

**DEVELOPMENT AND VALIDATION OF THE PARTNER
ACCEPTANCE SCALE FOR CHRONIC PAIN (PAS-CP)**

by

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Abstract

Background: Chronic pain has a significant impact on patients and their romantic partners. The benefits of chronic pain acceptance for patients are well-established; however, partner chronic pain acceptance has been under researched. One recent study identified five themes thought to characterize partner pain acceptance, but no theoretically and psychometrically sound measure of the construct currently exists.

Objective: To address this gap in the literature, the current project aimed to develop and validate a new self-report measure, the Partner Acceptance Scale for Chronic Pain (PAS-CP).

Method: In Study 1, the PAS-CP item pool was generated, reviewed by five acceptance experts (Part A), and pilot tested on nine partners (Part B). In Study 2, 217 adult partners (48.8% male) completed the PAS-CP and measures of depression, anxiety, stress, relationship satisfaction, and experiential acceptance via an online survey. The item pool was then submitted to an exploratory factor analysis (EFA) and preliminary psychometric properties of the PAS-CP were evaluated.

Results: In Study 1, chronic pain acceptance experts and partners provided feedback that was used to revise existing PAS-CP items (e.g., improve clarity and conciseness), create new items (e.g., to capture different aspects of acceptance), and improve the scale's response options. In Study 2, EFA resulted in the creation of the PAS-CP-13, a 13-item measure with two factors, good reliability, and modest concurrent and convergent validity; however, examination of the PAS-CP-13 factors revealed it did not adequately measure the full scope of the acceptance construct, but rather measured partners' engagement in values-driven action regardless of the patient's chronic pain and partners'

understanding of the chronicity of their spouse's chronic pain. This finding suggests the PAS-CP-13 has inadequate content validity.

Conclusions: Although the PAS-CP-13 is not yet suitable for use in research and clinical practice, the current dissertation contributed to the advancement of partner pain acceptance conceptualization and highlighted a number of improvements that can be made to future scale development efforts. Clinically, these findings confirm a proportion of partners experience clinically significant psychological distress and/or low relationship satisfaction and may be in need of psychotherapy to help them adjust to their spouse's chronic pain.

Dedication

Early on in this project, when I was asking partners how they had been affected by their spouse's chronic pain, many took pause. Numerous partners told me that no one had ever asked them that question before. After some thought, however, they would share in great detail how chronic pain had affected almost every aspect of their lives, as individuals and as couples. One participant in particular said something that stuck with me. She called herself the "silent partner", who is indirectly affected by chronic pain on a daily basis but refrains from talking about what it is like for her because her husband with chronic pain "has it so much worse". Her words inspired me to dedicate this manuscript to all the "silent partners" whose sacrifices, distress, resilience, and commitment often go unrecognized. I hope this work sheds light on the experiences of partners in the context of chronic pain and leads to better supports for partners and patients alike.

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Chapter 1: Introduction

1.1 Overview

Chronic pain is a highly prevalent medical condition that affects approximately 1 in 5 Canadian adults (Schopflocher et al., 2011). The pervasive negative impact of chronic pain on patients' physical and mental health, as well as their daily activities, recreational/social involvement, occupational functioning, financial stability, and health care service utilization is well documented (Burke et al., 2015; Dueñas et al., 2016). Given that individuals with chronic pain are embedded in their social context, the condition also has significant consequences for their romantic partners¹ (Dueñas et al., 2016). Research has repeatedly highlighted various physical, psychological, and functional costs incurred by romantic partners as a result of chronic pain, including a greater number of somatic symptoms and reported medical conditions, greater subjective distress, and an increased incidence of anxiety and depression (Ahern & Follick, 1985; Dueñas et al., 2016; Flor et al., 1987; Schwartz & Ehde, 2000; West et al., 2012).

Chronic pain can also negatively affect the quality of the romantic relationship. Research has consistently demonstrated that chronic pain can contribute to reductions in relationship and sexual satisfaction for patients and partners, poor pain-related communication, and lack of shared social/recreational activities (Flor et al., 1987; Maruta et al., 1981; Matheson et al., 2010; Porter et al., 2008). In turn, relationship dissatisfaction, the most commonly cited metric of relationship functioning, has been associated with a number of negative patient and partner outcomes (Leonard et al., 2006).

¹ To maintain consistency and clarity in the text, the term "patient" will be used to refer to the individual in the relationship with chronic pain, while the term "partner" will be used to refer to the individual in the relationship without chronic pain.

Promisingly though, patients and partners in more satisfying unions report better physical, emotional, cognitive, and behavioural functioning, suggesting higher levels of relationship satisfaction are associated with improved outcomes (Cano et al., 2004; Flor et al., 1987; Leonard et al., 2006; Stark Taylor et al., 2013).

Given the pervasive negative impact of chronic pain on patients, partners, and romantic relationships, there is value in exploring constructs that may promote positive adjustment to chronic pain at the individual and relationship levels. Acceptance may be one such construct. Although there are numerous definitions of acceptance with varying levels of specificity, the broadest form is experiential acceptance, which involves purposefully embracing personal experiences as they are without trying to change or avoid them (Hayes et al., 2006). McCracken, Vowles, and Eccleston (2004) extended Hayes' early work to the realm of chronic pain and defined chronic pain acceptance as refraining from attempts to change, control, or avoid pain so one's energy can be redirected toward valued life activities. Since then, the Chronic Pain Acceptance Questionnaire (CPAQ), a measure designed to reflect the McCracken and colleagues' definition of chronic pain acceptance, has been used to explore the benefits of acceptance for patients with chronic pain (Reneman et al., 2010). Research using this tool has consistently demonstrated that chronic pain acceptance is positively related to patients' physical, emotional, social, and occupational functioning (McCracken & Eccleston, 2005; Reneman et al., 2010). Moreover, acceptance-based therapies appear to be moderately effective for reducing pain intensity, depression, and anxiety, while also increasing physical well-being and quality of life in individuals with chronic pain (Veehof et al., 2016).

