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Coping Similarity And Psychosocial Risk Factors In Couples With Chronic Pain

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COPING SIMILARITY AND PSYCHOSOCIAL RISK FACTORS IN COUPLES WITH CHRONIC PAIN

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DEDICATION

I dedicate this work to the many mentors and advisors who, throughout my life, saw possibility in me and took the time and energy to foster it. To my husband, whose words of encouragement and push for tenacity never faltered and who, through his instrumental and emotional support, helped me complete this research and earn this degree. To my daughter, though too young to remember these days, was a motivating force behind my achievement. And finally, to my parents, who have supported me in countless ways and believed in me through the many years of education and work it took to come this far.

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CHAPTER 1

INTRODUCTION

Coping is defined as the consequence of the individual's appraisal of an event as a threat and the perceived ability or resources to deal with the event (Lazarus & Folkman, 1984). It is a dynamic process of the interaction between the individual who has set resources, commitment, and values, and their particular environment that has its own resources, constraints, and demands (Lazarus & Launier, 1978). In general, coping efforts center on five main tasks: to reduce the harmful environment, tolerate or adjust to negative events or realities, maintain a positive self-image or self-efficacy, maintain emotional equilibrium, and continue satisfying relationships with others (Cohen & Lazarus, 1979). There exists volumes of research on individuals' coping with illness; however, there is less research on dyads or couples, and little longitudinal research with respect to coping with illness. The purpose of this study is to examine similarity in coping strategies within couples who are coping with chronic pain and how coping similarity is related to physical and psychosocial adjustment over time in both the patient with pain and the spouse.

Coping and Chronic Illness

Hundreds of different types of coping strategies have been identified in the literature. The classification of the strategies into general types of coping styles has yet to be agreed upon. These coping styles represent an individual's propensity to respond to stressful events in a particular way. Typically the strategies are viewed in terms of contrasting strategies such as emotion-focused vs. problem-focused or approach vs. avoidance-oriented. Lazarus and Folkman (1984) proposed the cognitive appraisal

theory of stress and coping in which an individual is faced with a situation and cognitively appraises that situation as either a threat or a challenge. In order to form this appraisal, the individual determines if they have the resources to manage the situation. If the individual lacks the resources, the situation will be appraised as threatening and manifest as a stressor. If the individual has sufficient resources, the situation will be appraised as a challenge (Lazarus & Folkman, 1984). These resources include intrapersonal (e.g., physical and emotional resilience) and interpersonal (e.g., social support, relationship satisfaction) resources available to the individual at that time. In this model, coping is a transactional process that involves one's cognitions and behaviors which can be directed toward changing the situation (i.e., problem-focused coping) or directed toward regulating one's emotions provoked by the situation (i.e., emotion-focused coping; Pearlin & Schooler, 1978).

Problem-focused coping includes behavioral and cognitive strategies which can be avoidance-oriented (e.g., avoiding situations, behavioral distraction) or approach-oriented (e.g., attempts to solve the problem, planning, information seeking, weighing the pros and cons of the situation, and taking control of the situation; Marin, Holtzman, DeLongis, & Robinson, 2007; Roth & Cohen, 1986). Problem-focused coping appears to emerge during childhood (Campos, Banez, Malcarne, & Worsham, 1991). Generally, problem-focused coping has been found to be more adaptive than emotion-focused coping in most situations, particularly those in which the stressor is highly controllable by the individual (Badr, 2004; Lazarus & Folkman, 1984; Zakowski, Hall, Klein, & Baum, 2001). However, there are mixed results with problem-focused coping for situations in which there is little individual control, such as cancer and chronic pain. In these

situations, the dominant use of problem-focused coping is sometimes associated with poorer outcomes (Newth & Delongis, 2004), while other times being associated with better outcomes (Badr, 2004).

Emotion-focused coping includes behavioral and cognitive strategies which can be avoidance-oriented (e.g., self-blame, distancing, dissociating, wishful thinking, denial, escape) or approach-oriented (e.g., attempts to understand or express stress-related emotions, reappraisal, acceptance; Marin et al., 2007; Roth & Cohen, 1986). Emotion-focused coping appears to develop in late childhood or adolescence, as emotion regulation is developed (Campos et al., 1991). Overall, emotion-focused coping is often used by physically ill individuals and is generally associated with negative adjustment outcomes (Badr, 2004); however, there is some evidence that emotion-focused coping is associated with better outcomes when the stressor is one which must simply be accepted (Zakowski et al., 2001). The reasons behind the mixed results for emotion-focused coping in chronic health conditions may be due to the type of coping used (e.g., ruminating vs. emotional approach or regulation in the face of stress; A. L. Stanton, Danoffburg, Cameron, & Ellis, 1994).

Emotion-focused coping that is avoidance-oriented is associated with positive outcomes in the short-term, as the avoidance enables the individual to reduce their emotional symptoms initially (Wong & Kaloupek, 1986); however, in the long-term, this coping strategy is associated with poorer outcomes, as it doesn't change the situation nor the individual's appraisal of the situation as a stressor. This strategy does not encourage the individual to make the cognitive and emotional efforts to anticipate and manage long-term problems (Taylor & Clark, 1986) and is associated with physiological

responses to the stressor, even when the individual is not subjectively experiencing stress (Nyklicek, Vingerhoets, Van Heck, & Van Limpt, 1998). Indeed, research has shown that emotion-focused, avoidance-oriented coping is associated with increased distress in cancer patients (Hack & Degner, 2004; Roth & Cohen, 1986; Stanton, Danoff-Burg, & Huggins, 2002). Emotion-focused, approach-oriented coping is associated with positive outcomes in the long-term with research indicating that it is associated with decreased distress in cancer patients (Roth & Cohen, 1986; Stanton et al., 2002). However, this approach-oriented coping is associated with poorer outcomes, depending on the stressor (e.g. acute stressors like trips to the dentist), as this strategy involves the individual engaging in emotional and cognitive efforts which may generate anxiety and physiological reactivity (Smith, Ruiz, & Uchino, 2000).

Most individuals use both styles of coping with stress, suggesting both are useful for most stressors. Flexibility in coping style to meet the demands of the situation is also important to effectively managing stress (Cheng, 2003; Folkman & Lazarus, 1980). For example, in individuals with chronic illness, the type of effective coping may be moderated by the type of chronic illness (i.e., terminal compared to non-terminal), the timeline of the illness (e.g., diagnosis, treatment, remission, time since symptom onset), the consequences of the illness (e.g., disability, role strain), and controllability of the illness (e.g., highly manageable compared to unmanageable; Weinman, Heijmans, & Figueiras, 2003).

In short, coping is defined in many different ways that depend on the type of stressor (i.e., health-related or not), the controllability of the stressor, and the duration of the stressor (i.e., acute vs. chronic). With this, comparison between the different

definitions can be difficult. However, most definitions acknowledge an adaptive strategy, or set of strategies, and a maladaptive strategy, or set of strategies, that are associated with respective outcomes. This distinction will be used in the current study.

Coping Similarity

An area of coping research that has been less frequently examined is the coping similarity – the extent to which spouses are similar in their use of a particular coping strategy. Conversely, coping dissimilarity indicates the extent to which spouses are divergent on a particular coping strategy.

Similarity in coping is a predictor of couple's adjustment to illness (Revenson, 1994, 2003). In particular, similarity in approach-oriented coping is predictive of better adjustment, likely due to the possibility that spouses who are similar in coping reinforce each other's approach strategies (Pakenham, 1998). Further, Badr (2004) postulated that it is the level of similarity that matters, not amount of the particular type of coping strategy. In a longitudinal study of couples coping with breast cancer, similarity in the type of coping predicted better patient adjustment, unless the patient was using a avoidance-oriented or emotion-focused coping strategy (Badr, Carmack, Kashy, Cristofanilli, & Revenson, 2010).

Drawing from personality and psychopathology research that has examined trait and behavioral similarity in couples, couples who are more similar, cross-sectionally, are more satisfied in their relationships and these relationships are more likely to endure. Similar couples also become more congruent in certain traits over the duration of their relationship (Anderson, Keltner, & John, 2003; Rammstedt & Schupp, 2008). Research on psychopathology has also demonstrated that within a relationship, related

individuals are more similar cross-sectionally (Townsend, Miller, & Guo, 2001) and become more congruent over time in regards to depression symptoms (Holahan et al., 2007; Katz, Beach, & Joiner Jr, 1999).

One possible mechanism for this congruence over time may be emotional contagion. Contagion effects occur in couples because of the interdependence of the marital relationship (Hatfield, Cacioppo, & Rapson, 1994; Katz et al., 1999). Within this relationship each spouse's reactions, responses, attitudes and emotions influence the other (Cutrona, 1996). Emotional contagion is postulated to be the reasons behind the significant correlations of distress within couples (Baider & Denour, 1993; Cutrona, 1996), providing support for the idea that couples form an interdependent emotional system. Emotional contagion theory suggests that distress in one partner is transmitted to the other, either by a form of neurobiological mimicry (Hatfield et al., 1994) or as a result of empathy for one's significant other (Hagedoorn, Sanderman, Bolks, Tuinstra, & Coyne, 2008). Based on this research, one might argue that couples in the current study, due to their longer relationship duration at baseline, are likely to report more similarity in coping strategies at baseline.

Though there is research supporting the benefits of couples similarity in coping, other research has found that dissimilarity in particular coping strategies correlate with better adjustment in some situations (Berg & Upchurch, 2007). Coping researchers have found that dissimilarity in maladaptive strategies (e.g., avoidance-oriented) is associated with better relationship adjustment. It is possible that the dissimilarity acts to minimize the psychological and emotional toll of the chronic illness on the relationship. For instance, if one spouse was disclosing their concerns while the other was holding

back their concerns, this turn taking in disclosing may enable the couple to better cope as a unit (Badr, 2004). It has been hypothesized by other researchers that dissimilarity in coping styles may buffer couples from the negative consequences of one spouse's maladaptive coping on the relationship (Coyne & Smith, 1991; Revenson & Majerovitz, 1990). Previous research has found that when patients used an avoidance-oriented coping strategy, dissimilarity in spouse's coping was predictive of better patient adjustment 12 months later (Kraemer, Stanton, Meyerowitz, Rowland, & Ganz, 2011). In research with couples coping with infertility, husbands' use of emotional-approach coping compensated for wives' low use of emotional-approach coping to predict lower depressive symptoms in the wives' (Berghuis & Stanton, 2002). In contrast, both husbands' and wives' using a non-emotional-approach coping strategy predicted higher depression scores in the wives'. In couples coping with Multiple Sclerosis, dissimilar levels of problem-focused coping predicted better adjustment 12 months later (Pakenham, 1998). Thus, from this literature, it is important to understand how similarity in coping not only predicts concurrent but also later functioning.

Couples Coping with Chronic Illness

Evidence from the coping literature points to a need to consider coping and adjustment in the patient in relation to the coping and adjustment of the spouse (Berg & Upchurch, 2007; Bodenmann, 2005). Further, evidence points towards the need for more research on within-couple similarity in coping and how this similarity relates to adjustment. The purpose of the current study was to investigate coping similarity within couples as well as the extent to which similarity in coping is associated with individual and relationship adjustment in both spouses. As style of coping and effectiveness of

coping varies greatly by individual and situational factors, I focused specifically on the stressor of chronic pain within a couple.

The current study focused on a sample of couples in which at least one partner has chronic pain. If coping is a consequence of an individual's appraisal of events as a threat and his or her perceived ability to cope, for most chronic pain would be appraised as a threat. Indeed, the two main sources of stress (i.e., major life events and chronic strain) would both be exemplified by chronic pain (Elliott, Trief, & Stein, 1986).

Coping and Chronic Pain. Chronic pain, defined as pain that has persisted for longer than 3 months, is a common problem that affects approximately 20% of the population (Miller & Cano, 2009), or 150 million Americans (Turk & Burwinkle, 2006), and is associated with costs of $215 billion annually (Surgeons, 1999). Chronic pain is associated with multiple negative outcomes including comorbid mood disorders (Miller & Cano, 2009), significant spouse distress (Revenson, 2003), marital distress (Ahern, Adams, & Follick, 1985; Cano, Gillis, Heinz, Geisser, & Foran, 2004), poor coping (Cano, Mayo, & Ventimiglia, 2006), and lack of effective social support (Cano, 2004).

Coping research in chronic pain samples has traditionally divided coping into being adaptive or maladaptive, which is similar to the emotion/problem-focused or approach/avoidance-oriented seen in the general coping literature. Adaptive coping strategies represent an attempt by the person to deal with their pain by using one's own resources (i.e., strategies directed at solving or relieving the stress, dealing with the pain by using their resources; Brown & Nicassio, 1987; DeLongis, Holtzman, Puterman, & Lam, 2010). Conversely, maladaptive coping strategies represent a reaction by the person to their pain that is characterized by helplessness or reliance on others to deal

with one's pain (i.e., relinquishing control of pain to others or relying heavily on others; Brown & Nicassio, 1987; DeLongis et al., 2010). Unlike the literature focused on coping and illness in general which use general coping measures (e.g., Ways of Coping, the COPE), the pain coping literature more frequently uses coping measures that specifically examine how one copes with their pain (e.g., Coping Strategies Questionnaire; Rosenstiel & Keefe, 1983, or the Vanderbilt Multidimensional Pain Coping Inventory; Brown & Nicassio, 1987).

Previous studies in pain clinic and community samples have found that the use of the particular coping strategies measured in the Coping Strategies Questionnaire are associated with pain adjustment (i.e., pain severity, interference, disability) and psychological adjustment (i.e., depression, psychological distress, psychosocial disability; Cano et al., 2006; DeLongis et al., 2010; Jensen, Nielson, Turner, Romano, & Hill, 2003; Jensen, Turner, Romano, & Karoly, 1991; Lyons, Jones, Bennett, Hiatt, & Sayer, 2013; Snow-Turek, Norris, & Tan, 1996; Tuttle, Shutty, & Degood, 1991). Based on this literature and for the purposes of this study, coping strategies that involve diverting one's attention away from the pain, ignoring or reinterpreting pain sensations, making self-statements regarding one's ability to cope, or increasing one's behavioral activity are considered adaptive because they represent an attempt by the person to deal with their pain by using one's own resources (Brown & Nicassio, 1987; DeLongis et al., 2010). Conversely, coping strategies that involve praying or hoping that the pain will go away or exaggerating/magnifying the threat of the pain (i.e., catastrophizing) are considered maladaptive because these represent a reaction by the individual to his or her pain that is characterized by helplessness or reliance on others to deal with one's

pain (Brown & Nicassio, 1987; DeLongis et al., 2010). This measure is used in the current study as it is a well-established and reliable coping measure in chronic pain populations.

Similar to the coping literature as a whole, many studies of chronic pain coping and adjustment have focused on patients' coping styles with minimal attention to the social context. However, just as no man is an island, the effect of pain is not isolated to the individual with chronic pain. Prior research on coping with illness in general indicates that the lack of spouse involvement in coping efforts is associated with poor psychosocial adjustment for the patient (Helgeson, 1991). Further, when the spouse actively engages with the patient to collaboratively cope or the spouse uses individual approach-oriented coping and minimal avoidance-oriented coping with the stressor being faced by the patient, the patient reports feeling reassured, less distressed, and less of a burden of illness (Manne & Badr, 2008; Manne, Ostroff, Winkel, Grana, & Fox, 2004). Spouses' reactions to patients can also affect coping. In chronic pain research, individuals with arthritis that reported critical or punishing spouses were found to have poorer psychological adjustment and a more maladaptive coping style, while those with supportive spouses were more likely to engage in adaptive coping strategies (Manne & Zautra, 1990).

