lower pain threshold. Findings suggest that insecure attachment styles could be linked with negative pain experiences.

In summary, a few studies have been conducted exploring attachment variables among chronic pain patients. It can be concluded from these studies that chronic pain patients with insecure attachment styles are vulnerable to emotional distress, negative pain appraisals,

lower self-efficacy, and catastrophizing. Preoccupied pain patients are likely to make more visits to their health care provider compared to patients with other attachment styles.

Attachment Behaviors towards Physicians

Based on Bowlby's (1973) idea that pain, viewed as a threat, can illicit attachment behaviors, Mikail, Henderson, and Tasca (1994) theorize that the four group attachment styles can explain chronic pain patient's behavior towards their physician.

Secure attachment. Mikail and associates (1994) proposed that securely attached individuals will gather information, consult with physicians in the experience of pain or injury, utilize support systems when needed, and communicate their physical and emotional pain in a clear non-defensive manor.

Preoccupied attachment. People with preoccupied patterns of attachment perform both help seeking behaviors and avoidance behaviors (Mikail et al., 1994). In the initial stages of seeking treatment, they are looking for symptom relief and nurturance by appearing eager to comply with treatment regimes. After a while, preoccupied patients become ambivalent and noncompliance begins. Withdrawing from others lowers anxiety about being rejection for failing. Treatment is sabotaged by ambivalence and the end result is often "doctor shopping" (Mikail et al., 1994).

Dismissing attachment. People with dismissing attachment styles will dismiss pain signals and assign little meaning to pain thereby fostering reluctance to seek medical attention. Once dismissing individuals seek help their interpersonal communication may be received as hostile and detached. Health care providers may view dismissing people as not bothered by their pain or unwilling to comply with medical advice. Hostile, detached,

dismissive encounters with others will further reinforce the avoidance of the significant others (Mikail et al., 1994).

Fearful attachment. Similar to dismissing individuals, people who endorse a fearful attachment style are likely to postpone seeking treatment. Fearful individuals may be skeptical when it comes to others' responsiveness or others' ability to care and often feel undeserving (Mikail et al., 1994). Considering fearful people avoid treatment, by the time treatment is sought pain levels may be exacerbated and psychological states of helplessness and hopelessness may be present (Mikail et al., 1994). It may be difficult for pain management specialists to decipher between psychological factors and pain complaints which can be perceived by the fearful person as rejection. Frustration will develop in both the pain patient and pain management physician (Mikail et al., 1994).

Attachment and Patient-Provider Relationship. Kolb (1982) theorizes that attachment theory can provide understanding of chronic pain complaints and can offer treatment approach strategies to physicians and caretakers. Kolb explains that when first presenting with pain complaints patients are compliant and respectful to treatment. As treatment progresses (i.e., increase in activity or reduction in medication) the patient feels threatened and responds by complaining, questioning, becoming clingy, or withdrawing. Treatment failure or rejection for treatment lead to frustration and leave the chronic pain sufferer seeking a variety of treatments with different doctors. Kolb believes that pain complaining is a form of attachment behavior for eliciting a caretaker and suggests persisting pain complaints, increasing questioning of pain, and anger can be interpreted as a need for security when separation anxiety is occurring. Withdraw behaviors can be a signal that the pain patient has lost hope in the attachment figure or physician managing pain symptoms

ability to satisfy security needs (Kolb, 1982). Pain complainers who isolate and detach themselves from previous sources of help begin performing an attachment search for new sources of help (Kolb, 1982). Developing a trusting, expectant, and secure relationship between physician and pain patient is essential in relieving distress can eliminate separation anxiety while fostering hope that security needs will be attended to (Kolb, 1982).

Attachment researchers propose that patients' responsiveness and adjustment to pain as well as physician responsiveness can be expressions of attachment and further suggest that considering attachment in treatment interventions can foster better understanding of patient needs, defenses, and mutual patient-caregiver interactions (Ciechanowski et al., 2003; Meredith et al., 2006a, 2007; Porter, Davis, & Keefe, 2007; Tan, Zimmermann, & Rodin, 2005; Thompson & Ciechanowski, 2003). Distress and helplessness experienced in times of illness or pain can heighten attachment responses (Thompson & Ciechanowski, 2003).