Despite the known benefits of acceptance for patients with chronic pain, very little research has explored acceptance of chronic pain from the partner's perspective. Only two studies to date have examined the relationship between partner acceptance and partner outcomes in the context of a spouse's medical condition, but neither study focused on diverse types of chronic pain and both studies used unvalidated measures of partner acceptance (Boerner & Rosen, 2015; Pakenham & Samios, 2013). Therefore, my Ph.D. Apprenticeship² research project used qualitative research methods to identify the features of partner acceptance of chronic pain in the context of arthritis. Based on partners' accounts, five themes characterizing partner acceptance were identified: (1) Understanding the Nature of Arthritis, (2) Believing in the Authenticity of the Patient's Pain, (3) Letting Go of Negative Feelings, (4) Making Practical Adjustments, and (5) Engaging in Pleasurable Activities. Comparison of these themes to existing theories of experiential acceptance and patient chronic pain acceptance revealed some similarities; however, there were also unique aspects of partner acceptance of chronic pain, providing preliminary evidence that partner acceptance is a distinct construct that merits its own theory and measurement tool.

The overall goal of the current dissertation was to develop and validate a self-report questionnaire that assesses partners' acceptance of their spouses' chronic pain based on the themes identified in my previous work. The measure will hereafter be referred to as the Partner Acceptance Scale for Chronic Pain (PAS-CP). As a means of providing a basis for the PAS-CP, an extensive review of the literature was completed.

² At the University of New Brunswick, clinical psychology students complete a Ph.D. Apprenticeship project during their first two years of study. The project involves designing, conducting, analyzing, and writing up an independent research study, similar in scope to a Master's Thesis.

This review is divided into three main sections: (1) an introduction to chronic pain and its impacts on patients, partners, and couple relationships; (2) a review of the leading theories of patient acceptance and a newly proposed conceptualization of partner chronic pain acceptance; and (3) a step-by-step breakdown of the scale development process. The current project was conducted in two phases and followed scale development best practice guidelines (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006). In Study 1 (the development phase), the PAS-CP item pool was generated, reviewed by experts in the field (Part A), and pilot tested on a small sample of partners in the community (Part B). The PAS-CP was adapted based on the feedback provided by experts and the pilot sample. In Study 2 (the validation phase), a large sample of partners completed the PAS-CP and other measures of partner functioning (e.g., depression, anxiety, stress, relationship satisfaction) via an online survey. Subsequently, the factor structure and psychometric properties (e.g., reliability, validity) of the PAS-CP were evaluated.

1.2 Chronic Pain

The most common reason for seeking health care services in North America is pain, which is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Merskey & Bogduk, 1994, p. 212; Todd et al., 2007). Acute pain is a protective mechanism that warns an individual when tissue damage has occurred so action can be taken to prevent further harm (Melzack & Wall, 2008). Acute pain can last for days, weeks, or months depending on the nature of the tissue damage, but normally diminishes as the initial injury heals (Merskey & Bogduk, 1994). A proportion of people with acute pain,

however, go on to experience chronic pain that has no adaptive purpose and persists past the normative 3-6 month healing period (Melzack & Wall, 2008; Merskey & Bogduk, 1994).

Chronic pain affects approximately 1 in 5 Canadian adults and is the most common cause of disability in Canada (Moulin et al., 2002; Schopflocher et al., 2011). Although chronic pain affects individuals from all age groups, rates of chronic pain increase across the lifespan with the highest rates reported by older adults (Moulin et al., 2002; Schopflocher et al., 2011). Chronic pain affects both men and women, but prevalence rates become significantly higher in women with age (Badley et al., 2019; Statistics Canada, 2013). Chronic pain severity, frequency, and prognosis vary based on underlying etiology (Merskey & Bogduk, 1994). The most commonly reported causes of chronic pain in Canada are arthritis/joint pain (e.g., rheumatoid arthritis, osteoarthritis), spinal pain (e.g., neck pain, upper or lower back pain), physical trauma (e.g., broken bones), neuropathic pain syndromes (e.g., post-surgical pain, diabetic neuropathy), headaches/migraines, muscle pain syndromes (e.g., fibromyalgia), abdominal/visceral pain (e.g., angina), and post-cancer pain (Schopflocher et al., 2011). Most individuals with chronic pain report experiencing pain at more than one location in their body and some conditions (e.g., fibromyalgia, rheumatoid arthritis) are characterized by widespread pain. Chronic pain often has an unstable course and, in some cases, can be progressive (Merskey & Bogduk, 1994).

By definition, chronic pain can be managed but not eliminated (Merskey & Bogduk, 1994). Pharmacological intervention is often the first line treatment approach, but the exact medications prescribed depend on whether the patient's pain is nociceptive

(i.e., somatic or visceral pain that occurs when pain receptors are activated, signaling tissue trauma) or neuropathic (i.e., pain that occurs as a result of damage or dysfunction of the nerves of the central or peripheral nervous systems; Chapman & Okifuji, 2004). Non-pharmacological treatments such as physiotherapy, massage therapy, and psychotherapy are also utilized in some cases (Choiniere et al., 2010).

In the past, research focused primarily on the pervasive effects of chronic pain on patients; however, the last few decades have seen increased interest in the consequences of chronic pain for partners and romantic relationships (Roy, 2006). Chronic pain is now conceptualized as a direct dyadic stressor – a stressor that affects both patients and partners simultaneously, although in different ways (Bodenmann, 2005). Understanding the impacts of chronic pain for patients, partners, and relationships is valuable because it highlights the complex adjustment process that must take place at the individual and relationship levels. Specifically, when a dyadic stressor is encountered, it stimulates individual coping efforts, but also dyadic coping strategies such as a joint problem-solving process and shared emotion-focused coping activities (Bodenmann, 2005).