For the spouse, the stressors of chronic illness include emotional reactions to how the illness affects the patient, the relationship and the spouse, feelings of helplessness, frustration with the patient's limitations and the impact of these limitations on daily life, reductions in shared pleasurable activities, worries about the patient's future health and how it will affect the marriage (Revenson & Majerovitz, 1990), all of

which may influence the spouse's adjustment (i.e., depression, relationship satisfaction), in addition to their ability to provide support to the patient. Indeed, previous research has found that spouses of patients with chronic pain report lower relationship satisfaction (Flor, Turk, & Scholz, 1987; Maruta, Osborne, Swanson, & Halling, 1981) and greater depressed mood (Ahern et al., 1985; Flor et al., 1987). While the spouse's coping with the patient's pain is important, I focused on how the spouse coped with their own pain for two main reasons. First, pain is a part of the normal human experience. Second, research has shown that those who witness pain in their partner demonstrate brain activity that appears as if the witness is actually experiencing the pain themselves (Fecteau, Pascual-Leone, & Théoret, 2008). Hence, one's own pain coping styles may be associated with his or her expectations about how the spouse should cope with pain. Likewise, seeing similar styles of coping in one's spouse might reassure the other that they are appraising and coping "normally", which may reinforce the use of that strategy in both partners. Similarity in adaptive coping may also allow the spouse to help the other cope more effectively, as they rely on similar pain coping methods. Additionally, it is possible that spouses who use the same coping strategy to a similar extent will experience this similarity as collaboration, which in turn, could result in each feeling empowered and understood in their relationship, thus leading to better individual and relationship adjustment in the partners, as well as pain adjustment in the patient.

The Current Study

The current study examined how pain coping similarity within the couple predicted not only patient adjustment, but also spouse adjustment in a longitudinal study. Extending previous research on individual coping, it was expected that a couple's

coping similarity in adaptive coping strategies would predict not only healthy patient pain and individual adjustment, but also healthy spouse adjustment. This couples coping similarity in adaptive coping strategies was also expected to predict how spouses support their partners. Further, the similarity in coping in couples with chronic pain had not been examined. Thus, this sample was an ideal for the study of couples' coping with the patients' pain and adjustment over time as coping, support and adjustment are measured.

In the current study, each partner reported on their own coping strategies to cope with their own pain at baseline, as well as reporting on their own individual adjustment (e.g., depressive symptoms) and relationship adjustment (e.g., relationship satisfaction and patient perception of spouse support behaviors: instrumental, punishing, and distraction spouse responses to patient's pain). Patients also reported on their pain adjustment (e.g., pain severity and interference). These couples also reported on their individual and relationship adjustment an average of 26 weeks and 52 weeks after baseline assessment. The patients further reported on their pain adjustment at these time points.

Hypotheses:

1) *Coping similarity and adjustment at Baseline*: The first hypothesis concerns cross-sectional, concurrent relationships between coping similarity and adjustment. This hypothesis served as a replication and extension of the coping similarity research to a chronic pain sample.
    a. It was predicted that couples' coping similarity in adaptive coping strategies would be associated with better adjustment (i.e., lower patient

pain severity and interference, patient and spouse depression symptoms, and greater relationship satisfaction) at baseline.

b. Further, it was predicted that couples' coping similarity in maladaptive coping strategies would be associated with poorer adjustment (i.e., greater patient pain severity and interference, patient and spouse depression symptoms, and lower relationship satisfaction).

2) *Baseline coping similarity, and longitudinal support and adjustment*: The second hypothesis examines the extent to which coping similarity at baseline relates to changes in individual and relationship adjustment over time.

a. Greater baseline similarity in adaptive coping strategies (i.e., coping self-statements, diverting attention, increasing behavioral activity, ignoring pain sensations, and reinterpreting pain sensations) would predict better pain adjustment (i.e. decreased pain severity, interference), individual adjustment (i.e., decreased depressive symptoms) and relationship adjustment (i.e., increased relationship satisfaction, increased perceived instrumental/solicitous, decreased negative/punishing and distracting spouse responses to pain) over time.

b. However, greater baseline similarity in maladaptive coping strategies (i.e., catastrophizing and praying-hoping) would predict poorer pain adjustment (i.e. increased pain severity, interference), individual adjustment (i.e., increased depressive symptoms) and relationship adjustment (i.e., decreased relationship satisfaction, decreased perceived

instrumental/solicitous, increased negative/punishing and distracting spouse responses to pain) over time.

CHAPTER 2

METHOD

Participants

One hundred and eight heterosexual couples in which one partner had chronic pain (*N* = 216 individuals) participated in a longitudinal study of chronic pain in couples conducted in the Relationships and Health Lab at Wayne State University. At Time 0 (baseline), the racial group distribution of the sample was similar for both patients (*n* = 52, 41.7% Caucasian, *n* = 51, 47.2% African-American, *n* = 9, 8.3% Hispanic), and spouses (*n* = 55, 41.7% Caucasian, *n* = 50, 46.3% African-American, *n* = 10, 9.3% Hispanic). The gender of the patients was balanced with 45.4% male (*n* = 49). The average ages of the patients and spouses were 52.29 years (*SD* = 13.17) and 52.00 years (*SD* = 13.44), respectively. Patients reported an average pain duration of 11.72 years (*SD* = 10.49) at baseline. There were no significant differences on age or pain duration between male and female patients at baseline. On average, couples were married for 21.26 years (*SD* = 15.07) and had some college education (patients *M* = 14.31 years, *SD* = 3.03, spouses *M* = 13.95 years, *SD* = 2.88). Approximately 41 percent (*n* = 44) of patients were employed at least part-time, 34.3% (*n* = 37) were unemployed or not working due to disability, and 25% (*n* = 27) were retired. The most common pain locations in patients included the lower back (*n* = 53, 50%), knees (*n* = 11, 10.3%), and neck (*n* = 10, 9.4%).

Unlike many studies of couples in which one partner has chronic pain, the current study assessed whether the spouse also experienced chronic pain. Chronic pain was present in both partners in 53.7% of couples (*n* = 58) at baseline. Though pain may

have been present in both partners, those designated as patients had more severe pain by self-report of both partners (M = 4.71, SD = 2.34; M = 3.33, SD = 2.29 for patient and spouse, respectively; t (65) = 3.91, $p < .01$). For the purposes of this study, in each couple, one member was identified as the patient if his or her pain was reported as the most severe by both partners. The spouse, even if they also reported chronic pain, was referred to as the spouse.

Measures

The following variables were assessed in both partners: coping strategies, depressive symptoms, and marital satisfaction. For each of these variables, respondents self-reported on their own coping or adjustment. The following variables were assessed in patients only: self-reported pain severity and pain interference, and perceived spousal support.

Coping strategies. The Coping Strategies Questionnaire (CSQ; Rosenstiel & Keefe, 1983) and Coping Strategies Questionnaire-Spouse (Cano, Johansen, & Geisser, 2004) are 42-item questionnaires that were used to assess both partners' self-reports of different techniques to cope with pain. The CSQ is a rationally constructed measure based on the coping strategies often reported as being used by pain patients selected from a review of the pain literature. The CSQ assesses 7 coping strategies: *catastrophizing, coping self-statements, diverting attention, increasing behavioral activities, ignoring pain sensations, praying-hoping, and reinterpreting pain sensations*. Each strategy is assessed by 6 statements rated on a 7-point Likert Scale (0 "*Never do that*" to 6 "*Always do that*"). The score on any scale is determined by summing the

items, and can produce a range of scores from 0-36, with higher scores indicating increased use of that strategy. There is no total scale score.

The patients' mean subscale scores were similar to those reported in other studies using the CSQ (Cano, Leong, Williams, May, & Lutz, 2012; Haythornthwaite, Menefee, Heinberg, & Clark, 1998). The reliability and validity of the CSQ-patient has been determined in multiple populations with different types of chronic pain (Hastie, Riley, & Fillingim, 2004; Jensen, Keefe, Lefebvre, Romano, & Turner, 2003; Martin, Bradley, Alexander, & Alarcón, 1996; Rosenstiel & Keefe, 1983). A spousal version of the CSQ was also adapted for this study assessing the coping strategies of the spouse in response to their own pain. Both the patient and spousal versions of the CSQ were used in this study (Appendix A and B). In this study, the reliability ranged from acceptable to good for both the patient and spouse versions of the CSQ (see Table 1). Further, the average patient and spouse use of different coping strategies did not significantly differ (see Table 2).

Pain adjustment. The Brief Pain Inventory (BPI; Cleeland, 1989) was used to assess the patient's *pain severity*. The BPI included 4 items that assessed pain severity as the worst and least in the last 2 weeks, the average and current pain severity on an 11-point Likert Scale item. For the purposes of this study, we used an average of the patient's average, current, and least pain severity ratings to indicate pain severity as it proved to be the most reliable composite in this sample across the time points (see Table 3). The range for each of these scales is 0-10, with 0 indicating "*No pain*" and 10 indicating "*Pain as bad as you can imagine*" (Appendix E). On this scale higher scores indicate greater pain severity with a range of average scores from 0 to 10. The BPI has

been used widely with a variety of clinical pain samples, including chronic, surgical and acute pain, and has good reliability and validity (Cleeland, 1989). Again, though both patient and spouse completed these scales, only the patient's scales were considered for this study because not all spouses reported chronic pain and the focus of this study was on coping with chronic pain. Patients reported a moderate level of pain severity across time points (see Table 3).

The Multidimensional Pain Inventory (MPI; Kerns, Turk, & Rudy, 1985) is a 52-item self-report questionnaire that assessed clinical pain using a 7-point Likert Scale. In this study the MPI was used to assess the impact of pain on the individual with chronic pain's life, or *pain interference* (9 items; Appendix D). The range for the interference scale is 0-54, with higher scores indicating greater pain interference. This scale has been used with a variety of clinical pain samples, including individuals with chronic pain, and has good reliability and validity (Junghaenel, Keefe, & Broderick, 2010). Though there is a spouse version of the MPI, in which the spouse rates the patient's pain interference, only the patient's ratings were considered for this study. Only the patient's ratings were considered in this study because pain is an internal, subjective experience and spousal ratings of the patient's pain have been found to be incongruent (Cano, Johansen, et al., 2004).

In the current study, patients reported moderate pain interference (see Table 3). This scale had excellent reliability across time points (see Table 3).

Individual adjustment. The Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991, unpublished) assessed *depressive symptoms*. The MASQ is a 90-item self-report measure based on the tripartite theory of anxiety and depression that

assesses and discriminates between depression and anxiety. Both patients and spouses self-reported on the extent to which they experienced different sensations, problems and feelings in the past week on a 1 to 5 scale, with 1 being "*Not at all*" and 5 being "*Extremely*". For the purposes of this study, a composite sum of the non-specific depression subscale (12 diffuse depressive symptoms) and anhedonic depression subscale (22 symptoms of loss of interest and low positive affect) were used to measure the depressive symptoms of the patient and spouse (Appendix G). The range of this scale is 34-170 and higher scores indicated greater depressive symptoms. The MASQ has shown good reliability and validity in chronic pain samples (Geisser, Cano, & Foran, 2006). The reliability of this composite across time points was excellent (see Table 3). The average patient and spouse scores across the time points (see Table 3) indicate that both patients and spouses in this sample were, on average, experiencing moderate depressive symptoms as compared to other chronic pain samples.

Relationship adjustment. The Dyadic Adjustment Scale (DAS; Spanier, 1976) was used to assess self-reported *relationship satisfaction* in each spouse. The DAS consisted of 32-items that measure spousal agreement on a variety of topics (e.g., finances, world views, and recreation), degree of affection, and general marital happiness. The range of the scale was from 0-151 with higher scores indicating greater relationship satisfaction, with a score less than 100 indicating significant distress in the couple (Appendix F). This scale has been used with pain samples in the current literature and has excellent reliability and validity with this group (Romano, Turner, & Jensen, 1997). The average patient DAS score indicate that both patients and spouses

are, on average, satisfied with their relationships (see Table 3). The reliability in this sample was excellent for both patients and spouses across time points (see Table 3).

The Multidimensional Pain Inventory (MPI; Kerns et al., 1985) was also used to assess the *perception of spousal support behaviors* in response to the patient's pain (i.e., punishing/negative; my spouse "ignores me", "expresses irritation/anger/frustration with me", instrumental/solicitous spouse support; my spouse "asks what they can do to help", "takes over jobs or duties", or distracting spouse support: my spouse "does things to take my mind off the pain", 4-, 6-, and 4-items, respectively; Appendix C). The participant answered questions regarding their perceptions of their spouse's support from 0 (*"Never occurring"*) to 6 (*"Frequently occurring"*). These scales have been used with a variety of clinical pain samples, including individuals with chronic pain, and have good reliability and validity (Junghaenel et al., 2010; Kerns et al., 1985). In the current study the inter-item reliability was acceptable to good (see Table 3). Though there is a spouse version of the MPI, in which the spouse rates their own support behaviors, only the patient's ratings were considered for this study. Only the patient's ratings were considered in this study because previous social support literature has found that the one's perception of support, not the received support as reported by the provider, best predicts the perceiver's psychological adjustment (Cohen & Wills, 1985; Wethington & Kessler, 1986).

Patients reported minimal punishing spouse support and the reliability of this scale was good across the time points (see Table 3). Moderate levels of instrumental spouse support were reported by patients and the reliability of this scale was also good across the time points (see Table 3). Minimal distracting spouse support were reported

by patients, though the reliability of this scale across the time points was acceptable (see Table 3).

Procedure

All methods were approved by the university's IRB and written informed consent was obtained prior to participation at each time point in this study. The couples were recruited through newspaper advertisements in local papers, announcements made on the university's electronic bulletin board and other traditional bulletin boards in the community. These advertisements explained that the study was examining how couples coped with pain over time. The data for this study were collected over 3 time points, approximately 6 months apart. Upon initial contact with the lab, the each partner in the couple was screened over the phone to determine which partner had chronic pain, defined as pain that had been present almost daily for a minimum of 6 months and was not a result of cancer or rheumatoid arthritis. In each couple, one partner was identified as the patient if both spouses reported that this partner's pain was the most severe. The spouse, even if they also reported chronic pain, was referred to as the healthy spouse. Both partners were also screened for the exclusionary criteria of a current or past psychotic episode, and an inability to read or understand English. Couples were required to have lived together for over 2 years or be legally married. The couples who participated attended the Relationships and Health Lab at Wayne State University at Time 0 (baseline) and Time 2 where written consent was obtained from both partners, and they completed questionnaires, an in person interview, and an interaction task. At Time 1 participants completed written consent and questionnaires and returned them by mail. The mailed survey packets contained consent forms and questionnaires labeled

for the pain-patient and the healthy spouse. The instructions at Time 1 included instructions to complete these surveys individually and seal the surveys in individual envelopes when complete. Postage-paid return envelopes were provided.

Couples were compensated $100 for their participation at Time 0 (baseline) and Time 2 and $50 for their participation in Time 1 of the longitudinal study. Following completion of each time point they were debriefed about the purpose of the study.