While researchers have theorized the importance of chronic pain patient's attachments to their physician, only one researcher in an unpublished dissertation project (Hood, 2005) has examined the relationship of attachment style and patient-provider relationship quality among chronic pain patient clusters (dysfunctional, interpersonally distressed, and adaptive coper). Hood (2005) found that pain patients with secure attachment style reported higher patient-provider quality. In this study, patient-provider quality was measured with the Patients Reaction Assessment (PRA; Galassi, Schanberg, & Ware, 1992) which has three 5 item subscales: Patient Information Index, Patient Affective Index, and Patient Communication Index.

A group of researchers have examined attachment styles, self-care, and patient-provider relationships among diabetic patients (Ciechanowski, Russo, Katon et al., 2004).

The patient-provider relationship in this study was measured with three questions: "My doctor who treats my diabetes regularly reviews with me how I am doing in managing all aspects of my diabetes", "My doctor who treats my diabetes makes regular calls to find out how I'm doing managing my diabetes", and "My doctor who treats my diabetes has worked with me to develop a plan so that I know how to take care of my diabetes". Ciechanowski, Russo, Katon et al. (2004) reported that associations between dismissing attachment style and poorer self-care, and outcome were mediated by the patient-provider relationship. In another study, researchers explored the patient-provider relationship as it related to treatment adherence among diabetic patients (Ciechanowski, Katon, Russo, & Walker, 2001). Patients with dismissing attachment styles and poor physician-patient communication were more likely to report poor treatment adherence compared to patients with other attachments styles and better physician-patient communication. The PRA (Galassi et al., 1992) was used to measure physician-patient relationship quality (Ciechanowski et al., 2001).

In other general studies, researchers make note that the physician-patient relationship is pertinent to treatment adherence (Elliott, 2006; Lewis, Colbert, Erlen, & Meyers, 2006; Sajatovic, Bauer, Kilbourne, Vertress, & Williford, 2006), trust (Battagila, Finley, & Liebschutz, 2003), communication (Smith, Winkel, Egert, Diaz-Wionczek, & DuHamel, 2006), and satisfaction (Evans et al., 2004).

Further, investigation is warranted on chronic pain patient's attachment to their physician and how this professional attachment relationship is associated, if at all, with patient's emotional experiences, including their experience and expression of anger.

Summary

Anger among chronic pain patients has been shown to be an important factor in physical experiences of pain, emotional responses of pain, and can interfere with both personal and therapeutic relationships. Attachment styles and dimensions among chronic pain patients have also been associated with pain levels, anxiety, and coping responses. To date, no researchers have explored anger and attachment with chronic pain patients in the same study. Anger researchers have emphasized how anger can interrupt working alliances with treatment providers and attachment researchers have emphasized how attachment styles of chronic pain patients' contribute to approach and response to treatment providers. While some researchers have explored some aspects of physician-patient relationships and attachment styles, these specific relationship qualities have been explored in relation to treatment outcome and adherence and not to patients' emotional states. In addition, there are current no measures of patient-physician attachment available in the research literature. This is the first study to examine adult general attachment as well as patient-physician attachment as predictors of the experience and expression of anger among chronic pain patients.

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APPENDIX C: Recruitment Letter

Dr. _____ and Office Manager,

My name is Wendy Sims and I am a doctoral student in the Counseling Psychology program at Oklahoma State University. I have been very interested and committed to the interests of chronic pain patients and have seen the psychosocial impact of chronic pain on people's lives, having worked with this population in my role as a therapist over the past few years.

I am very interested in conducting a survey research study exploring factors that affect the experience and expression of anger in chronic pain patients. We know a lot about the impact of depression and anxiety on the physical, social, and emotional well-being of chronic pain patients. However, little is known about the impact of anger and anger expression on chronic pain patients' lives.

In particular, I would like to explore how anger and different types of anger expression, including anger aggression, anger suppression, and anger control efforts, may be related to the relationships or "bonds" patients have with people closest to them and their physicians. My research project is being supervised by my advisor, Carrie Winterowd, Ph.D., who is a licensed psychologist and associate professor of Counseling Psychology at Oklahoma State University, and is a leading expert in the area of cognitive therapy and chronic pain.