Impact of Chronic Pain on Patients

Chronic pain has a pervasive negative influence on those who experience it and is consistently associated with significant disability and reduced quality of life (Choiniere et al., 2010; Statistics Canada, 2013). In fact, one large-scale study found individuals with chronic pain reported poorer health-related quality of life compared to the Canadian general public, as well as to those with other chronic illnesses such as chronic lung disease, heart disease, and diabetes (Choiniere et al., 2010). The negative effects of chronic pain on patients' physical well-being are well established. Although level of

physical impairment varies with the nature of the chronic pain condition and the bodily regions affected, most patients experience a combination of pain, stiffness, inflammation, numbness, tingling, and fatigue (Melzack & Wall, 2008). These symptoms can make even the most routine movements difficult (e.g., walking, bending, reaching) and can limit patients' mobility (Choiniere et al., 2010). In some cases, individuals with chronic pain may avoid exertion or exercise due to fear it will exacerbate their pain. In turn, this avoidance can lead to weight gain, physical deconditioning, and deteriorating mobility (Crombez et al., 1999; Vlaeyen & Linton, 2000). Sleep disturbance (i.e., difficulty falling or staying asleep) is another issue commonly reported by those with chronic pain (Choiniere et al., 2010; Goral et al., 2010; Tang et al., 2015). Research has demonstrated a reciprocal relationship between chronic pain and sleep, such that persistent pain makes it difficult for patients to sleep comfortably, yet poor sleep quality is associated with greater pain severity (Choiniere et al., 2010).

Chronic pain is also known to have a negative impact on patients' psychological well-being and enjoyment of life (Burke et al., 2015; Choiniere et al., 2010). Chronic pain has been associated with a host of negative emotions, including anger, sadness, hopelessness, shame, guilt, fear, and anxiety (Burke et al., 2015; Dow et al., 2012; Tang & Crane, 2006; Turner-Cobb et al., 2015). It has also been linked to low self-esteem and self-efficacy (Burke et al., 2015). Moreover, individuals with chronic pain typically report more symptoms of depression and anxiety compared to members of the general public (Badley et al., 2019; Breivik et al., 2006; Burke et al., 2015; Choiniere et al., 2010; Demyttenaere et al., 2007). Relatedly, up to one-third of individuals with chronic pain experience suicidal ideation and those with chronic pain are two-times more likely to die

by suicide compared to members of the general public (Ratcliffe et al., 2008; Tang & Crane, 2006). Alcohol and substance use disorders also occur at higher rates in chronic pain populations (Demyttenaere et al., 2007). These mental health problems can have a direct negative impact on patients' functional abilities, but may also indirectly increase impairment by contributing to the worsening of their chronic pain (Holzberg et al., 1996).

The physical and psychological sequelae of chronic pain interfere with various aspects of daily living (Choiniere et al., 2010; O'Donnell et al., 2010). Chronic pain can have a negative effect on patients' self-care activities (e.g., functional mobility, bathing, grooming, exercise), as well as their ability to manage their households (e.g., vacuuming, shoveling snow, bending or kneeling to bathe children, reaching into the laundry machine; O'Donnell et al., 2010). Furthermore, individuals with chronic pain often report poorer recreational and social functioning (Choiniere et al., 2010; O'Donnell et al., 2010; Packham & Hall, 2002). Pain may preclude patients from engaging in physically demanding leisure activities or deter them from participating in social gatherings.

Chronic pain also has a significant impact on patients' vocational functioning. More specifically, pain, fatigue, and poor mobility give rise to a variety of employment challenges (Breivik et al., 2006; Karoly et al., 2013; Kemler & Furnée, 2002; Patel et al., 2012). A majority of patients with chronic pain go to work even when they feel unwell (i.e., presenteeism) which results in lower levels of productivity in the workplace (Karoly et al., 2013; Patel et al., 2012). In contrast, a portion of patients will have to temporarily (i.e., absenteeism) or permanently discontinue working (i.e., disability, early retirement) as a result of their illness (Patel et al., 2012). In most cases, being less able or unable to

work has significant financial ramifications for patients and their families (Guerriere et al., 2010; Kemler & Furnée, 2002).

Individuals with chronic pain also exhibit increased levels of health care service utilization compared to members of the general public (Bombardier et al., 2011; Goral et al., 2010; Guerriere et al., 2010; O'Donnell et al., 2010; Todd et al., 2007). Patients with chronic pain are more likely to be hospitalized, require multiple primary care visits, seek out medical specialists, and engage with a variety of health care professions (Badley et al., 2019; Breivik et al., 2006; Choiniere et al., 2010). They also require a greater number of prescription medications (Choiniere et al., 2010). Although a proportion of these medical services are publicly funded by the Canadian government or privately funded by insurance companies, patients often pay significant sums out-of-pocket, which adds to the financial strain they experience as a result of lost employment income (Guerriere et al., 2010).

Impact of Chronic Pain on Partners

Given that individuals with chronic pain are embedded in their social context, their condition also has a significant impact on their romantic partners (Dueñas et al., 2016; Hadjistavropoulos et al., 2011). Research has consistently shown that being in a committed relationship with someone who has chronic pain takes a physical and psychological toll and often requires significant lifestyle modifications (Ahern & Follick, 1985; Dueñas et al., 2016; Flor et al., 1987; Roy, 2006; Schwartz et al., 1991; Soderberg et al., 2003; West et al., 2012). Although the specific effects on partners may differ based on the patient's chronic pain symptoms and functional limitations, the costs of chronic

pain imposed on partners seem to be relatively consistent regardless of the etiology of the patient's pain (Breivik et al., 2006).