Data Analysis Plan

Preliminary analyses were first conducted to estimate a sufficient sample size, check for univariate and multivariate outliers, and determine if the multivariate assumptions of normality were met. Missing item analyses were conducted on each scale in order to determine if the missing items were missing completely at random. Analyses were done to identify any differences on demographic and dependent variables between participants who completed and did not complete the three phases of this study to estimate generalizability of the results. Next, descriptive analyses were conducted. Bivariate correlations were also conducted to describe the associations between individual Time 0 (baseline) coping strategies and the dependent variables across the study time points.

Computing an estimate of couples coping similarity. Before testing the hypotheses, an absolute difference score was calculated to indicate the extent to which partners within the same couple similarly relied on each coping strategy to cope with their own pain. In order to calculate this couples coping similarity, the spouse's score on a subscale of the Coping Strategies Questionnaire was subtracted from the patient's score on the same subscale, yielding a positive, negative or zero value. The absolute

value of this score was then derived, yielding a positive value. With this method, the similarity values closer to zero indicated more similarity within the couple on that strategy while larger values indicated more dissimilarity within the couple on that particular coping strategy. The absolute value score was chosen over a straight difference score because it enabled easier interpretation of later analyses. This approach is consistent with much of the dyadic similarity and congruence literature (Edwards, 1994; Phillips & Bedeian, 1994).

Multilevel Analyses: Hypothesis 1 (baseline coping similarity will correlate with concurrent adjustment) and Hypothesis 2 (baseline coping similarity will predict changes in adjustment over time).

A single multilevel analysis using HLM-6 (Raudenbush, Bryk, & Congdon, 2004) was performed for each coping strategy-dependent variable combination to test the fixed effects of the intercept (Hypothesis 1) and slope (Hypothesis 2). The fixed effect for the intercept was examined to test the associations between the couples coping similarity and patient and spouse baseline adjustment. Time was coded in weeks where Time 0 equals baseline. On average, Time 1 occurred at 26 weeks and Time 2 occurred at 52 weeks. This time coding allowed the intercept to be interpreted as average baseline coping similarity score across couples. The intercept model included at least three variables: 1) the patient and 2) spouse coping strategy score, as well as the 3) couples coping similarity and any appropriate covariates (covariates differed depending on dependent variable examined, see below). Thus, these intercept models explained whether the association between the couples coping similarity and the dependent variable is significant even when accounting for the patient and spouse coping

strategies, as well as relevant covariates. These analyses were conducted for each coping strategy separately.

The fixed effect for slope (time) was used to test Hypothesis 2: whether baseline (Time 0) similarity in coping strategies would predict pain adjustment (i.e., patient pain severity and interference), individual adjustment (i.e., patient and spouse depressive symptoms), and relationship adjustment (i.e., patient and spouse relationship satisfaction, and the patient's report of spousal support) over time. The fixed effect for slope indicated the average change over time for the sample. As with the intercept model, each partner's coping strategy score, the couple's similarity in that coping strategy, and any covariates were included.

Seven coping strategies were analyzed in the current study. For each of the analyses, each partner's coping score was also included in the equation to ensure that any significant effects of the similarity score were not due to one or both partner's individual score. These analyses were conducted independently for each coping strategy measured by the Coping Strategies Questionnaire. Recall that adaptive coping strategies were coping self-statements, diverting attention, increasing behavioral activity, ignoring pain sensations, and reinterpreting pain sensations, while maladaptive strategies were catastrophizing and praying-hoping. Models for each coping strategy's baseline associations with patient outcomes (i.e., pain severity, perceived spouse solicitous and distracting support) and patient and spouse adjustment (i.e., relationship satisfaction and depression symptoms) were conducted for a total of 49 baseline models. Models for each coping strategy predicting longitudinal patient outcomes (i.e., pain severity, perceived spouse solicitous and distracting support) and patient and

spouse adjustment (i.e., relationship satisfaction and depression symptoms) were conducted for a total of 35 longitudinal models. The longitudinal models predicting patient outcomes were not conducted for pain interference or perceived punishing spouse support because the variance did not support running these longitudinal models.

Prior to examining predictors of intercept (Hypothesis 1) and slope variation (Hypothesis 2), time-only models were run for each dependent variable to determine if there was significant variation in the fixed effects for the intercept and slope (i.e., if the variance component for each of the fixed effects were significant). A significant variance component for intercept or slope would indicate that there is significant variability among participants' intercepts and/or trajectories over time and that it would be suitable to investigate predictors that might account for that variance across people. If intercepts or slopes across people do not vary, then examining covariates and coping predictors of variation is largely moot. In cases where there was no significant variance component for intercept or slope, predictors were not examined for that particular fixed effect.

Next, in each model with a significant variance component for intercept (Hypothesis 1) or slope (Hypothesis 2), possible covariates (i.e., patient or spouse age, education, race, or gender, and length of marriage) were identified by including them in the time-only models. The covariate was included if it was significantly correlated with the dependent variables in order to determine which covariates should be included in each multilevel model. Each possible covariate (i.e., patient age, gender, race, education, and pain duration, spouse age, gender, race, and education, and length of marriage) was individually included in a two-level "time-only" model predicting baseline dependent variable (intercept) and change over time (slope). The covariate was

included in later analyses if the covariate and one of the patient, spouse, or couples coping similarity were significantly associated with the dependent variable in these models and the covariate was included only in the level with which it was significantly associated (e.g., patient gender was significantly associated with pain severity at baseline, but not with change over time, and would then be included in later analyses as a covariate in the baseline model where patient, spouse, or couples coping similarity were significantly associated with the dependent variable).

For analyses examining patient pain adjustment and perceived spousal support, patient age, gender, race, education, pain duration, and years of marriage were examined as possible covariates. For analyses examining patient and spouse depressive symptoms and relationship satisfaction, patient and spouse age, gender, race, education, patient pain duration, and years of marriage were examined as possible covariates.

When the dependent variable was assessed only in the patient (i.e., pain severity, pain interference, punishing, instrumental, and distracting spouse support), the data were analyzed using a two-level model in which time points (Level 1) were nested within individual patients (Level 2). Using similarity in catastrophizing predicting changes in pain severity over time as an example, couple similarity in catastrophizing is a Level 2 variable because each participant has only one couple similarity score. Thus, this analysis determined how Time 0 couples coping similarity related to changes in pain severity over and above each partner's catastrophizing score. The unstandardized regression coefficient for the intercept in this example is the catastrophizing score when

time equals zero (i.e., baseline), and the unstandardized regression coefficient for the slope indicates change in the dependent variable over time.

When the dependent variable was assessed in both partners (e.g. relationship satisfaction or depressive symptoms), a two-level dyadic model was employed as described by Atkins (2005) and Raudenbush, Brennan, and Barnett (1995). An advantage of this model over a three-level model is that it simultaneously estimated patient and spouse intercepts and slopes, and allowed for within-couple changes to occur in different directions (i.e., slopes for patient and spouse within a couple could be in opposite directions; Atkins, 2005). This analysis determined how baseline couples coping similarity was related to changes in patients' and spouses' relationship satisfaction and depressive symptoms after controlling for each partner's coping score.

For consistency throughout, the results will be presented by outcomes (i.e., pain adjustment, individual adjustment, and relationship adjustment).

CHAPTER 3

RESULTS

Preliminary Analyses

The G*Power3.1 program was used to estimate power and necessary number of participants. Power was calculated based on a medium effect size f^2 of .15 for the analyses described below. Based on this, a sample size of 64 was deemed necessary to reach power of .80. Thus the sample size of 108 couples appears to be sufficient. Note that this power analysis is for multiple regressions; the manner in which to conduct power analyses for multilevel modeling is under debate (Kreft & De Leeuw, 1998; Scherbaum & Ferreter, 2009).

Data were checked for univariate and multivariate outliers and violations to the multivariate assumptions of normality. There were no univariate or multivariate outliers. Several variables were positively skewed; Time 0 (baseline) patient increasing behavioral activity, reinterpreting pain sensations, and depression symptoms, and spouse coping self-statements; Time 1 (26 weeks) punishing spouse support to patient pain, spouse and patient depression symptoms; and Time 2 (52 weeks) punishing spouse support. These variables were transformed using a square root transformation and the positive skew was corrected in all. Analyses were run with the transformed and non-transformed variables without notable differences in outcome, therefore all future analyses were performed using the non-transformed variables to maintain scale interpretability and for ease of interpretation.

Little's Missing Completely at Random (MCAR) test was conducted in SPSS 21 (IBM, 2012) on each scale to determine if missing data was missing at random. MCAR analyses determined the data to be missing at random in each of the scales ($p < .05$).

The missing data was replaced with the item mean and did not constitute more than 10% of any calculated scale.

Completer analyses. The baseline measures of couples who completed the 3 phases of the longitudinal study (i.e., completers) were compared to those who only completed the baseline phase (i.e., non-completers). There were no significant differences between completers and non-completers in patients' or spouses' age, gender, race, education (in years), relationship satisfaction, or depressive symptoms. There were also no significant differences between completers and non-completers baseline length of marriage or couples coping similarity. Further, there were no significant group differences in patient's reports of pain severity, pain interference, or perceived spouse responses to patient's pain.

Descriptive correlations. Bivariate correlations were conducted to determine the associations between individual baseline patient and spouse coping strategies and the dependent variables across the length of the study. Since these correlations were not the focus of the current investigation, they are presented in Appendix 2 (Tables 4 and 5) for descriptive purposes.

Hypothesis 1: Baseline coping similarity and concurrent adjustment

It was predicted that couples coping similarity in adaptive coping strategies (i.e., ignoring pain sensations, coping self-statements, diverting attention, reinterpreting pain sensations, and increasing behavioral activities) would be associated with better pain adjustment (i.e., patient pain severity and interference), individual adjustment (i.e., patient and spouse depression symptoms), and relationship adjustment (i.e., perceived spouse support and marital satisfaction) at baseline (Time 0). Conversely, it was

predicted that couples coping similarity at baseline on maladaptive coping strategies (i.e., praying-hoping and catastrophizing) would be associated with poorer adjustment.

Pain adjustment. For both pain severity and pain interference there was significant variation in the intercepts of baseline severity and interference in the time-only models (see variance component estimates in Tables 6 & 14). Thus, it made sense to investigate predictors of baseline pain severity and interference.

Patient catastrophizing, diverting attention, increasing behavioral activity, and praying-hoping at baseline was associated with greater concurrent pain severity (see Tables 7, 9, 10, and 12). Similarly, greater reliance on patient catastrophizing, diverting attention, increasing behavioral activity, and praying-hoping at baseline was associated with more concurrent pain interference (see Tables 15, 17, 18, and 20). Conversely, patient coping self-statements and ignoring pain sensations at baseline was associated with less pain interference (see Tables 16 and 19).

Individual adjustment. There was significant variation in the intercept or baseline depressive symptoms in the time-only models (see variance component estimates for patient and spouse in Table 46). Thus, it made sense to investigate predictors of baseline patient and spouse depressive symptoms.

Baseline patient catastrophizing was associated with greater concurrent patient depressive symptoms, while more spouse catastrophizing was associated with greater concurrent spouse depressive symptoms (see Table 47). Conversely, patient coping self-statements and ignoring pain sensations were associated with fewer concurrent patient depressive symptoms (see Tables 48 and 51).

Relationship adjustment. There was significant variations in baseline relationship satisfaction for both partners in the time-only models (see variance component estimates for patient and spouse in Table 54). For all perceived spouse support variables there was significant variation in the intercept or baseline punishing, instrumental, or distracting spouse support in the time-only models (see variance component estimates in Tables 22, 30, & 38). Thus, it made sense to investigate predictors of baseline relationship satisfaction and perceived spouse support.

Spouse catastrophizing was associated with lower concurrent relationship satisfaction for both patient and spouse (see Table 55). Patient use of increasing behavioral activity was associated with more concurrent patient relationship satisfaction (see Table 58). Finally, more couples coping similarity in ignoring pain sensations was associated with less concurrent spouse relationship satisfaction (see Table 59).

Greater baseline similarity on reinterpreting pain sensations was associated with patient perceptions of less concurrent punishing spouse responses (see Table 29). Spouse catastrophizing and ignoring pain sensations at baseline was associated with patient perception of more concurrent punishing spouse responses (see Tables 23 and 27). In contrast, patient diverting attention, praying-hoping and reinterpreting pain sensations at baseline were associated with greater concurrent patient perception of instrumental spouse responses (see Tables 33, 36, and 37). Similarly, patient diverting attention, increasing behavioral activity, praying-hoping, and reinterpreting pain sensations at baseline were associated with greater concurrent patient perception of distracting spouse responses (see Tables 41, 42, 44, and 45). Spouse reinterpreting

pain sensations was also associated with more concurrent patient perception of distracting spouse responses at baseline (see Table 45).

Hypothesis 2: Baseline coping similarity and adjustment over time

It was hypothesized that greater baseline similarity in adaptive coping strategies (i.e., coping self-statements, diverting attention, increasing behavioral activity, ignoring pain sensations, and reinterpreting pain sensations) would predict better pain adjustment (i.e. decreased pain severity, interference), individual adjustment (i.e., decreased depressive symptoms) and relationship adjustment (i.e., increased relationship satisfaction, increased perceived instrumental/solicitous, decreased negative/punishing and distracting spouse support to pain) over time.

Greater baseline similarity in maladaptive coping strategies (i.e., catastrophizing and praying-hoping) would predict poorer pain adjustment (i.e. increased pain severity, interference), individual adjustment (i.e., increased depressive symptoms) and relationship adjustment (i.e., decreased relationship satisfaction, decreased perceived instrumental/solicitous, increased negative/punishing and distracting spouse support to pain) over time.

For consistency throughout, the results will be presented by outcomes (i.e., pain adjustment, individual adjustment, and relationship adjustment).

Pain adjustment.

Pain severity. The average baseline pain severity in the sample was 4.76 (*SE* = .21, *t* = 22.13; see Table 6), indicating moderate levels of pain. On average for the sample, there was no significant change over time (unstandardized regression coefficient = .00, *SE* = .00, *t* = .55); however there was significant variation across

participants in how their pain changed over time (slope variance component = .00, *SD* = .02, X^2 (99) = 129.06; see Table 6). This pattern of findings suggested that it was appropriate to examine predictors of change over time.

The analysis indicated that greater baseline similarity between the partners on diverting attention predicted decreases in pain severity over time. However, neither the patient or spouse use of diverting attention predicted changes in pain severity over time (see Table 9). Conversely, greater baseline similarity between partners on praying-hoping was predictive of increases in pain severity over time (see Table 12). None of the other coping similarity scores predicted change in pain severity over time. Similarly, none of the other patient or spouse coping scores predicting changes in pain severity.

Pain interference. The average pain interference at baseline in this sample was 30.41 (*SE* = 1.23, *t* = 24.77), indicating mild impairment. Similar to pain severity, there was no significant change over time (unstandardized regression coefficient = -.01, *SE* = .02, *t* = -.68); however, unlike pain severity there was no significant variation in slope (variance component = .00, *SD* = .05, X^2 (99) = 111.35; see Table 14). As noted above, this pattern of findings indicated that it was not appropriate to examine predictors of change over time.

Individual adjustment.