My advisor and I would like the opportunity to meet with you about the possibility of conducting my dissertation study with patients in your office. Participation would involve the completion of a few questionnaires. Questionnaire packets could be made available at the front desk when patients check-in for their office visits. It typically takes no more than 30 minutes for patients to complete these forms. Their participation would be voluntary. If they agree to participate, they could quit at any time without penalty. Participants will receive a $3.00 compensation payment for their time if they complete the surveys. Patients would not write their names on any of the forms, so there would be no way to connect their responses to their identities

We would be happy to share a summary of our research findings with you and your office staff. We think this information would be very helpful to physicians and specialists such as yourself who work with chronic pain patients.

We look forward to discussing this research opportunity with you very soon. We will be in touch with a follow-up phone call in the next week or two, or please email me, Wendy Sims, with any questions.

Sincerely,

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APPENDIX D: Informed Consent

Informed Consent

You are invited to participate in a study exploring chronic pain patient's relationships with others, relationships with their physicians, and emotional reactions such as anger, depression, anxiety, and stress. Participation in this study involves the completion of six questionnaires and a demographic form, which should take approximately 30 minutes to complete.

The potential benefit of participating in this study is an increased awareness of your relationships with others, your relationship with your physician, and your experience and expression of emotional reactions. There are no known risks associated with this study which are greater than those ordinarily encountered in daily life.

Participation in this study is completely voluntary. There is no penalty for not participating and you have the right to withdraw your consent and participation at any time. Your participation in this study will not affect your services with your physician. If you choose to participate, please complete the questionnaires in this study. Your completion of the questionnaires will indicate your consent for participation. Your signature will not be required on this form, and no one will know how you answered the questions in this study.

All information collected in this study is strictly confidential. Please DO NOT write your name on any of the forms. Your physician will not know your individual responses to the questionnaires. However, the office staff will collect the questionnaires in a sealed envelope once you are finished with them. Upon returning the packet to the office staff, you will receive $3. Your participation in this study is greatly appreciated.

The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

If you have any questions about this research study, you can contact Wendy Sims, MA, doctoral student, Counseling Psychology, Oklahoma State University, 434 Willard Hall, Stillwater OK, 74078-4024, wendy.sims@okstate.edu or 806-786-2015. If you have questions about your rights as a research volunteer, you may contact Dr. Sue C. Jacobs, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

APPENDIX E: Measures

Demographic Sheet

Directions: Please answer each question by filling in the blank, checking the blank, or circling the number that best describes you.

1) How old are you? Age____

2) Sex: ___ Female ___ Male

3) Are you: ___ a) Single
___ b) Partnered/Common Law
___ c) Married
___ d) Separated
___ e) Divorced
___ f) Widowed

4) Race (check all that apply):
____ a) African-American/Black
____ b) American Indian/Native
____ c) Asian/Asian American
____ d) Hispanic/Latino(a)
____ e) White, non-Hispanic
____ f) Other _____

5) Are you currently employed? ___ yes ___ no ___ disabled
If yes, what is your present or most recent occupation?_____

6) Do you receive disability benefits? ___ yes ___ no

7) What is the highest level of education completed?
___ did not complete high school
___ GED, or equivalent
___ high school graduate
___ some university education; number of years ___
___ bachelor's degree
___ master's degree
___ doctoral degree

8) Are you experiencing pain? ___ yes ___ no
If yes, how long have you been experiencing pain? ___ years ___ months

9) What are the medical diagnoses related to your pain?
___Myofacial Pain Syndrome
___Arthritis: __Osteoarthritis__Rheumatoid
___Cancer Pain
___Carpal Tunnel
___Peripheral Neuropathy
___Complex Regional Pain Syndrome
___Fibromyalgia
___Low Back Pain
___Osteoporosis
___Other:_____

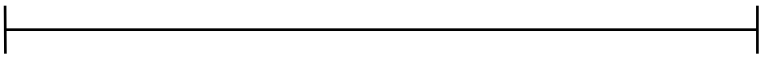
10) Where is the location of your pain? (check all that apply)
___ head ___ neck ___ shoulder(s) ___ upper arm(s) ___ elbow(s) ___ lower arm(s) ___ wrist(s)
___ hand(s) ___ knuckle(s) ___ finger(s) ___ upper back ___ mid back ___ lower back ___ chest
___ stomach ___ hip(s) ___ groin ___ upper leg(s) ___ knee(s) ___ lower leg(s)
___ ankle(s) ___ foot (feet) ___ toes ___ Other: _____

11) Are you currently taking prescription medication for pain? ___ yes ___ no

Visual Analogue Scale

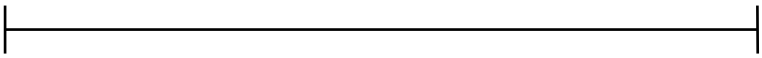
Place a vertical mark on the line below to indicate the level of your pain **now**.