Several studies have demonstrated the negative effect of patients' chronic pain on partners' physical health. In an early investigation, Block (1981) found partners showed significant increases in skin conductance (and heart rate increases fell near statistical significance) when viewing their spouse's pain behaviours compared to behaviours unrelated to pain. Moreover, partners' physiological responses were more pronounced for those who reported greater marital satisfaction. These findings suggest that seeing a loved one in pain has a direct physiological impact on partners, especially when there is a strong marital bond. Most recently, Bigatti and Cronan (2002) found male partners of women with fibromyalgia reported increased subjective stress, a greater number of physical symptoms (e.g., pain, fatigue, nausea), and significantly more medical conditions (e.g., high blood pressure, heart disease, diabetes) compared to partners of healthy controls. In another study, partners of patients with chronic pain reported similar physical symptoms (e.g., fatigue, nausea, indigestion, dizziness) to spouses of patients with diabetes; however, they showed significantly more pain symptoms (e.g., headaches, chest pains, back/neck pain, extremity pains; Flor et al., 1987). Together these findings indicate that patients' chronic pain has the potential to contribute to the ill health of partners, possibly via prolonged increases in physiological arousal (Block, 1981). In other words, if partners are unable to manage chronic stress associated with their spouse's chronic pain condition, then this stress can tax the partner's bodily resources and thereby contribute to a number of serious health conditions in the long-term, such as immune suppression, sleep problems, and high blood pressure (Baum & Posluszny, 1999;

Schwartz & Ehde, 2000). Alternatively, partners with pre-existing health conditions may find their symptoms exacerbated by the stress of the patient's chronic pain (Schwartz & Ehde, 2000). Regardless of whether partners' physical symptoms are a result of, or existed prior to, the patient's chronic pain, partners in this situation face the added challenge of managing their own physical symptoms as well as the patient's (Danoff-Burg & Revenson, 2000). This issue is particularly salient as patients and partners approach older adulthood, a period where health issues often arise (Danoff-Burg & Revenson, 2000).

Patients' chronic pain also can be detrimental to their partners' emotional well-being. Partners often experience substantial subjective distress, including feelings of frustration, anger, resentment, guilt, loss, anxiety, fear, and loneliness (Bigatti & Cronan, 2002; Danoff-Burg & Revenson, 2000; Matheson et al., 2010; Rowat & Knafl, 1985; Schwartz & Ehde, 2000; West et al., 2012). For example, partners may feel frustrated with patients' physical limitations and changes in mood, worried about the uncertainty of the future, and guilty about asking patients to contribute more than they have been doing (Danoff-Burg & Revenson, 2000; West et al., 2012). Helplessness also appears to be a key contributor to emotional distress in partners, as Rowat and Knafl (1985) found that a lack of perceived control over patients' chronic pain was associated with greater partner distress. Furthermore, partners may encounter an approach-avoidance conflict, wherein they feel the desire to provide comfort to their spouse who is suffering, but are simultaneously pushed away by the patient's negative affect (Riemsma et al., 1999; Schwartz & Ehde, 2000). This dynamic may lead partners to avoid interaction with patients, which in turn produces feelings of guilt, shame, and sadness. Consistent with

these distressing emotional experiences, partners of those with chronic pain typically endorse more symptoms of depression and anxiety than partners of healthy individuals and a proportion of those partners experience clinically significant mental health symptoms (Ahern et al., 1985; Ahern & Follick, 1985; Bigatti & Cronan, 2002; Flor et al., 1987; Kerns & Turk, 1984; Walsh et al., 1999). Researchers suggest the level of psychological distress experienced by partners is related to the severity of patients' physical, psychological, and social difficulties (Geisser et al., 2005; Walsh et al., 1999). In some cases, partners may be in need of formal or informal support to manage their distress, but may feel reluctant to burden patients with their own emotional needs (Danoff-Burg & Revenson, 2000).

Patients' chronic pain may require partner, patient, and family roles to be altered, expectations to be adjusted, and new household routines to be established (Danoff-Burg & Revenson, 2000; Gullickson & LaChapelle, 2018; Soderberg et al., 2003; West et al., 2012). It may be necessary for partners to take on greater responsibility within the home (e.g., household chores, parenting activities), especially if the patient's condition deteriorates and disability increases (Danoff-Burg & Revenson, 2000; Gullickson & LaChapelle, 2018; Kemler & Furnée, 2002; Lewandowski et al., 2007; Schwartz & Ehde, 2000; Soderberg et al., 2003; West et al., 2012). Simultaneously, partners are often pressured to contribute more outside the home by finding employment, changing jobs, or making changes to their existing job (e.g., hours, shifts, responsibilities) to accommodate their new roles at home or to address financial concerns (Danoff-Burg & Revenson, 2000; Gullickson & LaChapelle, 2018; Matheson et al., 2010; Soderberg et al., 2003; West et al., 2012). This increased onus at home and work can add to partners' level of

perceived burden and, thus, exacerbate the physical and psychological costs of their spouse's chronic pain (Matheson et al., 2010). Finally, partners often report their spouses' chronic pain has a negative impact on their social and recreational functioning (Gullickson & LaChapelle, 2018; Kemler & Furnée, 2002; Matheson et al., 2010; Soderberg et al., 2003; West et al., 2012). Commonly, partners find it difficult to participate in independent recreational activities, because of their increased responsibilities at home and at work. Moreover, some partners have reported feeling guilty about leaving their functionally limited spouse behind while they engage in leisure activities (Gullickson & LaChapelle, 2018).

Impact of Chronic Pain on Romantic Relationships

Chronic pain not only affects patients and partners as individuals, it also has implications for the couple as a dyad (Schwartz & Ehde, 2000). Research suggests chronic pain negatively influences several aspects of relationship functioning. For example, patients and partners commonly report reduced relationship satisfaction, greater sexual dissatisfaction, poor pain-related communication, and a lack of joint recreational/social activities (Danoff-Burg & Revenson, 2000; Lewandowski et al., 2007; Roy, 2006; Schwartz & Ehde, 2000; Turk et al., 1987). This finding is problematic, given that better relationship quality seems to mitigate the negative effects of chronic pain on patients and partners in a number of ways (Cano et al., 2004; Flor et al., 1987; Leonard et al., 2006; Stark Taylor et al., 2013).

The most commonly measured aspect of relationship functioning is romantic relationship satisfaction³, which can be conceptualized as an individual's subjective evaluation of the overall quality of their relationship (Proulx et al., 2007). In numerous studies, patients and partners alike have reported reduced relationship satisfaction as a result of chronic pain, although exact rates of relationship dissatisfaction differ depending on the measure used and sample characteristics (Ahern et al., 1985; Flor et al., 1987; Kerns & Turk, 1984; Maruta et al., 1981; Turk et al., 1987). Whereas positive correlations between patient and partner ratings are typically identified (i.e., dissatisfied patients are more likely to have dissatisfied partners and vice versa), partners tend to report significantly lower relationship satisfaction than their patient counterparts, suggesting chronic pain may impact partners' perceptions of relationship quality to a greater extent than it does for patients (Flor et al., 1987; Kerns & Turk, 1984; Maruta et al., 1981; Romano et al., 1989).