Depressive symptoms. The average baseline patient score on depressive symptoms was 80.31 (*SE* = 1.92, *t* = 41.81) and, on average, there was significant change over time (unstandardized regression coefficient = .10, *SE* = .03, *t* = 2.94) and significant variation in slope (variance component = .03, *SD* = .17, X^2 (99) = 134.14; see Table 46). The average spouse score on depressive symptoms was 77.05 (*SE* = 1.90, *t*

= 39.84) and, on average, there was no significant change over time (unstandardized regression coefficient = .06, *SE* = .03, *t* = 1.71); however there was significant variation in slope (variance component = .03, *SD* = .17, X^2 (99) = 133.37; see Table 46). Therefore, it was appropriate to examine predictors of change over time for patient and spouse depressive symptoms.

The analysis indicated that more baseline similarity between partners on coping self-statements at baseline was predictive of increases in spouse depressive symptoms over time (see Table 48). However, neither patient nor spouse coping self-statements predicted change over time in patient depressive symptoms (see Table 48). Additionally, more baseline patient diverting attention predicted increases in depressive symptoms over time for both patient and spouse (see Table 49). Greater patient increasing behavioral activity at baseline was predictive of increases in spouse depressive symptoms over time (see Table 50). None of the other coping similarity scores predicted change in patient or spouse depressive symptoms over time. Similarly, none of the other patient or spouse coping scores predicted changes in patient or spouse depressive symptoms.

Relationship adjustment.

Relationship satisfaction. The average baseline patient score on relationship satisfaction was 106.06 (*SE* = 1.79, *t* = 59.20) and, on average, there was no significant change over time (unstandardized regression coefficient = -.04, *SE* = .04, *t* = -1.04), though there was significant variation in how participants' satisfaction changed over time (slope variance component = .08, *SD* = .29, X^2 (99) = 248.20; see Table 54). The average baseline spouse score on relationship satisfaction was 106.75 (*SE* = 1.69, *t* =

63.25). On average there was no significant change over time (unstandardized regression coefficient = -.02, *SE* = .03, *t* = -.66), however there was significant variation in slope (variance component = .03, *SD* = .17, X^2 (99) = 140.26; see Table 54). Therefore, it was appropriate to examine predictors of change over time for both patient and spouse relationship satisfaction.

The analysis indicated that greater patient catastrophizing at baseline was predictive of decreased patient relationship satisfaction over time, however, neither spouse catastrophizing nor couples similarity in catastrophizing predicted change over time in patient or spouse relationship satisfaction (see Table 55). Additionally, baseline spouse coping self-statements was predictive of declines in patient relationship satisfaction (see Table 56). Greater baseline patient diverting attention also predicted decreases in relationship satisfaction over time for patients (see Table 57). Similarly, more patient increasing behavioral activity at baseline predicted decreases in patient relationship satisfaction over time (see Table 58). Further, more baseline patient praying-hoping was predictive of decreases in patient relationship satisfaction over time. Finally, more baseline similarity between partners on praying-hoping at baseline predicted decreases in relationship satisfaction for patients over time (see Table 60).

Punishing spouse support. The average baseline score on punishing spouse support was 7.00 in this sample (*SE* = .53, *t* = 13.12) and there was no significant change over time (unstandardized regression coefficient = -.00, *SE* = .01, *t* = -.14) nor significant variation in slope (variance component = .00, *SD* = .02, X^2 (99) = 103.06; see Table 22). Therefore, coping variables were not examined as predictors of change given that there was no variation in slope over time.

Instrumental spouse support. The average baseline score on instrumental spouse support was 21.58 (*SE* = .86, *t* = 25.22) and there was no significant change over time (unstandardized regression coefficient = -.00, *SE* = .01, *t* = -.54); however, there was significant variation in slope (variance component = .01, *SD* = .10, X^2 (99) = 199.79; see Table 30). This pattern of findings suggested that it was appropriate to examine predictors of change over time.

The analysis indicated that greater spouse diverting attention at baseline predicted increases in patient perceptions of spouse instrumental support over time (see Table 33). The covariate of patient gender was also associated with less patient perception of instrumental spouse support at baseline (unstandardized regression coefficient = -.06, *SE* = .03, *t* = -2.17). However, neither the patient's diverting attention nor the couple's similarity in diverting attention predicted change over time in the patient reports of spousal instrumental support. None of the other coping similarity scores predicted change in patient perceptions of instrumental spouse support over time. Similarly, none of the other patient or spouse coping scores predicted changes in patient perceptions of instrumental spouse support.

Distracting spouse support. The average baseline score on distracting spouse support was 9.52 (*SE* = .54, *t* = 17.58) and, on average, there was no significant change over time (unstandardized regression coefficient = .01, *SE* = .01, *t* = .88), however there was significant variation in slope (variance component = .00, *SD* = .07, X^2 (99) = 177.03; see Table 38). Therefore, it was appropriate to examine predictors of change over time.

The analysis indicated that none of the coping similarity scores predicted change in patient's reports of distracting spouse support over time. Likewise, none of the patient or spouse coping scores predicted changes in patient reports of distracting spouse support.

CHAPTER 4

DISCUSSION

The current study examined how coping similarity within the couple predicted not only patient adjustment, but also spouse adjustment, both concurrently and over time. The majority of the existing pain research on pain coping strategies has focused on associations between patients' coping and individual adjustment (i.e., pain and depressive symptoms). This study extended previous research on coping by investigating both partners' coping with a common human experience – pain – in a sample in which one partner is experiencing chronic pain. Others have postulated that the use of adaptive coping strategies by both spouses should help reinforce the use of these strategies, or lead to greater satisfaction in the relationship because the couple shares something in common (Pakenham, 1998). This similarity in adaptive coping strategies within the couple may also be related to each partner's individual well-being and adjustment. However, these hypotheses had not been tested in a chronically ill sample of couples.

In this study, it was expected that a couple's coping similarity in adaptive pain coping strategies (i.e., coping self-statements, diverting attention, increasing behavioral activity, ignoring pain sensations, and reinterpreting pain sensations) would predict not only healthy pain and individual adjustment in patients, but also healthy adjustment in their spouses. Coping similarity in adaptive coping strategies was also expected to be related to greater spousal support. Overall, 49 tests of baseline associations between coping and adjustment were run and 26 of these tests were significant, only one of which was related to baseline couples coping similarity. Additionally, 35 tests of

baseline coping predicting adjustment over time were run and 13 of these tests were significant, 4 of which were related to baseline couples coping similarity. The pattern of findings from this study indicated that coping similarity was more consistently predictive of changes in adjustment over time than correlated with concurrent adjustment, as will be described below. In addition, there was no consistent pattern in findings when examining adaptive versus maladaptive coping strategies. As such, I will discuss the findings in terms of each coping strategy, rather than classifying strategies into adaptive or maladaptive strategies. Overall, there were particular coping strategies that were more consistently associated with and predictive of adjustment than others (i.e., catastrophizing, diverting attention, coping self-statements, increasing behavioral activity, and praying-hoping).

Coping similarity

In regards to baseline coping similarity and concurrent adjustment, there were few significant associations between coping similarity and concurrent adjustment. The only significant finding was that similarity in ignoring pain sensations was significantly correlated with lower spouse relationship satisfaction. No other coping similarity score was correlated concurrently with either patient or spouse adjustment, perhaps because each partner's coping was more strongly correlated with individual adjustment, as will be described below. Given the large number of associations that were tested, the single association of baseline coping similarity with concurrent adjustment should be interpreted with caution.

There were more findings regarding couples coping similarity and how it related to adjustment *over time*. In particular, baseline couples similarity in coping self-

statements was predictive of increased *spouse* depressive symptoms over time, though it was correlated neither with concurrent adjustment, nor with patient depressive symptoms. Perhaps when both partners rely on internal coping statements, it reflects an internal locus of control (Crisson & Keefe, 1988). With an internal locus of control, each partner may be less available to his/her partner or less likely to turn to his/her partner for support. For example, if the patient is coping more immediately with the pain, s/he may not be as available to his/her spouse more generally, which may possibly lead to feelings of worthlessness and other depressive symptoms in the spouse. Alternatively, couples similarity in coping self-statements at baseline may not be adaptive over time and lead to changes in coping that has interpersonal consequences (e.g., spouses' use of coping self-statements is predictive of decreases in patients' relationship satisfaction) that would predict increases in spouses' depressive symptoms.

As hypothesized, baseline couples coping similarity in diverting attention was predictive of decreased pain severity over time. Diverting attention is a cognitive coping strategy in which the individual is specifically distracting themselves from pain. Though a cognitive coping strategy, it may be that diverting attention has a behavioral component that makes it more likely to be reinforced or aided by one's spouse than other types of strategies. For instance, diverting one's attention may take the form of turning to reading, singing, crafts, or doing other activities that take the patient's mind off of the pain. These are potentially observable behaviors that have the opportunity to be reinforced by partners in a way that unspoken thoughts or intentions do not. Perhaps when both partners are similar in their use of distraction, they reinforce each other's use

of diverting attention and are better able to distract the patient from the experience of pain, thus the patient reports less pain severity.

Baseline similarity in praying-hoping was predictive of increased pain severity and decreased patient relationship satisfaction over time, also as hypothesized. Unlike the other coping strategies, similarity in praying-hoping and patients' individual use of praying-hoping had similar outcomes (i.e., poor pain adjustment and patient relationship satisfaction). Praying-hoping has been conceptualized as avoidant-oriented coping (Brown & Nicassio, 1987; DeLongis et al., 2010). It is thought to represent a reaction that is characterized by helplessness or reliance on others to deal with one's pain (Brown & Nicassio, 1987; DeLongis et al., 2010). Thus, praying-hoping may reflect an external locus of control (e.g., one's belief system). Some researchers have hypothesized that poorer adaptation to chronic pain has to do with an external locus of control (Boothby, Thorn, Stroud, & Jensen, 1999; Crisson & Keefe, 1988). Indeed, individuals with chronic pain with external locus of control were more likely to use praying-hoping and diverting attention to cope with pain in previous studies. These individuals were also more likely to report feeling helpless to deal effectively with their pain and have higher levels of psychological distress (Crisson & Keefe, 1988). Previous couples coping similarity research on couples with cancer has also demonstrated that, for patients who use an avoidance-oriented or emotion-focused coping strategy, dissimilarity in couples coping was predictive of better adjustment (Kraemer et al., 2011; Pakenham, 1998). Thus it is possible that spouses who are similar in coping reinforce each other's coping approach, for better or worse.

Individual coping

Compared to the sparse findings in regards to couples coping similarity, the findings on self-reported coping strategies and adjustment were more plentiful. Overall, patients' self-reported coping strategies were most often associated with concurrent patient-reported adjustment. Further, spouses' coping strategies were generally associated with patient-reported spousal support and relationship adjustment, while patients' coping strategies were generally associated with patient and spouse adjustment. For a clearer picture of the results, the discussion that follows is organized by coping strategy, beginning with those strategies that were hypothesized to reflect maladaptive coping. Key overall patterns will be highlighted after this section.

Catastrophizing. Catastrophizing as a coping strategy demonstrated the most consistent individual results, though, couples coping similarity on this strategy was not significant. Pain catastrophizing was hypothesized to be a maladaptive coping strategy because it is characterized by helplessness to deal with one's pain (Brown & Nicassio, 1987; DeLongis et al., 2010; Sullivan, Bishop, & Pivik, 1995). The pattern of findings indicated that pain catastrophizing is not only detrimental to the patient, as previous research has highlighted (Sullivan, Adams, Martel, Scott, & Wideman, 2011; Sullivan, Rodgers, & Kirsch, 2001), but that catastrophizing can be just as detrimental to adjustment in the spouse. In particular, one's own use of catastrophizing was concurrently associated with poorer adjustment in the patient (i.e., greater baseline pain severity, pain interference and patient depressive symptoms) and the spouse (i.e., spouse depressive symptoms). Indeed, previous cross-sectional research shows catastrophizing positively related to depression symptoms, psychological distress, pain

severity and disability (Cano et al., 2006; Jensen, Nielson, et al., 2003; Jensen et al., 1991).

Both patients' and spouses' catastrophizing was also associated with poorer spouse relationship satisfaction. However, only patients', but not spouses', catastrophizing was predictive of decreases in patient relationship satisfaction over time. Interestingly, spouse catastrophizing was also associated with greater concurrent patient perceptions of punishing spouse responses to patient pain. Previous research has found that high distress (e.g., depression) and poor coping strategies (e.g., catastrophizing) makes it difficult for others to be motivated to offer support or provide empathy (Revenson, 1994). In this case, perhaps the spouse decreases his/her support because s/he view his/her support as ineffective with the distressed patient, leading to feelings of helplessness and/or annoyance with the patient, or a struggle to adequately cope with his/her own internal distress, or may even become more frustrated or angry with the patient, resulting in punishing responses to the patient's pain.

Praying-hoping. Praying-hoping was hypothesized to represent a maladaptive coping strategy as it reflects an avoidance-oriented coping strategy (Brown & Nicassio, 1987; DeLongis et al., 2010). The results supported this hypothesis as patients' praying-hoping was associated with greater baseline pain severity and pain interference, which is consistent with previous research (Jensen, Nielson, et al., 2003; Jensen et al., 1991). Patients' praying-hoping was also associated with greater perceptions of instrumental and distracting spouse responses at baseline and predictive of decreases in patients' relationship satisfaction over time. Interestingly, couples coping similarity on praying-hoping was also predictive of increases in pain severity and decreases in patients'

relationship satisfaction over time. Perhaps, the patient who excessively relies on praying-hoping is more passive in a variety of situations and with a variety of people. S/he may seek out, attend to, and recall situations when they are offered support, hence the greater perceptions of instrumental and distracting spouse responses. However, in the long term, this passive coping strategy may be maladaptive (e.g., decreased patient relationship satisfaction). Over time, the patient may begin to feel guilty about the support s/he has received, or the spouse may begin to provide support with a resentful attitude. Indeed, previous research has found that catastrophizing, another passive coping strategy, was associated with greater spousal support at shorter pain durations but less instrumental spousal support at longer pain durations (Cano, 2004). Alternatively, the patient may not be satisfied with the support provided by the partner and turns instead to other sources for coping help (e.g., their religion or belief system). Another possibility is that the patient feels helpless about the pain, and for some, prayer or hoping is something that is done after exhausting all other coping possibilities.

Coping self-statements. Making coping self-statements was hypothesized to characterize an adaptive coping strategy as it represents an attempt by the person to deal with his/her pain by using one's own resources (Brown & Nicassio, 1987; DeLongis et al., 2010). Indeed patients' coping self-statements was concurrently associated with more positive outcomes for the patient (i.e., less pain interference and patient depressive symptoms). This is consistent with previous research that found that coping self-statements is related to less depressive symptoms, pain interference, as well as psychosocial disability & pain severity (Jensen, Keefe, et al., 2003; Jensen et al., 1991; Keefe & Williams, 1990). In addition, spouses' coping self-statements was predictive of

decreases in *patients'*, but not spouses', relationship satisfaction over time. Perhaps the patient feels invalidated by an expectation of the spouse to cope similarly using coping self-statements, which may imply an expectation that the patient would use an internal coping strategy rather than turning to his/her spouse to cope. This may result in a decrease in patients' relationship satisfaction over time. Or, the spouse's use of coping self-statements, a strategy that may reflect an internal locus of control or an intrapersonal strategy, may act to isolate the patient rather than connect him/her with his/her spouse in coping with the interpersonal chronic stressor (i.e., chronic pain), leading to decreases in relationship satisfaction in the patient. Of note is that reviews of CSQ findings have observed that coping self-statements as a coping strategy does not generally show a consistent relationship with reduced pain or improved functioning (Boothby et al., 1999; DeGood & Cook, 2011). However, these self-statements are often a fundamental part of most psychological interventions for pain management and these statements have been shown to change over the course of the intervention (DeGood & Cook, 2011). Given the inconsistent relationship with adjustment in previous research and the results of the current study, further research into the effect of coping self-statements on adjustment appears warranted.