No Pain — Pain as bad as it could be



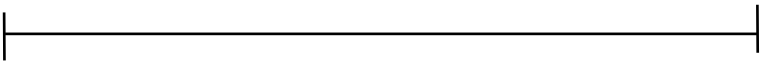
Place a vertical mark on the line below to indicate the level of your **average** pain over the past week.

No Pain — Pain as bad as it could be



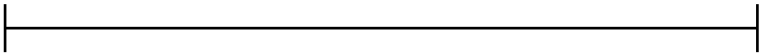
Place a vertical mark on the line below to indicate the level of your **highest level** of pain over the past week.

No Pain — Pain as bad as it could be



Place a vertical mark on the line below to indicate the level of your **lowest level** of pain over the past week.

No Pain — Pain as bad as it could be



Physician Attachment Scale

This questionnaire asks you about your relationship with your **PHYSICIAN**. Please read each statement and circle the **ONE** number that tells how true that statement is for you now.

1 = Almost Never or Never True	**2 = Not Very Often True**	**3 = Sometimes True**	**4 = Often True**	**5 = Almost Always or Always True**

1. I like to get my physician's point of view on things I'm concerned about.	1	2	3	4	5
2. My physician can tell when I'm upset about something.	1	2	3	4	5
3. When we discuss things, my physician cares about my point of view.	1	2	3	4	5
4. Talking over my problems with my physician makes me feel ashamed or foolish.	1	2	3	4	5
5. I wish I had a different physician.	1	2	3	4	5
6. My physician understands me.	1	2	3	4	5
7. My physician encourages me to talk about my difficulties.	1	2	3	4	5
8. My physician accepts me as I am.	1	2	3	4	5
9. I feel the need to be in touch with my physician more often.	1	2	3	4	5
10. My physician does not understand what I'm going through these days.	1	2	3	4	5
11. I feel alone or apart when I am with my physician.	1	2	3	4	5
12. My physician listens to what I have to say.	1	2	3	4	5
13. I feel my physician is a good physician.	1	2	3	4	5
14. My physician is fairly easy to talk to.	1	2	3	4	5
15. When I am angry about something, my physician tries to be understanding.	1	2	3	4	5
16. My physician helps me to understand myself and my medical conditions better.	1	2	3	4	5
17. My physician cares about how I am feeling.	1	2	3	4	5
18. I feel angry with my physician.	1	2	3	4	5
19. I can count on my physician when I need to get something off my chest.	1	2	3	4	5
20. I trust my physician.	1	2	3	4	5
21. My physician respects my feelings.	1	2	3	4	5
22. I get upset a lot more than my physician knows about.	1	2	3	4	5
23. It seems as if my physician is irritated with me for no reason.	1	2	3	4	5
24. I can tell my physician about my problems and troubles.	1	2	3	4	5
25. If my physician knows something is bothering me, they ask me about it.	1	2	3	4	5

Attachment Style Questionnaire

Show how much you agree with each of the following items by rating them on the following scale:

1= Totally Disagree	2 = Strongly Disagree	3 = Slightly Disagree	4= Slightly Agree	5= Strongly Agree	6 = Totally Agree