Sexual satisfaction, a specific and important component of romantic relationships (Christopher & Sprecher, 2000), also has been found to decline when one member of the couple has chronic pain (Flor et al., 1987; Maruta et al., 1981; Maruta & Osborne, 1978; Rico-Villademoros et al., 2012). Chronic pain can make both casual and intimate physical contact between patients and partners more challenging (Danoff-Burg & Revenson, 2000; Soderberg et al., 2003; West et al., 2012). Consequently, patients and partners commonly report substantial decreases in the frequency and quality of their sexual relations (Matheson et al., 2010; Rico-Villademoros et al., 2012; Soderberg et al.,

³ "Relationship satisfaction" is used in lieu of "marital satisfaction", because it is a more inclusive term that also represents the experiences of couples who may be in a committed relationship but are unmarried.

2003). This outcome may be because individuals with chronic pain are frequently troubled by sexual difficulties, including physical discomfort during intercourse, fear of exacerbating pain during sex, low confidence, and performance anxiety (Ambler et al., 2001; Kwan et al., 2005; Prins et al., 2006). The couple's premorbid sexual history, each person's attitude toward sex, and the loss of sexual desire associated with depression and other forms of psychological distress may also play a role in reducing sexual satisfaction (Prins et al., 2006; Roy, 2006). Similar to relationship satisfaction, there is a positive correlation between patient and partner ratings of sexual satisfaction, though partners tend to report greater dissatisfaction (Maruta et al., 1981). Furthermore, there is a positive association between relationship and sexual satisfaction, such that individuals who are dissatisfied with their sexual relationship are more likely to also be dissatisfied with the overall quality of their relationship and vice versa (Byers, 2005).

Effective communication about pain and pain-related issues (e.g., symptoms, activity limitations, treatment, negative emotions, relationship concerns) is central to a couple's ability to adjust to chronic pain (Cano et al., 2018; Porter et al., 2008; Rolland, 1994). Unfortunately, research suggests patients and partners often fail to communicate their pain-related thoughts and feelings, especially when they are negative in nature (Paulson et al., 2003; Porter et al., 2008; Rolland, 1994; Roy, 2006). For example, partners may be hesitant to express their chronic-pain related frustrations and worries for fear of adding to the patient's distress. Patients, on the other hand, may conceal their physical and emotional pain so as not to elicit an unwanted response from their partner or be seen as a "complainer". Alternatively, some couples engage in negative communication that is characterized by criticism, hostility, defensiveness, and contempt

(Cano & Tankha, 2018; Rolland, 1994). In either case, poor communication about pain and pain-related issues can lead to misunderstandings, disagreements, arguments, resentment, and other negative feelings (Porter et al., 2008). Quality of relationship communication appears to predict concurrent changes in both relationship and sexual satisfaction, such that individuals in relationships characterized by poor communication are more likely to report greater relationship and sexual dissatisfaction (Byers, 2005).

A couple's ability to effectively communicate about chronic pain is complicated by the invisible nature of pain (Dow et al., 2012; Soderberg et al., 1999). In order to determine how much and what kind of support to provide to the patient, partners are forced to make judgments about the patient's pain severity and disability (Porter et al., 2008); however, because the severity of chronic pain is extremely difficult to judge based on observation alone, partners tend to make inaccurate judgments in the absence of effective verbal communication (Cano et al., 2005; Cremeans-Smith et al., 2003; Lyons et al., 2013; Riemsma et al., 2000). In some cases, partners overestimate the severity of the patient's pain, which results in providing excessive support or being overprotective (Porter et al., 2008). In other cases, partners underestimate the severity of the patient's pain or are skeptical about the authenticity of the patient's pain, thus questioning whether the patient's pain is as severe and frequent as reported. As a result, they may provide inadequate or inappropriate support (Dow et al., 2012; Gullickson & LaChapelle, 2018; Porter et al., 2008). In order to overcome this problem, patients often have to work hard to explain and legitimize their pain experience, which can be a frustrating endeavor for both parties and can further detract from the couple's emotional intimacy (Dow et al., 2012).

Although chronic pain has a negative impact on the social functioning of patients and partners as individuals, it can also impede couples' efforts to engage in joint recreational and social activities (Gullickson & LaChapelle, 2018; Matheson et al., 2010; Soderberg et al., 2003). Shared recreational and social activities are one way for couples to spend quality time together, build intimacy, and enhance cohesion (Knapp, 1983), but the symptoms associated with chronic pain (e.g., patient pain, fatigue, immobility, and mental health; partner fatigue and physical/mental health symptoms), as well as practical issues (e.g., lack of time and money) can limit what patients and partners can do together and with members of their social network (Matheson et al., 2010; Soderberg et al., 2003). In most cases, couples are forced to abandon previously valued pastimes altogether, or find alternative, often less enjoyable, activities that accommodate the patient's pain-related limitations (Lewandowski et al., 2007). Additionally, planning recreational and social activities in advance can be very challenging, given the unpredictable nature of chronic pain (Paulson et al., 2003). Last minute cancelations and changes to plans can be frustrating for the couple and their social contacts, resulting in fewer invitations to social events and progressive isolation from family, friends, and community (Lewandowski et al., 2007; West et al., 2012).