Diverting attention. Although *couples coping similarity* in diverting attention was adaptive, the results from this study did not support diverting attention as an adaptive *individual* coping strategy. In particular, patients' diverting attention was concurrently associated with worse pain adjustment (i.e., pain severity and interference) and greater perceived spousal support (i.e., instrumental and distracting spouse responses). Previous research has found that perceptions of instrumental and distracting spouse

responses are also associated with better patient mood and relationship adjustment, while also being associated with poorer pain adjustment (Flor, Turk, & Rudy, 1989; Romano et al., 1995; Turk, Kerns, & Rosenberg, 1992). However, the contributions of the current study are novel because previous research has not examined the associations between perceptions of spousal support and either each partner's coping or type of coping strategy. In contradiction to previous findings regarding these types of support, patients' diverting attention in this study was concurrently associated with greater perceptions of these types of spouse support, but also predictive poorer patient relationship adjustment (i.e., relationship satisfaction) and individual adjustment (i.e., depressive symptoms) of both patient and spouse over time. Perhaps diverting attention can be conceptualized as an avoidance-oriented coping strategy; it may be adaptive for the individual in the short term (i.e., greater perceptions of spouse support), but there might be a negative long-term emotional impact of this coping strategy in the individual (i.e., patient relationship adjustment and depressive symptoms in both patient and spouse). Avoidance-oriented coping strategies are strategies in which the person seeks to avoid, escape, or distract oneself from the stressor and, for short-term stressors such as a doctor's visit or school exams, this strategy can be adaptive (Boothby et al., 1999). However, with chronic stressors, such as chronic pain, the stressor does not end and the avoidance both temporarily reduces symptoms associated with the pain while also maintaining and strengthening the anxiety or depression associated with the chronic stressor. From a behavioral learning perspective, avoidance coping interferes with the person being able to break the association between the experience of pain and the

unwanted emotion of the experience of pain (e.g., depression or anxiety; Lazarus & Folkman, 1984).

Ignoring and reinterpreting pain sensations. Previous factor analyses with the CSQ have found a three factor structure in which one factor encompasses strategies which are labeled as “cognitive coping and suppression” (Lawson, Reesor, Keefe, & Turner, 1990; Tuttle et al., 1991). The “suppression” items in this factor are those that comprise the ignoring and reinterpreting pain sensations subscales of the CSQ, thus they will be discussed together. Both were hypothesized to represent adaptive coping strategies. Indeed, the results indicated that patients’ ignoring pain sensations was concurrently adaptive for patient pain and individual adjustment, which is congruent with previous research (Jensen, Nielson, et al., 2003; Jensen et al., 1991; Keefe & Williams, 1990). Patients’ ignoring pain sensations was also concurrently associated with increased patient perceptions of instrumental spouse responses, which is a novel finding as researchers have not examined perceptions of spouse support in relation to each partner’s coping. However, spouses’ ignoring and reinterpreting pain sensations were maladaptive for relationship adjustment (i.e., punishing and distracting spouse responses). Additionally, neither ignoring pain sensations nor reinterpreting pain sensations were predictive of adjustment over time. Previous research has found strong associations between ignoring pain sensations, reinterpreting pain sensations, and diverting attention, and each are found to be associated with adaptive pain and pain-related functioning in acute pain, but appear to have little benefit over time in chronic pain (Boothby et al., 1999).

Increasing behavioral activity. Much like diverting attention, increasing behavioral activity was hypothesized to represent an adaptive coping strategy; however, the results from the current study were mixed. Specifically, though patients' increasing behavioral activity was concurrently associated greater baseline pain severity and pain interference, which is in contradiction to previous studies (Jensen, Nielson, et al., 2003; Jensen et al., 1991), it was also associated with greater concurrent patient relationship satisfaction. Of all of the coping strategies examined in this study, increasing behavioral activity is the only purely behavioral strategy. The patient's behavioral activity may also be an indicator of the absence of mood problems in the patient or that the patient is experiencing less psychosocial impairment, despite reports of greater pain severity and interference. As a behavioral coping strategy, behavioral activity may indicate that the patient is engaging in activities more often, and it is possible that the patient engages in many of these activities with the spouse. Thus, patients' initially have greater relationship satisfaction. However, patients' behavioral activity at baseline was predictive of *decreases* in patient relationship satisfaction and increases in spouse, but not patient, depressive symptoms over time. Perhaps, patients with higher pain severity and interference at baseline engage in fewer behavioral activities over time. This change in using activity to cope on the part of the patient, in a dynamic system such as a marriage, may change the established roles in the relationship (e.g., patient is less active and the spouse is forced to take on more responsibilities around the house), which may in turn lead to an increase in spouses' depressive symptoms. Further, depressive symptoms have been associated with decreased relationship satisfaction in other research (Beach, Sandeen, & O'Leary, 1990; Fincham, Beach, Harold, &

Osborne, 1997; Katz et al., 1999; Pruchno, Wilson-Genderson, & Cartwright, 2009; Rehman, Gollan, & Mortimer, 2008), and the increases in spouses' depression symptoms with decreases in patients' relationship satisfaction might be expected based on this research. It is speculation in the current study that patients' use of increasing behavioral activity changed over time, or how these changes might have affected the couple, as coping was not measured over time. Based on these results, it would be important in future research to track changes in coping strategies over time.

Patterns in coping

Overall, there were few outcomes for couples coping similarity and those outcomes were often in contradiction to previous research on pain coping as well as the individual coping findings in the current study. It is possible that there is little to no benefit when both partners use the same coping strategies at the same point in time. Perhaps certain active strategies are most beneficial if the couple takes turns in using those strategies. As this is the first study to examine coping *similarity* using the Coping Strategies Questionnaire (CSQ) in couples with chronic pain, it may not be appropriate to compare individual findings to coping similarity. Coping similarity as measured in the current study is conceptually different from the way an individual's coping with pain is typically measured in the literature. Nevertheless, these findings extend the coping literature by examining how *both* partners' coping relates to adjustment in the context of pain.

Two patterns emerged from the data when examining each partner's coping strategies aside from the coping similarity score. One pattern demonstrated that *patient* coping strategies were generally associated with or predicted *patient* adjustment, in

particular patients' pain adjustment and depressive symptoms. There were few associations between *either* partner's coping strategies and the *spouse's* adjustment. From these data it appears that both patients', and to a lesser extent spouses', coping strategies are associated with and predictive of the patients', but not the spouses', functioning. Perhaps this is due to how the pain coping questions were directed to spouses coping with their *own* pain and that these spouses often did not have chronic pain. However, both patients' and spouses' self-reported coping strategies were associated with and predictive of the patients' perceptions of spousal support, which may be an indicator of the spouses' actual support behavior as well as an indicator of the patients' relationship adjustment. Perhaps a patient's coping strategy affects his/her awareness and interpretation of spouse behavior, while a spouse's coping affects the behavior that the patient perceives (e.g., spouse catastrophizing associated with patient perceptions of punishing spouse responses to patient pain).

The second pattern was that none of the coping strategies were predictive of pain severity over time. In fact, neither partner's coping nor couples similarity in coping was related to changes in pain adjustment over time. One complaint of retrospective coping measures is that coping is a complex construct and coping is thought to *dynamically* change over time, over the course of minutes, days, months, and years (Peters et al., 2000; Sorbi et al., 2006; Stone, Shiffman, Schwartz, Broderick, & Hufford, 2002). These dynamic changes in coping may also influence the spouse's coping as the relationship is an interdependent system in which each partner affects the other. In future research, daily diaries and electronic momentary assessment devices for both partners would allow for the complexities and possible interactions of coping and the

impact of coping attempts on adjustment to be measured more frequently over time (Lefebvre & Keefe, 2002; Peters et al., 2000). It may also be that the use of coping strategies changes over time both when considered within an individual and between partners. For instance, a strategy may be adaptive at one point in time but maladaptive at another point in time. Similarly, strategies may be swapped for others that are more adaptive. Again, future research should measure coping in each partner over multiple time points, in addition to measuring adjustment across multiple time points. This may enable researchers to map this dynamic evolution of coping within both the individual and the couple and how these changes in coping influence adjustment. Indeed it is possible that some coping strategies may not affect adjustment in the short term but have longer term contributions to disease progression or quality of life in the years to come.

In general, the division of adaptive and maladaptive coping strategies used in previous research was not found in the current study. Previous research with the CSQ has found inconsistent associations with adjustment outcomes between strategies that were hypothesized to be adaptive (i.e., distracting attention, ignoring and reinterpreting pain sensations) and numerous different factor structures or groupings of coping strategies have been proposed (Hastie et al., 2004; Lawson et al., 1990; Rosenstiel & Keefe, 1983; Tuttle et al., 1991). Both catastrophizing and praying-hoping have been most consistently related to poorer adjustment in previous research (Ashby & Lenhart, 1994; Crisson & Keefe, 1988; Engel, Schwartz, Jensen, & Johnson, 2000; Sullivan et al., 2011; Sullivan et al., 1995; Sullivan et al., 2001) and were the most consistent in the current study as well.

Finally, the lack of more extensive findings in regards to couples coping similarity may be a result of the conservative testing of the models which included both the patient and spouse coping scores as well as the couples coping similarity score. However, this was the best test because it allowed for an examination of the contributions of both individual and couples coping similarity to adjustment. Also, it was possible that one's own coping could influence his/her partner's coping over time, thus affecting coping similarity.

Additional clinical implications

Although most therapeutic interventions for chronic pain target the patient only, the current study and other research has indicated that the involvement of the patient's primary support, typically the spouse, might further improve adjustment. The current study can inform intervention approaches that involve spouses (Keefe et al., 2004; Leonard, Cano, & Johansen, 2006; Manne et al., 2004) in several ways. For instance, several interventions teach patients to engage in coping self-statements but have not examined how the use of this strategy might affect the partner. The current study suggests that research should be conducted to see if this is in fact an adaptive strategy for both partners or if it is adaptive for patients and to the eventual detriment of spouses. Further, the knowledge of the effects of similarity in coping on adjustment may encourage assessment of each partner's coping strategies at the start of pain interventions and inform the content of the intervention. For example, the pre-intervention assessment of couples may allow for the intervention to be tailored to that specific couple with their specific coping profile, teaching strategies where adaptive and further reinforcing strategies that are adaptive, rather than a one-size-fits-all approach.

Of course, additional research into the types of profiles that are associated with good outcomes is necessary before such tailoring is instituted.

The current study also contradicts previous research and highlights the importance for further research in regards to coping through increasing behavioral activity. Similar to coping self-statements, pain coping interventions and medical recommendations stress the importance of remaining active or coping by increasing behavioral activities (Brady, Jernick, Hootman, & Sniezek, 2009; Chou & Huffman, 2007; Do, Hootman, Helmick, & Brady, 2011). Again, however, the current study suggests that patient coping by increasing behavioral activities, though adaptive in the short term, may be detrimental to both patient and spouse adjustment over time. Further longitudinal research is necessary to support or refute the current findings and would be important for informing pain interventions.

Finally, the results of the current study indicate that addressing catastrophizing in the spouse as part of a couples-based intervention may benefit both partners over time. Spouse's catastrophizing was associated with negative individual (i.e., spouse's depression) and relationship adjustment (i.e., spouse's relationship satisfaction and patient perception of punishing spouse responses to patient's pain). As previous marital research has found a cross-sectional and longitudinal relationship between depression and relationship satisfaction (Beach et al., 1990; Fincham et al., 1997; Katz et al., 1999; Pruchno et al., 2009), the current findings highlight the importance of addressing catastrophizing in both partners and doing so in a couples-based intervention.

Limitations

This study is not without limitations, the largest of which is that the study did not measure change over time in coping. As stated earlier, the measurement of coping over time might have allowed for clearer understanding of the relationships between each partner's coping and coping similarity, both as these relate to each other and how they relate to the adjustment outcomes.

Second, each partner was asked to report on his or her own coping with pain rather than how both partners cope with the patient's pain. Each partner's report on their own pain coping was useful in that it allowed for an examination of how the partner does or would cope with pain if it was their own pain. How one copes with his/her own pain may infer an expectation of how one's partner should cope with her/his pain. However, assessing coping from the perspective of how each partner copes with their own pain is also a limitation because it does not allow for measurement of the emerging coping concept called dyadic coping.

The couples in the current study had been in their relationships and coping with chronic pain for a long period of time prior to entering the study, on average 10 years. As such, it may be that there is less change in the one year of the study compared to the change in coping and adjustment that likely occurred when the couple first started struggling with and adapting to chronic pain. It may be that there is an initial period of adjustment, in which there is rapid and dynamic changes in coping, and then stabilization in coping for many of these couples, in which they settle into a pattern of interaction that does not change significantly over time.

Finally, though previous studies have calculated couple similarity using the absolute difference score (Badr, 2004; Holahan et al., 2007), there exists some evidence against the use of the absolute difference score. (Luo & Klohnen, 2005) compared absolute difference scores to profile correlation scores in examining similarity between two reports on the same measure. Researchers found that when individual scores were included in the regression the outcomes were best explained by the individual scores compared to the absolute difference scores (i.e., similarity score). They concluded that the absolute difference score contributed nothing further to the outcome than the profile correlation score, while the profile correlation score was a stronger and more reliable measure of similarity (Luo & Klohnen, 2005).

Future research directions

Many of the limitations of the current study highlight the areas which would benefit from further research. First, the initial adjustment to chronic pain has not been extensively studied in the coping literature, with much of the research reporting similar pain durations as found in the current study (i.e., slightly more than a decade of coping with chronic pain). Measuring coping and adjustment longitudinally from the initial onset of pain may provide an opportunity to map the developmental course of coping with chronic pain within both the individual and the couple. Longitudinal measurement would provide key insights that could inform clinical interventions for the individual and/or the couple as they cope with pain, including the development of coping similarity/dissimilarity over the course of coping with pain. Personality and psychopathology research has found that couples become more congruent in certain traits and symptoms over the length of their relationship (Holahan et al., 2007; Katz et

al., 1999), and those who are more similar, cross-sectionally (Gaunt, 2006; Townsend et al., 2001), are more satisfied in their relationships and that these relationships are more likely to endure, with these individuals becoming more similar with increasing duration of marriage (Anderson et al., 2003; Rammstedt & Schupp, 2008). Examining how coping similarity changes over time and the associations of these changes with the couple's adjustment may also be important in assisting couple's coping efforts. Through their interactions, spouses may become more congruent in either approach or avoidance-oriented coping, although this has not yet been tested (Berg & Upchurch, 2007). One would expect that, just as the personality and psychopathology research has indicated, that individuals in a relationship would likely be more similar to each other at baseline and become more similar over the length of their relationship in their coping strategies. Furthermore, if coping is hypothesized to change over time (Anderson, 1977), there is reason to believe coping similarity may also change over time. For example, if partners become more congruent in approach-oriented coping they are each likely employing active attempts to solve the problem, planning, information seeking, and weighing the pros and cons of the situation, in addition to working more collaboratively together on these attempts, and perhaps adjusting better to chronic pain. Also, previous research has shown that individuals typically use more than one coping strategy when dealing with a stressor and those stressors that are appraised as more threatening often result in the use of multiple coping strategies (Folkman & Lazarus, 1980). One's coping strategy may change over time to better fit the stressor; hence the individual's coping strategy may contribute more influence to outcomes than the similarity in coping within the couple.