1. Overall I am a worthwhile person.	1	2	3	4	5	6
2. I am easier to get to know than most people.	1	2	3	4	5	6
3. I feel confident that other people will be there for me when I need them.	1	2	3	4	5	6
4. I prefer to depend on myself rather than other people.	1	2	3	4	5	6
5. I prefer to keep to myself.	1	2	3	4	5	6
6. To ask for help is to admit that you're a failure.	1	2	3	4	5	6
7. People's worth should be judged by what they achieve.	1	2	3	4	5	6
8. Achieving things is more important than building relationships.	1	2	3	4	5	6
9. Doing your best is more important than getting on with others.	1	2	3	4	5	6
10. If you've got a job to do, you should do it no matter who gets hurt.	1	2	3	4	5	6
11. It's important to me that others like me.	1	2	3	4	5	6
12. It's important to me to avoid doing things that others won't like.	1	2	3	4	5	6
13. I find it hard to make a decision unless I know what other people think.	1	2	3	4	5	6
14. My relationships with others are generally superficial.	1	2	3	4	5	6
15. Sometimes I think I am no good at all.	1	2	3	4	5	6
16. I find it hard to trust other people.	1	2	3	4	5	6
17. I find it difficult to depend on others.	1	2	3	4	5	6
18. I find that others are reluctant to get as close as I would like.	1	2	3	4	5	6
19. I find it relatively easy to get close to other people.	1	2	3	4	5	6
20. I find it easy to trust others.	1	2	3	4	5	6
21. I feel comfortable depending on other people.	1	2	3	4	5	6
22. I worry that others won't care about me as much as I care about them.	1	2	3	4	5	6
23. I worry about people getting too close.	1	2	3	4	5	6
24. I worry that I won't measure up to other people.	1	2	3	4	5	6
25. I have mixed feelings about being close to others.	1	2	3	4	5	6
26. While I want to get close to others, I feel uneasy about it.	1	2	3	4	5	6
27. I wonder why people would want to be involved with me.	1	2	3	4	5	6
28. It's very important to me to have a close relationship.	1	2	3	4	5	6
29. I worry a lot about my relationships.	1	2	3	4	5	6
30. I wonder how I would cope without someone to love me.	1	2	3	4	5	6
31. I feel confident about relating to others.	1	2	3	4	5	6
32. I often feel left out or alone.	1	2	3	4	5	6
33. I often worry that I do not really fit in with other people.	1	2	3	4	5	6
34. Other people have their own problems, so I don't bother them with mine.	1	2	3	4	5	6
35. When I talk over my problems with others, I generally feel ashamed or foolish.	1	2	3	4	5	6
36. I am too busy with other activities to put much time into relationships.	1	2	3	4	5	6
37. If something is bothering me, others are generally aware and concerned.	1	2	3	4	5	6
38. I am confident that other people will like and respect me.	1	2	3	4	5	6
39. I get frustrated when others are not available when I need them.	1	2	3	4	5	6
40. Other people often disappoint me.	1	2	3	4	5	6

Relationship Questionnaire

Instructions: Please rate each of the relationship styles below to indicate how well or poorly each description corresponds to your relationship style with your **friends**. Please select the number that best fits for each item.

1. It is easy for me to become emotionally close to my friends. I am comfortable depending on my friends and having my friends depend on me. I do not worry about being alone or having my friends not accept me.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

2. I am uncomfortable getting close to my friends. I want emotionally close relationships, but I find it difficult to trust my friends completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to my friends.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

3. I want to be completely emotionally intimate with my friends, but I often find that my friends are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that my friends do not value me as much as I value them.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

4. I am comfortable without close emotional relationships with my friends. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on my friends or have my friends depend on me.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

Instructions: Please rate each of the relationship styles below to indicate how well or poorly each description corresponds to your relationship style with the **person closest to you** (spouse, significant other, family member, etc.).

Please identify this person by category first (circle): Mother Father Spouse Partner Brother Sister Cousin Aunt/Uncle Grandparent

Then select the number that best fits for each item.

1. It is easy for me to become emotionally close to the person I am closest to. I am comfortable depending on this person and having this person depend on me. I do not worry about being alone or having this person not accept me.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

2. I am uncomfortable getting close to the person I am closest to. I want an emotionally close relationship, but I find it difficult to trust this person completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to this person.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

3. I want to be completely emotionally intimate with the person I am closest to, but I often find that this person is reluctant to get as close as I would like. I am uncomfortable being without a close relationship, but I sometimes worry that this person does not value me as much as I value them.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

4. I am comfortable without a close emotional relationship with the person I am closest to. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on this person or have this person depend on me.

Not at all like me			Neutral			Very much like me
1	2	3	4	5	6	7

DASS21

Please read each statement and circle a number that indicates how much the statement applied to you *over the past week*. Do not spend too much time on any statement.