Despite the fact that relationship satisfaction, sexual satisfaction, quality of communication, and enjoyment of shared activities are all indicators of relationship quality, overall relationship satisfaction is the most commonly cited predictor of patient and partner outcomes in the chronic pain literature (Leonard et al., 2006). Research has repeatedly demonstrated that, for patients and partners alike, relationship dissatisfaction is associated with greater emotional distress in the form of dysphoric mood, anxiety, and

depression (Block & Boyer, 1984; Cano et al., 2000, 2004; Flor et al., 1987; Geisser et al., 2005; Kerns et al., 1990; Leonard et al., 2006; Romano et al., 1989; Saarijarvi et al., 1990; Schwartz et al., 1991; Walsh et al., 1999). Moreover, in the cognitive domain, patients who report dissatisfaction with their relationship are more likely to have poor pain coping self-efficacy and to catastrophize about their pain (Stark Taylor et al., 2013). Although relationship satisfaction has not been consistently found to have a direct impact on patients' pain severity and pain-related disability, it may be indirectly related to both outcomes through its effect on partners' responses to pain (Leonard et al., 2006). That is, several studies have found dissatisfaction with the relationship to be positively correlated with partners' negative/punishing responses (e.g., expressing irritation, frustration, and anger, ignoring), solicitous responses (e.g., taking over, encouraging rest, persistently helping, overseeing medication adherence), and distracting responses to pain (e.g., shifting focus away from pain, changing the topic of discussion; Cano et al., 2000; Flor, Turk, & Rudy, 1989; Kerns et al., 1990; Raichle, Romano, & Jensen, 2011; Stark Taylor et al., 2013; Turk, Kerns, & Rosenberg, 1992). It is possible that, in turn, consistent application of unhelpful partner response styles is associated with greater pain severity, increased disability, and more psychological distress in patients with chronic pain (Burns et al., 1996; Cano et al., 2000, 2004; Flor et al., 1987, 1989; Kerns et al., 1990; Lousberg et al., 1992; Manne & Zautra, 1989, 1990; Romano et al., 1995; Schwartz et al., 1996; Stark Taylor et al., 2013; Turk et al., 1992; Williamson et al., 1997). Research on partners' support provision and its relationship to patient and partner outcomes is ongoing (Mittinty et al., 2020).

Overall, better relationship quality, as evidenced by greater relationship satisfaction, may be associated with better partner and patient outcomes in a chronic pain context (Leonard et al., 2006; Robles et al., 2015; Stark Taylor et al., 2013). Patients who report greater relationship satisfaction appear to be less physically and emotionally disabled by their pain and tend to have more adaptive cognitive responses to pain (Cano et al., 2000, 2004; Kerns et al., 1990; Leonard et al., 2006; Romano et al., 1997; Saarijarvi et al., 1990; Stark Taylor et al., 2013; Walsh et al., 1999). Partners who are more satisfied with their relationship appear to experience better emotional adjustment to chronic pain and provide better quality support characterized by empathy and validation (Block & Boyer, 1984; Cano et al., 2000; Cano & Tankha, 2018; Flor et al., 1987, 1989; Geisser et al., 2005; Kerns et al., 1990; Leonard et al., 2006; Raichle et al., 2011; Schwartz et al., 1991; Stark Taylor et al., 2013; Turk et al., 1992). More generally, good relationship quality may be associated with fewer unnecessary doctor visits for patients and decreased need for mental health services for patients and partners, although this possibility has not yet been explored in the literature. Perhaps most importantly, individuals in satisfying unions are more likely to remain committed to one another and face chronic pain as a dyad, rather than turning to separation and divorce (Paulson et al., 2003; Soderberg et al., 1999; West et al., 2012).

1.3 Acceptance

Given the pervasive negative impact of chronic pain on patients, partners, and romantic relationships, there is value in exploring constructs that may promote positive adjustment to chronic pain at the individual and relationship levels. Acceptance is one construct that has received increasing attention in the literature since the turn of the

century, largely as a result of the emergence of acceptance-based psychological interventions (Williams & Lynn, 2010). Several research groups have proposed definitions of acceptance with varying levels of specificity (Hayes et al., 2006; McCracken et al., 2004) and the benefits of acceptance for patients with chronic pain have been repeatedly highlighted across various domains of physical and psychosocial functioning (Reneman et al., 2010). In order to understand how acceptance also might be beneficial to partners, it is helpful to first review patient-centered theories of acceptance and their corresponding measures, as well as summarize patient outcomes associated with acceptance.

Patient Acceptance

Experiential Acceptance. Defining acceptance is incredibly difficult and requires a great deal of nuance (McAndrews et al., 2019). The most commonly cited definition of experiential acceptance is associated with Acceptance and Commitment Therapy (ACT), an evidence-based psychological treatment for a variety of physical and mental health problems (A-Tjak et al., 2015; Hayes et al., 2006; McAndrews et al., 2019; Veehof et al., 2016; Williams & Lynn, 2010). According to ACT theory, acceptance involves purposefully embracing thoughts, feelings, and physical sensations as they are, without trying to change or avoid them (Hayes et al., 2006). Contrary to the beliefs of some, acceptance is not tantamount to resignation to the status quo (Williams & Lynn, 2010). Acceptance is based on the principles of awareness, non-attachment, non-avoidance, non-judgment, tolerance, and willingness (Williams & Lynn, 2010). The opposite of acceptance is experiential avoidance, which involves an unwillingness to be in contact with private experiences and taking steps to avoid or alter those experiences, even when

the avoidance causes psychological and behavioural harm (Hayes et al., 1996, 2004). Acceptance is one of six interrelated processes that contribute to psychological flexibility, the main theoretical construct targeted by ACT (Hayes et al., 2006). In ACT, psychological flexibility is the product of six core psychological skills: acceptance, cognitive defusion, present moment awareness, contact with self as context, values clarification, and committed action (Hayes et al., 2006). In short, ACT theory suggests that once an individual is able to accept their personal experiences and live in the present moment, they are better able to identify their values and act in accordance with that value-system (Hayes et al., 2006). Presently, the conceptualization of acceptance proposed by Hayes and colleagues is the most widely cited in the psychological literature and represents the most general form of acceptance (Williams & Lynn, 2010).