Second, an emerging concept called dyadic coping has been proposed as a theory of a couple's adjustment to stressors. Dyadic coping is the coping of one or both spouses aimed at either creating or restoring prior physical, psychological, or social homeostasis within each spouse individually and within the couple as a unit (Bodenmann, Pihet, Shantinath, Cina, & Widmer, 2006; O'Brien & DeLongis, 1997). From this perspective, dyadic coping, at times, may require the needs and integrity of the relationship to be put above to the needs of either individual in the relationship. Adaptive dyadic coping is associated with increased relationship satisfaction, feelings of togetherness and decreased quarrelling (Bodenmann, 2005). Research on dyadic coping has found that patients who are actively involved with their spouses in decision making, problem-solving and mutual disclosure (i.e., approach-oriented coping) are more likely to report higher self-efficacy, better daily mood, and better relationship satisfaction (Bodenmann, 1997; Coyne & Smith, 1994). Conversely, behaviors such as underestimating the other's abilities, providing excessive assistance, denying one's own anxiety or concerns, or deferring to the spouse to avoid conflict (i.e., avoidance-oriented coping) are associated with lower perceived control, lower self-efficacy, and poorer marital satisfaction by the receiver (Hagedoorn et al., 2000). These findings suggest that a fruitful avenue of research would involve examining looking at how dyadic coping with pain changes over time and how it contributes to adjustment in both partners over time.

Conclusion

Overall, there were sparse findings in regards to couples coping similarity; however, the findings on each partner's coping strategies and adjustment were more

plentiful. The current study found that patients' self-reported coping strategies were associated with concurrent patient-reported adjustment. Further, both patients' and spouses' coping strategies were generally predictive of patient and spouse adjustment over time. A majority of the previous research on coping strategies has focused on concurrent associations between one's own coping and individual adjustment (i.e., pain and depressive symptoms) in patients and the current study supports many of these findings (Cano et al., 2006; Jensen, Keefe, et al., 2003; Jensen, Nielson, et al., 2003; Jensen et al., 1991; Keefe & Williams, 1990). The current study takes previous research further by examining similarity, spouse adjustment, perceived spousal support, and patient and spouse adjustment over time. It has also examined possible contributing variables to previous findings (i.e., relationship adjustment, perceived spousal support, and spousal adjustment) in an effort to capture the psychosocial complexities of chronic pain. Finally, this is the first study to examine coping and perceived spousal support in couples with chronic pain. Results have implications for research and practice that focuses on patient and their families as well as identifying strategies that best relate to adjustment.

APPENDIX A

Table 1

Means, standard deviations, and reliabilities of the patient and spouse Coping Strategies Questionnaire (CSQ)

	Patient			Spouse		
Coping Strategies Subscale	*M*	*SD*	*Alpha*	*M*	*SD*	*Alpha*
Catastrophizing	9.60	7.53	.83	8.42	6.72	.75
Diverting Attention	13.52	8.16	.82	12.70	7.79	.83
Ignoring Pain Sensations	13.10	7.53	.83	12.96	7.65	.80
Coping Self-Statements	21.36	7.36	.80	20.13	7.67	.78
Reinterpreting Pain Sensations	6.28	6.50	.80	7.76	7.62	.81
Praying-Hoping	16.76	7.69	.71	16.12	9.22	.82
Increasing Behavioral Activities	15.48	7.11	.74	14.32	7.02	.73

Note: *alpha* > .80 = “good” reliability, *alpha* > .70 = “acceptable” reliability.

Table 2

Correlations and paired-sample t-test of mean differences in CSQ subscales between patient and spouse

	Correlation	*P*	*t* (*df* = 107)	*P* (2-tailed)
Diverting attention	.20*	.04	.85	.40
Reinterpreting pain sensations	-.03	.78	-1.52	.13
Coping self-statements	.02	.85	1.21	.23
Ignoring pain sensations	-.06	.53	.13	.89
Praying-hoping	.28**	.003	.66	.51
Catastrophizing	.36**	.000	1.52	.13
Increasing behavioral activity	.08	.38	1.26	.21

Table 3

Longitudinal scale means, standard deviations, and reliabilities

		Baseline		Time 1		Time 2	
Measure		Patient	Spouse	Patient	Spouse	Patient	Spouse
Pain severity		4.75		4.83		4.85	
	SD	(2.25)		(2.20)		(2.14)	
	alpha	.90		.88		.86	
Pain interference		30.44		30.05		30.69	
	SD	(12.87)		(13.91)		(14.93)	
	alpha	.94		.94		.95	
Punishing spouse responses		7.19		6.37		7.04	
	SD	(6.14)		(5.62)		(6.40)	
	alpha	.83		.83		.86	
Instrumental spouse responses		21.76		21.48		21.49	
	SD	(8.87)		(9.41)		(9.23)	
	alpha	.83		.84		.84	
Distracting spouse responses		9.34		10.29		9.70	
	SD	(5.55)		(5.81)		(6.14)	
	alpha	.69		.73		.76	
Depressive symptoms		79.92	77.39	83.11	76.82	87.50	80.88
	SD	(20.08)	(20.32)	(22.72)	(22.30)	(21.86)	(24.40)
	alpha	.94	.94	.95	.96	.95	.96
Relationship satisfaction		105.67	107.24	106.46	105.67	102.88	105.88
	SD	(18.41)	(17.71)	(21.41)	(20.11)	(23.39)	(18.82)
	alpha	.93	.92	.95	.94	.95	.93

Note: *alpha* > .90 = “excellent” reliability, *alpha* > .80 = “good” reliability, *alpha* > .70 = “acceptable” reliability.

Table 4

Bivariate correlations of baseline patient coping strategies and dependent variables

		DA	RPS	CSS	IPS	PH	CAT	IBA
Pain severity	T0	.23*	.08	-.19*	-.10	.47**	.54**	.23*
	T1	.28**	.17	-.15	-.04	.42**	.38**	.12
	T2	.34**	.28**	-.12	-.10	.51**	.40**	.24*
Pain interference	T0	.45**	.14	-.22*	-.21*	.46**	.53**	.26**
	T1	.34**	.10	-.30**	-.26*	.42**	.38**	.10
	T2	.37**	.17	-.16	-.25*	.38**	.42**	.16
Punishing spouse	T0	.11	.08	-.04	.08	.10	.11	.05
responses	T1	.06	.12	-.03	-.01	.06	.22*	-.00
	T2	.25*	.17	-.12	-.07	.23*	.39**	.18
Instrumental spouse	T0	.24*	.14	.01	-.07	.20*	.13	.12
responses	T1	.25*	.11	-.05	.01	.18	.12	.12
	T2	.16	.17	-.05	-.01	.22*	.10	.06
Distracting spouse	T0	.51**	.35**	.13	.11	.30**	.20*	.35**
responses	T1	.36**	.19	.01	-.02	.29**	.19	.24*
	T2	.30**	.18	.00	.01	.20	.11	.25*
Depressive symptoms	T0	.03	-.06	-.44**	-.27**	.07	.52**	-.07
	T1	.17	.15	-.33*	-.17	.09	.42**	-.07
	T2	.20	.13	-.25*	-.12	.14	.53**	-.05
Relationship satisfaction	T0	.13	.03	.18	.07	.02	-.14	.22*
	T1	-.02	-.01	.18	.10	.09	-.18	.08
	T2	-.23*	-.05	.11	.14	-.14	-.20	-.05

Note: * = $p < .05$, ** = $p < .01$, DA = diverting attention, RPS = reinterpreting pain sensations, CSS = coping self-statements, IPS = ignoring pain sensations, PH = praying-hoping, CAT = catastrophizing, IBA = increasing behavioral activity.

Table 5

Bivariate correlations of baseline spouse coping strategies and dependent variables

		DA	RPS	CSS	IPS	PH	CAT	IBA
Depressive symptoms	T0	-.02	-.03	-.16	.03	-.04	.47**	-.13
	T1	-.03	.12	-.04	.07	.04	.49**	.01
	T2	-.10	.01	-.04	.03	.05	.53**	-.07
Relationship satisfaction	T0	.08	-.12	.14	-.09	.00	-.26**	.05
	T1	-.01	-.18	.10	-.06	-.05	-.23*	.01
	T2	.06	-.05	.27*	.04	.08	-.24	.12

Note: * = $p < .05$, ** = $p < .01$, DA = diverting attention, RPS = reinterpreting pain sensations, CSS = coping self-statements, IPS = ignoring pain sensations, PH = praying-hoping, CAT = catastrophizing, IBA = increasing behavioral activity.

Table 6

Time-only model predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.76	.21	22.13**
Change over time (Slope)	.00	.00	.55
Random effects	Variance	*SD*	Chi-square (df = 99)
Baseline (Intercept)	3.70	1.92	364.94**
Change over time (Slope)	.00	.02	129.06*

Table 7

Catastrophizing predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.73	.30	15.53**
Catastrophizing – patient	.12	.03	3.79**
Catastrophizing - spouse	.02	.03	.56
Couples coping similarity – Catastrophizing	.01	.04	.14
Change over time (Slope)	.01	.01	.97
Catastrophizing – patient	-.00	.00	-1.15
Catastrophizing - spouse	.00	.00	.76
Couples coping similarity – Catastrophizing	-.00	.00	-.78

Note: * = $p < .05$, ** = $p < .01$, covariates (patient education and length of marriage) were included in the model at baseline but not displayed in the table.

Table 8

Coping self-statements predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.38	.34	12.86**
Coping self-statements – patient	-.03	.03	-1.15
Coping self-statements – spouse	-.01	.03	-.42
Couples coping similarity – Coping self-statements	.04	.03	1.38
Change over time (Slope)	.01	.01	1.12
Coping self-statements – patient	.00	.00	.11
Coping self-statements – spouse	.00	.00	1.34
Couples coping similarity – Coping self-statements	-.00	.00	-.95

Note: * = $p < .05$, ** = $p < .01$, covariates (patient education and length of marriage) were included in the baseline model but not displayed in the table.

Table 9

Diverting attention predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.90	.31	15.63**
Diverting attention – patient	.05	.02	2.07*
Diverting attention – spouse	.02	.03	.66
Couples coping similarity – Diverting attention	-.02	.03	-.61
Change over time (Slope)	-.01	.01	-1.32
Diverting attention – patient	.00	.00	.33
Diverting attention – spouse	.00	.00	.66
Couples coping similarity – Diverting attention	.00	.00	2.03*

Note: * = $p < .05$, ** = $p < .01$, covariates (patient education and length of marriage) were included in the baseline model but not displayed in the table.

Table 10

Increasing behavioral activity predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.76	.34	13.79**
Increasing behavioral activity – patient	.06	.03	2.00*
Increasing behavioral activity – spouse	.01	.03	.49
Couples coping similarity – Increasing behavioral activity	-.00	.04	-.00
Change over time (Slope)	.00	.01	.45
Increasing behavioral activity – patient	-.00	.00	-.78
Increasing behavioral activity – spouse	.00	.00	.06
Couples coping similarity – Increasing behavioral activity	-.00	.00	-.15

Note: * = $p < .05$, ** = $p < .01$, covariates (patient education and length of marriage) were included in the baseline model but not displayed in the table.

Table 11

Ignoring pain sensations predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.62	.36	12.98**
Ignoring pain sensations – patient	-.03	.03	-1.01
Ignoring pain sensations – spouse	-.04	.03	-1.54
Couples coping similarity – Ignoring pain sensations	.02	.03	.52
Change over time (Slope)	.00	.01	.84
Ignoring pain sensations – patient	-.00	.00	-.61
Ignoring pain sensations – spouse	.00	.00	1.32
Couples coping similarity – Ignoring pain sensations	-.00	.00	-.69

Note: * = $p < .05$, ** = $p < .01$, no covariates were included model.

Table 12

Praying-hoping predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.73	.31	15.18**
Praying-hoping – patient	.11	.03	4.22**
Praying-hoping – spouse	.02	.02	1.12
Couples coping similarity – Praying-hoping	.00	.03	.15
Change over time (Slope)	.01	.01	2.25*
Praying-hoping – patient	-.00	.00	-.05
Praying-hoping – spouse	-.00	.00	-.03
Couples coping similarity – Praying-hoping	-.00	.00	-2.31*

Note: * = $p < .05$, ** = $p < .01$, covariates (patient education and length of marriage) were included in the baseline model but not displayed in the table.

Table 13

Reinterpreting pain sensations predicting pain severity

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	4.49	.36	12.53**
Reinterpreting pain sensations – patient	.02	.04	.45
Reinterpreting pain sensations – spouse	-.02	.03	-.52
Couples coping similarity – Reinterpreting pain sensations	.04	.04	.96
Change over time (Slope)	.00	.01	.52
Reinterpreting pain sensations – patient	.00	.00	1.41
Reinterpreting pain sensations – spouse	.00	.00	.48
Couples coping similarity – Reinterpreting pain sensations	-.00	.00	-.25

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 14

Time-only model predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	30.41	1.23	24.77**
Change over time (Slope)	-.01	.02	-.68
Random effects	Variance	*SD*	Chi-square (df = 99)
Baseline (Intercept)	133.71	11.56	534.92**
Change over time (Slope)	.00	.05	111.35

Table 15

Catastrophizing predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	26.87	2.19	12.30**
Catastrophizing – patient	.64	.18	3.58**
Catastrophizing - spouse	.20	.17	1.13
Couples coping similarity – Catastrophizing	.27	.23	1.17
Change over time (Slope)	-.01	.02	-.68

Note: * = $p < .05$, ** = $p < .01$, covariates (patient race, age, and education) were included in the baseline model but not displayed in the table.

Table 16

Coping self-statements predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	28.62	2.40	11.94**
Coping self-statements – patient	-.38	.17	-2.25*
Coping self-statements – spouse	.01	.15	.07
Couples coping similarity – Coping self-statements	-.03	.19	-.18
Change over time (Slope)	-.01	.02	-.66

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age, race, and education) were included in the baseline model but not displayed in the table.

Table 17

Diverting attention predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	30.12	1.94	15.49**
Diverting attention – patient	.61	.13	4.53**
Diverting attention – spouse	.16	.14	1.15
Couples coping similarity – Diverting attention	-.06	.17	-.34
Change over time (Slope)	-.01	.02	-.75

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age, race, and education) were included in the baseline model but not displayed in the table.

Table 18

Increasing behavioral activity predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	29.59	2.34	12.67**
Increasing behavioral activity – patient	.40	.17	2.36*
Increasing behavioral activity – spouse	.01	.17	.05
Couples coping similarity – Increasing behavioral activity	-.11	.21	-.52
Change over time (Slope)	-.01	.02	-.74

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age, race, and education) were included in the baseline model but not displayed in the table.