The rating scale is as follows:
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

www.psy.unsw.edu.au/dass/

APPENDIX F: Thank You

Thank You

We thank you for completing questionnaires for this study. We are very interested in chronic pain patients' relationships with others including their relationships with their physicians and how these relationships influence emotional experiences, including anger and anger expression. Sometimes, when people participate in research studies, they may become aware of their own feelings, and experiences that they may wish to discuss with others, including counseling professionals. We have provided you with a list of resources in case you become aware of your interest in seeking help to cope with you thoughts and feelings about your life, including emotions such as anger, stress, depression, and anxiety, as well as your pain. If you have any questions about this research study, you can contact Wendy Sims, MA, doctoral student, Counseling Psychology, Oklahoma State University, 434 Willard Hall, Stillwater OK, 74078-4024, wendy.sims@okstate.edu or 806-786-2015. If you have questions about your rights as a research volunteer, you may contact Dr. Sue C. Jacobs, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

Resource List

This is a list of some centers that provide counseling services to chronic pain patients.

Counseling Psychology Clinic
408 Willard Hall
Oklahoma State University
Stillwater, OK 74078
(405) 744-6980

Psychological Services Center
118 North Murray Hall
Oklahoma State University
Stillwater, OK 74078
(405) 744-5975

Center for Family Services
101 Human Environmental Sciences West
Oklahoma State University
Stillwater, Oklahoma 74078
(405) 744-5058

APPENDIX G: Institutional Review Board

Oklahoma State University Institutional Review Board

Date:	Friday, November 30, 2007
IRB Application No	ED07124
Proposal Title:	The Relationship of Attachment Dimensions and Physician-Patient Attachment with Experience and Expression of Anger Among Chronic Pain Patients
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 11/29/2008

Principal Investigator(s)

Wendy Sims
1822 N. Perkins Rd. #1536
Stillwater, OK 74075

Carrie Winterrowd
409 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☑ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sue C. Jacobs, Chair
Institutional Review Board

VITA

Wendy Dawn Sims

Candidate for the Degree of

Doctor of Philosophy

Dissertation: THE RELATIONSHIP OF GENERAL ADULT ATTACHMENT AND PHYSICIAN-PATIENT ATTACHMENT WITHEXPERIENCE AND EXPRESSION OF ANGER AMONG CHRONIC PAIN PATIENTS

Major Field: Counseling Psychology

Biographical:

Education: Completed the requirements for the Doctor of Philosophy in Counseling Psychology at Oklahoma State University, Stillwater, Oklahoma in December, 2009.

Completed the requirements for the Master of Arts in Psychology at Midwestern State University, Wichita Falls, Texas in 2004.

Completed the requirements for the Bachelor of Arts in Psychology at Texas Tech University, Lubbock, Texas in 2002.

Experience: Completed APA accredited pre-doctoral internship in psychology at Metropolitan State College of Denver, Denver, Colorado in 2009.

Professional Memberships: American Psychological Association

Name: Wendy D. Sims Date of Degree: December, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: THE RELATIONSHIP OF GENERAL ADULT ATTACHMENT AND PHYSICIAN-PATIENT ATTACHMENT WITH EXPERIENCE AND EXPRESSION OF ANGER AMONG CHRONIC PAIN PATIENTS

Pages in Study: 117 Candidate for the Degree of Doctor of Philosophy

Major Field: Counseling Psychology

Scope and Method of Study:
General adult attachment and patient physician attachment along with experience and expression of anger were studied in chronic pain patients. Patients (N=62) from four chiropractic offices were asked to complete surveys that included a demographics page, the Attachment Style Questionnaire, the Physician Attachment Scale, the State-Trait Anger Inventory-2, the Relationship Questionnaire, the Depression Anxiety Stress Scales 21, and a Visual Analogue Scales.

Findings and Conclusions:
Among chronic pain patients insecure attachment with people in general and alienation from their physicians was associated with chronic anger and anger suppression. Secure attachment with people in general and trust and connection with their physicians was associated with less anger suppression. In addition, secure attachment to others in general was associated with more effort to control anger out among chronic pain patients, whereas avoidant attachment with others in general was associated with less anger control out. General adult attachment was a significant predictor of chronic anger, anger suppression, and anger control out. Physician-patient attachment was a significant predictor of chronic anger and anger suppression. After controlling for general adult attachment, physician-patient attachment contributed meaningfully in explaining anger suppression, but not chronic anger or anger control-out.

ADVISER'S APPROVAL: Dr. Carrie Winterowd