The Acceptance and Action Questionnaire (AAQ) was created for the specific purpose of measuring experiential acceptance/avoidance within the ACT theoretical framework (Hayes et al., 2004; McAndrews et al., 2019; Williams & Lynn, 2010). The AAQ was initially developed by Hayes and colleagues (2004) based on a pool of 32 items that were designed to assess “a high need for emotional and cognitive control, avoidance of negative private events, inability to take needed action in the face of private events, and forms of cognitive entanglement, such as excessively negative evaluations of private experiences or negative self-references” (p. 557). The initial validation study yielded both 9- and 16-item single-factor solutions (Hayes et al., 2004), whereas another study identified a 16-item two-factor version (Bond et al., 2011), suggesting the factor structure of the initial AAQ was somewhat unstable. Unfortunately, the original AAQ was also plagued by low internal consistency, likely as a result of poor item

comprehension and the subtlety of the concepts addressed (Bond & Bunce, 2003; McAndrews et al., 2019). Consequently, Bond and colleagues (2011) endeavored to develop the AAQ-II, based on a pool of 49 items generated by acceptance experts. Factor analysis yielded a 10-item two-factor solution that was subsequently reduced to a 7-item one-factor solution. The AAQ-II has demonstrated a stable factor structure, superior reliability to the original AAQ (e.g., internal consistency, test-retest reliability), and has been validated with a variety of different groups (Bond et al., 2011). As such, it has been widely adopted in the literature (McAndrews et al., 2019; Ong, Lee, et al., 2019).

Although the AAQ-II is the most widely used measure of experiential acceptance, concerns have been raised with respect to item sensitivity, measurement invariance across samples, and discriminant validity, suggesting the measure could be further improved (Benoy et al., 2019; Gámez et al., 2011; Ong, Pierce, et al., 2019; Rochefort et al., 2018; Tyndall et al., 2019; Wolgast, 2014). Moreover, the measure is limited in that it is a general measure of experiential acceptance that does not make reference to accepting specific internal experiences (Ong, Lee, et al., 2019; Williams & Lynn, 2010). In fact, the items exclusively relate to accepting thoughts and feelings (Benoy et al., 2019). For example, ‘I worry about being unable to control my worries and feelings’, ‘Emotions cause problems in my life’, and ‘I’m afraid of my feelings’ (Bond et al., 2011). Thus, other researchers have created context-specific variants of the AAQ-II to capture acceptance of specific internal experiences or conditions, such as chronic pain and other medical conditions (McCracken, 1998; McCracken et al., 2004; Ong, Lee, et al., 2019).

Chronic Pain Acceptance. McCracken (1998) is credited with the development of the leading theory of chronic pain acceptance, based on the principles of experiential

acceptance outlined by Hayes et al. (2006). Although the conceptualization of chronic pain acceptance has evolved since it was originally proposed (McCracken, 1999; McCracken et al., 2004), the current conceptualization has been widely adopted in research and clinical practice (Lauwerier et al., 2015). Chronic pain acceptance involves refraining from attempts to change, control, or avoid pain so one's energy can be redirected toward valued life activities (McCracken et al., 2004). More specifically, chronic pain acceptance is said to consist of two components: Pain Willingness and Activity Engagement. Pain Willingness involves being in contact with pain-related sensations, thoughts, and feelings and refraining from unproductive attempts to reduce, avoid, or otherwise change them. It is often described as disengaging from the struggle with pain by giving up the search for the "cure" and acknowledging pain is likely to persist (McCracken et al., 2004; McCracken & Eccleston, 2003). It does not require the patient to judge pain as a positive experience. This component corresponds to Hayes and colleagues (2006) definition of experiential acceptance. Activity Engagement is characterized by engagement in valued life activities regardless of pain-related sensations, thoughts, and feelings that might otherwise hinder that engagement (McCracken et al., 2004). It involves the individual engaging in values-driven action by committing their efforts toward living a satisfying and meaningful life regardless of chronic pain (McCracken, 1998). This component does not correspond with Hayes and colleagues' definition of experiential acceptance, but rather two other pillars of psychological flexibility: values clarification and committed action. In general, acceptance of chronic pain is considered to be an ongoing process rather than a one-time decision (McCracken, 1998).

Although there are multiple self-report questionnaires to measure chronic pain acceptance, the CPAQ has the strongest psychometric support and is the most widely used (Lauwerier et al., 2015). The CPAQ was originally developed by Geiser (1992) as a part of his doctoral dissertation comparing two behavioural treatments for chronic pain, one of which focused on giving up the struggle with pain and focusing on other life goals. The original CPAQ was based on an early version of the AAQ and consisted of 34 items that were reduced to a 24-item solution reflecting overall acceptance. Early chronic pain acceptance research utilized this original version of the CPAQ, although authors often suggested that the factor structure of the CPAQ needed to be refined in future research (McCracken, 1998; Viane et al., 2003).

McCracken (1999) conducted the first factor analysis on the original CPAQ-34 item pool. After several items were excluded due to restricted frequency distributions and poor item-total correlations, 27-items grouped into four factors remained: (1) Activity Engagement - engaging in normal life activities, (2) Thought Control - believing that controlling thoughts controls pain, (3) Chronicity - recognizing the chronicity of pain, and (4) Pain Control - needing to avoid or control pain. The authors observed, however, that thought control (factor 2) was weakly correlated with the other factors and did not fit with the proposed definition of acceptance, and thus it was excluded from further calculations. These results supported the validity of the CPAQ by suggesting a three-factor 22-item scale that was very similar in nature to Geiser's (1992) 24-item solution. Subsequently, McCracken and colleagues (2004) aimed to investigate the item content, internal consistency, and factor structure of the CPAQ in a new sample, while also examining the relationship between the subcomponents of chronic pain acceptance and

measures of pain-related distress and disability. After factor analyzing the original CPAQ 34-item pool, these authors identified the same four-factor solution, which they then labeled: (1) Activity Engagement - pursuit of life activities regardless of pain, (2) Pain Willingness - recognizing that avoidance and control are often unworkable methods of adapting to chronic pain, (3) Thought Control - belief that pain can be controlled or changed by altering one's thoughts, and (4) Chronicity - recognizing that pain may not change. Analyses of item variability, item inter-correlation, internal consistency, and predictive validity supported the retention of the Activity Engagement and Pain Willingness components. Conversely, the Thought Control and Chronicity factors had marginal scale reliabilities and were generally unrelated to other measures of pain-related distress and disability. As such, the authors recommended these two factors not be included in future research. Their study resulted in a revised two-factor, 20-item version of the CPAQ, often referred to as the CPAQ-20. The CPAQ-20 is now the most widely used measure of pain acceptance and is thought to be the most representative measure of the Pain Willingness and Activity Engagement components of acceptance (Lauwerier et al., 2015; McAndrews et al., 2019). Nevertheless, other measures of chronic pain acceptance deserve mention.