Table 19

Ignoring pain sensations predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	27.79	2.22	12.49**
Ignoring pain sensations – patient	-.37	.16	-2.38*
Ignoring pain sensations – spouse	-.00	.15	-.01
Couples coping similarity – Ignoring pain sensations	.08	.17	.43
Change over time (Slope)	-.01	.02	-.65

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age, race, and education) were included in the baseline model but not displayed in the table.

Table 20

Praying-hoping predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	31.13	2.24	13.88**
Praying-hoping – patient	.65	.16	4.11**
Praying-hoping – spouse	.09	.13	.70
Couples coping similarity – Praying-hoping	-.12	.18	-.67
Change over time (Slope)	-.01	.02	-.71

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age, race, and education) were included in the baseline model but not displayed in the table.

Table 21

Reinterpreting pain sensations predicting pain interference

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	29.06	2.03	14.30**
Reinterpreting pain sensations – patient	.18	.20	.86
Reinterpreting pain sensations – spouse	-.04	.19	-.20
Couples coping similarity – Reinterpreting pain sensations	.18	.22	.83
Change over time (Slope)	-.01	.02	-.66

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 22

Time-only model predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	7.00	.53	13.12**
Change over time (Slope)	-.00	.01	-.14
Random effects	Variance	*SD*	Chi-square (df = 99)
Baseline (Intercept)	16.59	4.07	215.87**
Change over time (Slope)	.00	.02	103.06

Table 23

Catastrophizing predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	6.43	.87	7.35**
Catastrophizing – patient	.03	.08	.37
Catastrophizing - spouse	.22	.07	2.91**
Couples coping similarity – Catastrophizing	.08	.10	.84
Change over time (Slope)	-.00	.01	-.11

Note: * = $p < .05$, ** = $p < .01$, covariates (patient gender and age) were included in the baseline model at but not displayed in the table.

Table 24

Coping self-statements predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	7.64	.87	8.78**
Coping self-statements – patient	-.04	.07	-.61
Coping self-statements – spouse	.02	.07	.27
Couples coping similarity – Coping self-statements	-.07	.08	-.92
Change over time (Slope)	-.00	.01	-.16

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 25

Diverting attention predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	7.73	.82	9.49**
Diverting attention – patient	.08	.06	1.38
Diverting attention – spouse	.01	.06	.19
Couples coping similarity – Diverting attention	-.09	.08	-1.19
Change over time (Slope)	-.00	.01	-.16

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 26

Increasing behavioral activity predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	6.58	.89	7.35**
Increasing behavioral activity – patient	.03	.07	.36
Increasing behavioral activity – spouse	.04	.07	.57
Couples coping similarity – Increasing behavioral activity	.05	.01	.59
Change over time (Slope)	-.00	.01	-.16

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 27

Ignoring pain sensations predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	7.68	.93	8.24**
Ignoring pain sensations – patient	.04	.06	.62
Ignoring pain sensations – spouse	.14	.06	2.20*
Couples coping similarity – Ignoring pain sensations	-.05	.07	-.72
Change over time (Slope)	-.00	.01	-.15

Note: * = $p < .05$, ** = $p < .01$, covariates (patient age and gender) were included in the baseline model but not displayed in the table.

Table 28

Praying-hoping predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	7.04	.86	8.16**
Praying-hoping – patient	.08	.07	1.19
Praying-hoping – spouse	-.01	.06	-.27
Couples coping similarity – Praying-hoping	-.00	.08	-.05
Change over time (Slope)	-.00	.01	-.15

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 29

Reinterpreting pain sensations predicting punishing spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	5.35	.82	6.54**
Reinterpreting pain sensations – patient	02	08	.30
Reinterpreting pain sensations – spouse	.00	.07	.00
Couples coping similarity – Reinterpreting pain sensations	.22	.08	2.66**
Change over time (Slope)	-.00	.01	-.17

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 30

Time-only model predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	21.58	.86	25.22**
Change over time (Slope)	-.01	.01	-.54
Random effects	Variance	*SD*	Chi-square (df = 99)
Baseline (Intercept)	67.33	8.21	671.95**
Change over time (Slope)	.01	.10	199.79**

Table 31

Catastrophizing predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	21.65	1.42	15.27**
Catastrophizing – patient	.23	.14	1.62
Catastrophizing - spouse	-.26	.14	-1.86
Couples coping similarity – Catastrophizing	-.01	.18	-.07
Change over time (Slope)	-.01	.02	-.44
Catastrophizing – patient	.00	.00	.93
Catastrophizing - spouse	-.00	.00	-.72
Couples coping similarity – Catastrophizing	.00	.00	.12

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 32

Coping self-statements predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	20.77	1.48	14.03**
Coping self-statements – patient	.02	.12	.14
Coping self-statements – spouse	.04	.11	.31
Couples coping similarity – Coping self-statements	.09	.14	.67
Change over time (Slope)	-.01	.02	-.40
Coping self-statements – patient	-.00	.00	-1.25
Coping self-statements – spouse	-.00	.00	-1.14
Couples coping similarity – Coping self-statements	.00	.00	.12

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 33

Diverting attention predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	22.51	1.33	16.88**
Diverting attention – patient	.31	.10	2.90**
Diverting attention – spouse	.00	.11	.01
Couples coping similarity – Diverting attention	-.11	.13	-.86
Change over time (Slope)	.05	.03	1.83
Diverting attention – patient	-.00	.00	-1.39
Diverting attention – spouse	.00	.00	2.52*
Couples coping similarity – Diverting attention	-.00	.00	-1.85

Note: * = $p < .05$, ** = $p < .01$, covariates (patient gender) were included in the longitudinal model but not displayed in the table.

Table 34

Increasing behavioral activity predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	23.27	1.50	15.55**
Increasing behavioral activity – patient	.22	.12	1.76
Increasing behavioral activity – spouse	-.02	.12	-.18
Couples coping similarity – Increasing behavioral activity	-.21	.16	-1.36
Change over time (Slope)	-.00	.02	-.20
Increasing behavioral activity – patient	-.00	.00	-.39
Increasing behavioral activity – spouse	.00	.00	1.81
Couples coping similarity – Increasing behavioral activity	-.00	.00	-.24

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 35

Ignoring pain sensations predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	20.40	1.41	14.42**
Ignoring pain sensations – patient	-.09	.11	-.80
Ignoring pain sensations – spouse	-.18	.11	-1.57
Couples coping similarity – Ignoring pain sensations	.13	.13	1.04
Change over time (Slope)	-.02	.02	-.89
Ignoring pain sensations – patient	.00	.00	1.02
Ignoring pain sensations – spouse	.00	.00	.60
Couples coping similarity – Ignoring pain sensations	.00	.00	.70

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 36

Praying-hoping predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	21.35	1.43	14.90**
Praying-hoping – patient	.23	.12	1.97*
Praying-hoping – spouse	.02	.10	.22
Couples coping similarity – Praying-hoping	.03	.14	.19
Change over time (Slope)	-.03	.02	-1.30
Praying-hoping – patient	-.00	.00	-.14
Praying-hoping – spouse	.00	.00	1.42
Couples coping similarity – Praying-hoping	.00	.00	1.16

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 37

Reinterpreting pain sensations predicting instrumental spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	23.43	1.40	16.77**
Reinterpreting pain sensations – patient	.29	.14	2.02*
Reinterpreting pain sensations – spouse	.23	.13	1.75
Couples coping similarity – Reinterpreting pain sensations	-.25	.15	-1.66
Change over time (Slope)	-.00	.02	-.23
Reinterpreting pain sensations – patient	.00	.00	.41
Reinterpreting pain sensations – spouse	.00	.00	.18
Couples coping similarity – Reinterpreting pain sensations	-.00	.00	-.15

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 38

Time-only model predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	9.52	.54	17.85**
Change over time (Slope)	.01	.01	.88
Random effects	Variance	*SD*	Chi-square (df = 99)
Baseline (Intercept)	24.94	4.99	454.00**
Change over time (Slope)	.00	.07	177.03**

Table 39

Catastrophizing predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	9.52	.53	18.10**
Catastrophizing – patient	.17	.09	1.83
Catastrophizing - spouse	-.13	.09	-1.48
Couples coping similarity – Catastrophizing	-.01	.11	-.12
Change over time (Slope)	.01	.01	.90
Catastrophizing – patient	-.00	.00	-.32
Catastrophizing - spouse	-.00	.00	-.90
Couples coping similarity – Catastrophizing	-.00	.00	-.22

Note: * = $p < .05$, ** = $p < .01$, covariates (length of marriage) were included in the baseline model but not displayed in the table.

Table 40

Coping self-statements predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	8.97	.93	9.62**
Coping self-statements – patient	.08	.07	1.01
Coping self-statements – spouse	.01	.07	.19
Couples coping similarity – Coping self-statements	.06	.09	.73
Change over time (Slope)	.01	.02	.62
Coping self-statements – patient	-.00	.00	-.97
Coping self-statements – spouse	-.00	.00	-.87
Couples coping similarity – Coping self-statements	-.00	.00	-.12

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 41

Diverting attention predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	9.67	.76	12.71**
Diverting attention – patient	.31	.06	5.10**
Diverting attention – spouse	.07	.06	1.05
Couples coping similarity – Diverting attention	-.02	.08	-.24
Change over time (Slope)	.02	.02	1.50
Diverting attention – patient	-.00	.00	-1.34
Diverting attention – spouse	-.00	.00	-.16
Couples coping similarity – Diverting attention	-.00	.00	-1.19

Note: * = $p < .05$, ** = $p < .01$, covariates (length of marriage) were included in the baseline model but not displayed in the table.

Table 42

Increasing behavioral activity predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	9.88	.89	11.07**
Increasing behavioral activity – patient	.24	.07	3.20**
Increasing behavioral activity – spouse	.10	.07	1.31
Couples coping similarity – Increasing behavioral activity	-.04	.09	-.48
Change over time (Slope)	.01	.02	.55
Increasing behavioral activity – patient	-.00	.00	-.41
Increasing behavioral activity – spouse	-.00	.00	-.90
Couples coping similarity – Increasing behavioral activity	-.00	.00	-.01

Note: * = $p < .05$, ** = $p < .01$, covariates (length of marriage) were included in the baseline model but not displayed in the table.

Table 43

Ignoring pain sensations predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	8.93	.90	9.86**
Ignoring pain sensations – patient	.05	.07	.68
Ignoring pain sensations – spouse	-.02	.07	-.33
Couples coping similarity – Ignoring pain sensations	.07	.08	.82
Change over time (Slope)	.01	.02	.41
Ignoring pain sensations – patient	-.00	.00	-.72
Ignoring pain sensations – spouse	-.00	.00	-.15
Couples coping similarity – Ignoring pain sensations	.00	.00	.14

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 44

Praying-hoping predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	8.98	.86	10.38**
Praying-hoping – patient	.20	.07	2.82**
Praying-hoping – spouse	.01	.06	.14
Couples coping similarity – Praying-hoping	.07	.09	.78
Change over time (Slope)	.02	.02	1.03
Praying-hoping – patient	-.00	.00	-.63
Praying-hoping – spouse	.00	.00	.04
Couples coping similarity – Praying-hoping	-.00	.00	-.62

Note: * = $p < .05$, ** = $p < .01$, covariates (length of marriage) were included in the baseline model but not displayed in the table.

Table 45

Reinterpreting pain sensations predicting distracting spouse responses

	b	*SE*	*t*
Fixed effects			
Baseline (Intercept)	10.31	.83	12.27**
Reinterpreting pain sensations – patient	.29	.08	3.49**
Reinterpreting pain sensations – spouse	.18	.08	2.37*
Couples coping similarity – Reinterpreting pain sensations	-.08	.09	-.93
Change over time (Slope)	.02	.02	1.10
Reinterpreting pain sensations – patient	-.00	.00	-.95
Reinterpreting pain sensations – spouse	-.00	.00	-.72
Couples coping similarity – Reinterpreting pain sensations	-.00	.00	-.63

Note: * = $p < .05$, ** = $p < .01$, covariates (length of marriage) were included in the baseline model but not displayed in the table.

Table 46

Time-only model predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	80.31	1.92	41.81**
Spouse baseline (Intercept)	77.05	1.9	39.84**
Patient change over time (Slope)	.10	.03	2.94**
Spouse change over time (Slope)	.06	.03	1.71
Random effects	Variance	*SD*	Chi-square (df = 99)
Patient baseline (Intercept)	302.83	17.40	414.65**
Spouse baseline (Intercept)	308.31	17.56	435.80**
Patient change over time (Slope)	.03	.17	134.14*
Spouse change over time (Slope)	.03	.17	133.37*

Table 47

Catastrophizing predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	81.83	2.80	29.27**
Catastrophizing – patient	1.33	.28	4.73**
Catastrophizing - spouse	.19	.28	.68
Couples coping similarity – Catastrophizing	-.25	.37	-.67
Spouse baseline (Intercept)	77.81	2.90	26.86**
Catastrophizing – patient	.03	.29	.10
Catastrophizing - spouse	1.40	.28	4.97**
Couples coping similarity – Catastrophizing	-.12	.38	-.32
Patient change over time (Slope)	.10	.05	1.82
Catastrophizing – patient	-.00	.01	-.28
Catastrophizing - spouse	.01	.00	1.39
Couples coping similarity – Catastrophizing	.00	.01	.01
Spouse change over time (Slope)	.07	.05	1.26
Catastrophizing – patient	.00	.01	.79
Catastrophizing - spouse	.00	.00	.65
Couples coping similarity – Catastrophizing	-.00	.01	-.23

Note: * = $p < .05$, ** = $p < .01$, covariate (age of patient) was included in the model at patient baseline but not displayed in the table.

Table 48

Coping self-statements predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	80.46	2.93	27.49**
Coping self-statements – patient	-1.17	.24	-4.97**
Coping self-statements – spouse	.02	.23	.07
Couples coping similarity – Coping self-statements	-.01	.28	-.05
Spouse baseline (Intercept)	75.68	3.28	23.06**
Coping self-statements – patient	-.37	.26	-1.39
Coping self-statements – spouse	-.39	.26	-1.54
Couples coping similarity – Coping self-statements	.17	.31	.54
Patient change over time (Slope)	.11	.06	2.34*
Coping self-statements – patient	.01	.00	1.69
Coping self-statements – spouse	.01	.00	1.46
Couples coping similarity – Coping self-statements	-.00	.00	-.38
Spouse change over time (Slope)	.15	.05	2.80**
Coping self-statements – patient	.00	.00	.66
Coping self-statements – spouse	.01	.00	1.85
Couples coping similarity – Coping self-statements	-.01	.00	-2.22*

Note: * = $p < .05$, ** = $p < .01$, covariate (age of patient) was included in the model at patient baseline but not displayed in the table.

Table 49

Diverting attention predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	83.32	3.09	26.99**
Diverting attention – patient	.09	.24	.39
Diverting attention - spouse	.06	.25	.23
Couples coping similarity – Diverting attention	-.39	.31	-1.26
Spouse baseline (Intercept)	77.07	3.13	24.61**
Diverting attention – patient	-.10	.25	-.42
Diverting attention - spouse	-.04	.26	-.15
Couples coping similarity – Diverting attention	-.00	.31	-.01
Patient change over time (Slope)	.10	.05	1.90
Diverting attention – patient	.01	.00	2.14*
Diverting attention - spouse	.00	.00	.13
Couples coping similarity – Diverting attention	-.00	.00	-.14
Spouse change over time (Slope)	.08	.05	1.43
Diverting attention – patient	.01	.00	2.08*
Diverting attention - spouse	-.01	.00	-1.43
Couples coping similarity – Diverting attention	-.00	.00	-.39

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 50

Increasing behavioral activity predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	81.03	3.40	23.80**
Increasing behavioral activity – patient	-.25	.28	-.89
Increasing behavioral activity – spouse	.02	.28	.07
Couples coping similarity – Increasing behavioral activity	-.09	.36	-.25
Spouse baseline (Intercept)	76.47	3.41	22.39**
Increasing behavioral activity – patient	-.26	.29	-.91
Increasing behavioral activity – spouse	-.28	.28	-1.01
Couples coping similarity – Increasing behavioral activity	.08	.36	.21
Patient change over time (Slope)	.14	.06	2.48*
Increasing behavioral activity – patient	.01	.00	1.44
Increasing behavioral activity – spouse	.00	.00	.56
Couples coping similarity – Increasing behavioral activity	-.01	.01	-1.02
Spouse change over time (Slope)	.12	.06	2.13*
Increasing behavioral activity – patient	.01	.00	2.02*
Increasing behavioral activity – spouse	.00	.00	.39
Couples coping similarity – Increasing behavioral activity	-.01	.01	-1.41

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 51

Ignoring pain sensations predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	82.69	3.04	27.23**
Ignoring pain sensations – patient	-.67	.25	-2.72**
Ignoring pain sensations – spouse	-.09	.25	-.37
Couples coping similarity – Ignoring pain sensations	-.27	.28	-.99
Spouse baseline (Intercept)	80.43	3.21	25.02**
Ignoring pain sensations – patient	-.08	.26	-.32
Ignoring pain sensations – spouse	.12	.26	.47
Couples coping similarity – Ignoring pain sensations	-.38	.29	-1.29
Patient change over time (Slope)	.07	.05	1.33
Ignoring pain sensations – patient	.01	.00	1.38
Ignoring pain sensations – spouse	.00	.00	.25
Couples coping similarity – Ignoring pain sensations	.00	.00	.55
Spouse change over time (Slope)	.13	.05	2.34*
Ignoring pain sensations – patient	.00	.00	.23
Ignoring pain sensations – spouse	.00	.00	.78
Couples coping similarity – Ignoring pain sensations	-.01	.00	-1.69

Note: * = $p < .05$, ** = $p < .01$, covariate (age of patient) was included in the model at patient baseline but not displayed in the table.

Table 52

Praying-hoping predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	84.11	3.24	25.96**
Praying-hoping – patient	.18	.27	.67
Praying-hoping – spouse	.10	.22	.46
Couples coping similarity – Praying-hoping	-.47	.32	-1.46
Spouse baseline (Intercept)	76.85	3.28	23.40**
Praying-hoping – patient	.24	.27	.90
Praying-hoping – spouse	-.20	.22	-.89
Couples coping similarity – Praying-hoping	.02	.33	.07
Patient change over time (Slope)	.07	.05	1.21
Praying-hoping – patient	.00	.00	.58
Praying-hoping – spouse	.00	.00	.65
Couples coping similarity – Praying-hoping	.00	.00	.67
Spouse change over time (Slope)	.03	.05	.49
Praying-hoping – patient	-.00	.00	-.26
Praying-hoping – spouse	.01	.00	1.69
Couples coping similarity – Praying-hoping	.00	.00	.62

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 53

Reinterpreting pain sensations predicting depressive symptoms

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	77.11	3.19	24.14**
Reinterpreting pain sensations – patient	-.22	.32	-.68
Reinterpreting pain sensations – spouse	-.31	.30	-1.05
Couples coping similarity – Reinterpreting pain sensations	.43	.34	1.25
Spouse baseline (Intercept)	72.69	3.18	22.87**
Reinterpreting pain sensations – patient	.03	.32	.10
Reinterpreting pain sensations – spouse	-.30	.30	-1.02
Couples coping similarity – Reinterpreting pain sensations	.59	.34	1.73
Patient change over time (Slope)	.08	.05	1.44
Reinterpreting pain sensations – patient	.01	.01	1.48
Reinterpreting pain sensations – spouse	.00	.00	.30
Couples coping similarity – Reinterpreting pain sensations	.00	.01	.48
Spouse change over time (Slope)	.10	.05	1.88
Reinterpreting pain sensations – patient	.00	.01	.37
Reinterpreting pain sensations – spouse	.01	.00	1.54
Couples coping similarity – Reinterpreting pain sensations	-.01	.01	-1.11

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 54

Time-only model predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	106.06	1.79	59.20**
Spouse baseline (Intercept)	106.75	1.69	63.25**
Patient change over time (Slope)	-.04	.04	-1.04
Spouse change over time (Slope)	-.02	.03	-.66
Random effects	Variance	*SD*	Chi-square (df = 99)
Patient baseline (Intercept)	284.95	16.88	552.30**
Spouse baseline (Intercept)	246.66	15.70	482.66**
Patient change over time (Slope)	.08	.29	248.20**
Spouse change over time (Slope)	.03	.17	140.26**

Table 55

Catastrophizing predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	104.71	3.00	34.89**
Catastrophizing – patient	.09	.29	.29
Catastrophizing - spouse	-.71	.28	-2.51*
Couples coping similarity – Catastrophizing	-.19	.38	-.50
Spouse baseline (Intercept)	106.45	2.75	8.64**
Catastrophizing – patient	.17	.28	.61
Catastrophizing - spouse	-.64	.27	-2.37*
Couples coping similarity – Catastrophizing	.05	.36	.13
Patient change over time (Slope)	-.10	.06	-1.64
Catastrophizing – patient	-.01	.01	-2.12*
Catastrophizing - spouse	.00	.01	.05
Couples coping similarity – Catastrophizing	.01	.01	1.23
Spouse change over time (Slope)	-.06	.05	-1.40
Catastrophizing – patient	-.01	.00	-1.19
Catastrophizing - spouse	.00	.00	.38
Couples coping similarity – Catastrophizing	.01	.01	1.19

Note: * = $p < .05$, ** = $p < .01$, covariates (age and gender of patient, age of spouse) were included in the model at patient and spouse baseline but not displayed in the table.

Table 56

Coping self-statements predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	103.89	3.03	34.30**
Coping self-statements – patient	.43	.24	1.79
Coping self-statements – spouse	.22	.24	.93
Couples coping similarity – Coping self-statements	.25	.29	.87
Spouse baseline (Intercept)	104.30	2.83	36.82**
Coping self-statements – patient	.44	.23	1.95
Coping self-statements – spouse	.36	.22	1.62
Couples coping similarity – Coping self-statements	.29	.27	1.07
Patient change over time (Slope)	-.05	.06	-.74
Coping self-statements – patient	-.00	.00	-.23
Coping self-statements – spouse	-.01	.00	-2.27*
Couples coping similarity – Coping self-statements	.00	.01	.21
Spouse change over time (Slope)	.01	.05	.16
Coping self-statements – patient	-.01	.00	-1.88
Coping self-statements – spouse	-.00	.00	-.60
Couples coping similarity – Coping self-statements	-.00	.00	-.73

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 57

Diverting attention predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	106.27	2.88	36.87**
Distracting attention – patient	.33	.23	1.44
Distracting attention - spouse	.04	.24	.18
Couples coping similarity – Diverting attention	-.03	.29	-.09
Spouse baseline (Intercept)	104.67	2.73	38.38**
Distracting attention – patient	.03	.21	.14
Distracting attention - spouse	.12	.22	.53
Couples coping similarity – Diverting attention	.27	.27	.99
Patient change over time (Slope)	-.01	.06	-.21
Distracting attention – patient	-.01	.00	-3.38**
Distracting attention - spouse	-.00	.00	-.87
Couples coping similarity – Diverting attention	-.00	.00	-.41
Spouse change over time (Slope)	.04	.05	.77
Distracting attention – patient	-.00	.00	-1.26
Distracting attention - spouse	.00	.00	.69
Couples coping similarity – Diverting attention	-.01	.00	-1.51

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 58

Increasing behavioral activity predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	102.14	3.23	31.61**
Increasing behavioral activity – patient	.62	.25	2.46*
Increasing behavioral activity – spouse	.04	.25	.18
Couples coping similarity – Increasing behavioral activity	.05	.32	.17
Spouse baseline (Intercept)	103.63	2.96	35.01**
Increasing behavioral activity – patient	.16	.25	.65
Increasing behavioral activity – spouse	.10	.24	.43
Couples coping similarity – Increasing behavioral activity	.41	.31	1.30
Patient change over time (Slope)	-.05	.06	-.85
Increasing behavioral activity – patient	-.01	.00	-2.41*
Increasing behavioral activity – spouse	-.01	.00	-1.94
Couples coping similarity – Increasing behavioral activity	.00	.01	.44
Spouse change over time (Slope)	.02	.05	.49
Increasing behavioral activity – patient	-.00	.00	-.72
Increasing behavioral activity – spouse	.00	.00	.85
Couples coping similarity – Increasing behavioral activity	-.01	.00	-1.13

Note: * = $p < .05$, ** = $p < .01$, covariates (gender and age of patient) were included in the model at patient baseline but not displayed in the table.

Table 59

Ignoring pain sensations predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	104.26	2.98	34.95**
Ignoring pain sensations – patient	.13	.24	.55
Ignoring pain sensations – spouse	-.16	.24	-.66
Couples coping similarity – Ignoring pain sensations	.21	.27	.76
Spouse baseline (Intercept)	102.43	2.73	37.55**
Ignoring pain sensations – patient	.23	.22	1.04
Ignoring pain sensations – spouse	-.26	.22	-1.16
Couples coping similarity – Ignoring pain sensations	.49	.25	1.98*
Patient change over time (Slope)	.00	.06	.02
Ignoring pain sensations – patient	.00	.00	.70
Ignoring pain sensations – spouse	-.00	.00	-.87
Couples coping similarity – Ignoring pain sensations	-.00	.01	-.73
Spouse change over time (Slope)	.00	.05	.10
Ignoring pain sensations – patient	-.00	.00	-.19
Ignoring pain sensations – spouse	.00	.00	.54
Couples coping similarity – Ignoring pain sensations	-.00	.00	-.65

Note: * = $p < .05$, ** = $p < .01$, the covariate (age of spouse) was included in the model at spouse baseline but not displayed in the table.

Table 60

Praying-hoping predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	105.02	3.05	34.40**
Praying-hoping – patient	.08	.25	.31
Praying-hoping – spouse	-.13	.21	-.64
Couples coping similarity – Praying-hoping	.12	.30	.41
Spouse baseline (Intercept)	104.97	2.88	36.49**
Praying-hoping – patient	-.00	.24	-.01
Praying-hoping – spouse	-.01	.19	-.06
Couples coping similarity – Praying-hoping	.22	.28	.77
Patient change over time (Slope)	-.16	.06	-2.72**
Praying-hoping – patient	-.01	.00	-1.98*
Praying-hoping – spouse	.00	.00	.22
Couples coping similarity – Praying-hoping	.01	.01	2.58*
Spouse change over time (Slope)	-.06	.05	-1.32
Praying-hoping – patient	-.00	.00	-1.37
Praying-hoping – spouse	.00	.00	.55
Couples coping similarity – Praying-hoping	.00	.00	1.01

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

Table 61

Reinterpreting pain sensations predicting relationship satisfaction

	b	*SE*	*t*
Fixed effects			
Patient baseline (Intercept)	110.58	2.96	37.41**
Reinterpreting pain sensations – patient	.27	.30	.91
Reinterpreting pain sensations – spouse	.23	.28	.82
Couples coping similarity – Reinterpreting pain sensations	-.61	.32	-1.92
Spouse baseline (Intercept)	108.04	2.80	38.64**
Reinterpreting pain sensations – patient	.20	.28	.71
Reinterpreting pain sensations – spouse	-.20	.26	-.77
Couples coping similarity – Reinterpreting pain sensations	-.17	.30	-.57
Patient change over time (Slope)	.02	.06	.33
Reinterpreting pain sensations – patient	.00	.01	.05
Reinterpreting pain sensations – spouse	-.00	.01	-.55
Couples coping similarity – Reinterpreting pain sensations	-.01	.01	-1.19
Spouse change over time (Slope)	.03	.04	.67
Reinterpreting pain sensations – patient	.00	.00	.23
Reinterpreting pain sensations – spouse	.00	.00	.80
Couples coping similarity – Reinterpreting pain sensations	-.01	.00	-1.38

Note: * = $p < .05$, ** = $p < .01$, no covariates were included in the model.

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ABSTRACT

COPING SIMILARITY AND PSYCHOSOCIAL RISK FACTORS IN COUPLES WITH CHRONIC PAIN

by

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Chronic pain is an important public health problem that is associated with a host of negative individual and relationship outcomes. Chronic pain is a chronic stressor that both the individual in pain and their spouse must cope with. The current study examined how pain coping similarity within the couple predicted not only patient adjustment, but also spouse adjustment in a longitudinal study. Participants were 108 heterosexual couples in which one partner had chronic pain. The participants completed measures at 3 time points at 6 month intervals. Both the patient and spouse individually completed questionnaires pertaining to their marriage, mood, pain and relationship. The sample was diverse for both patients (41.7% Caucasian, 47.2% African-American), and spouses (41.7% Caucasian, 46.3% African-American). The gender of the patients was balanced with 45.4% male (n = 49). The average ages of patients and spouses were 52.29 years and 52.00 years, respectively, and were married an average of 21.26 years. Patients reported average pain duration of 11.72 years.

Overall, there were sparse findings in regards to couples coping similarity; however, the findings on each partner's coping strategies and adjustment were more

plentiful. The current study found that patients' self-reported coping strategies were associated with concurrent patient-reported adjustment. Further, both patients' and spouses' coping strategies were generally predictive of patient and spouse adjustment over time.

A majority of the previous research on coping strategies has focused on concurrent associations between one's own coping and individual adjustment (i.e., pain and depressive symptoms) in patients and the current study supports many of these findings. The current study takes previous research further by examining similarity, spouse adjustment, perceived spousal support, and patient and spouse adjustment over time. It has also examined possible contributing variables to previous findings (i.e., relationship adjustment, perceived spousal support, and spousal adjustment) in an effort to capture the psychosocial complexities of chronic pain. Finally, this is the first study to examine coping and perceived spousal support in couples with chronic pain. Results have implications for research and practice that focuses on patient and their families as well as identifying strategies that best relate to adjustment.

AUTOBIOGRAPHICAL STATEMENT

Amy Margaret Williams received a Bachelor of Science degree in 2001 from the University of Guelph in Guelph, Ontario where she majored in Reproductive Biology and minored in Psychology. She has also received a Bachelor of Arts degree in 2007 from Simon Fraser University in Burnaby, British Columbia where she majored in Psychology and minored in Counseling. She is currently in the Clinical Psychology Doctoral Program at Wayne State University, specializing in Health Psychology, and is completing her internship and post-doctoral fellowship at Geisinger Medical Center in Pennsylvania. Her primary interests are how physical conditions, especially chronic pain and infertility, influence mental health and interpersonal relationships.