Lauwerier and colleagues (2015) conducted a content analysis of various instruments assessing chronic pain acceptance to determine their relevance to acceptance theory. Specifically, they examined which features of acceptance (e.g., Pain Willingness, Activity Engagement) were captured by each measure. The authors found the Pain Solutions Questionnaire (De Vlieger et al., 2006) represented both features of acceptance, although they noted its infrequent use in chronic pain research. They further suggested

that the CPAQ-8 (Fish et al., 2013), a briefer version of the CPAQ-20, was relevant only to the activity engagement component of acceptance. The Illness Cognition Questionnaire (Evers et al., 2001), which assesses acceptance, helplessness, and benefit finding, has been utilized in approximately 10 studies; however, Lauwerier et al. (2015) noted that many items in the acceptance subscale were ambiguous and not clearly related to the definition of acceptance described above. Furthermore, one study found only a moderate positive correlation between the CPAQ and the acceptance subscale of the Illness Cognition Questionnaire, suggesting these two measures assess different concepts of acceptance (Viane et al., 2003). Lauwerier and colleagues (2015) also found three additional measures purported to assess acceptance, the Acceptance of Illness Scale adapted to pain (Rankin & Holttum, 2003), the Medical Coping Modes Questionnaire (Feifel et al., 1987), and the Psychological Inflexibility in Pain Scale (Wicksell et al., 2008), did not contain any items relevant to Pain Willingness or Activity Engagement. Overall, these results suggest that, although other measures of chronic pain acceptance exist, they are inconsistently used and do not represent all facets of the acceptance construct as defined by McCracken and colleagues (2004).

Cross-sectional and longitudinal research incorporating the CPAQ-20 has consistently demonstrated that chronic pain acceptance has a positive impact on patients' physical, emotional, social, and occupational functioning (Reneman et al., 2010). Specifically, individuals who are more accepting of their chronic pain tend to report less intense pain, lower levels of medical service utilization, and less need for pain medication (Gyurcsik et al., 2011; Jeong & Cho, 2017; McCracken, 1998; McCracken et al., 2004, 2007; McCracken & Eccleston, 2003, 2005; Nicholas & Asghari, 2006; Ning et al., 2008;

Veehof et al., 2016; Viane et al., 2003; Vowles et al., 2008; Wicksell et al., 2009). Moreover, individuals with higher levels of acceptance require fewer hours of daytime rest and report less physical disability, more physical activity, and a greater ability to work (Bernini et al., 2014; Gyurcsik et al., 2011; Jeong & Cho, 2017; McCracken, 1998; McCracken et al., 2004, 2005, 2007; McCracken & Eccleston, 2003, 2005; Nicholas & Asghari, 2006; Ning et al., 2008; Veehof et al., 2016; Vowles et al., 2008; Wicksell et al., 2009). In the psychological domain, patients who are more accepting of their chronic pain report fewer symptoms of depression and pain-related anxiety, fewer catastrophic thoughts, less avoidance, and greater pain self-efficacy, as well as less psychosocial disability and better mental well-being (Bernini et al., 2014; Gyurcsik et al., 2011; Jeong & Cho, 2017; McCracken, 1998; McCracken et al., 2004, 2005, 2007; McCracken & Eccleston, 2003, 2005; Nicholas & Asghari, 2006; Veehof et al., 2016; Viane et al., 2003; Vowles et al., 2008; Wicksell et al., 2009). One study found acceptance scores successfully discriminated “adaptive copers” with chronic pain from those who were considered “dysfunctional copers” even after the influences of pain severity, depression, and pain-related anxiety were taken into account (McCracken et al., 1999).

Research evaluating the efficacy of ACT for chronic pain, which includes acceptance as one of the primary treatment targets, also underscores the positive outcomes associated with psychological flexibility. A meta-analysis conducted by Veehof and colleagues (2016) found patients with chronic pain responded positively to ACT and other acceptance-based therapies (e.g., Mindfulness-Based Stress Reduction). Specifically, their results indicated ACT had a moderate effect size for reducing pain intensity, depression, and anxiety, and for improving physical well-being and quality of

life. The magnitudes of these effects were comparable to those reported using cognitive behaviour therapy, a standard treatment for individuals with chronic pain. Moreover, several studies have found chronic pain acceptance uniquely contributes to changes in treatment outcome over and above other facets of psychological flexibility, such as cognitive defusion and committed action (Scott et al., 2016; Scott & McCracken, 2015; Vowles & McCracken, 2008). These results highlight the physical and mental health benefits of cultivating psychological flexibility, and in particular acceptance, in psychotherapy for chronic pain.

Partner Acceptance

Although the findings reviewed above emphasize the significant benefits of acceptance for patients with chronic pain, it remains unclear whether acceptance also contributes positively to partners' adjustment to chronic pain. To date, only two studies have examined the relationship between partner acceptance and partner outcomes in the context of a spouse's medical condition (Boerner & Rosen, 2015; Pakenham & Samios, 2013). In the first study, Pakenham and Samios (2013) recruited 69 patients with multiple sclerosis (MS) and their partners to participate in a cross-sectional study exploring the relationship between acceptance and adjustment in couples coping with MS. These authors hypothesized that greater partner acceptance (as measured by the two-factor 16-item AAQ) would be associated with better partner adjustment (e.g., lower depression and anxiety, higher life satisfaction, more positive affect, better relationship satisfaction). Results of their study supported their hypotheses: Partners who reported higher levels of acceptance endorsed fewer symptoms of depression and anxiety and higher levels of life satisfaction, relationship satisfaction, and positive affect.

In the second study, Boerner and Rosen (2015) examined the associations between partners' acceptance of their spouses' vulvovaginal pain and partner psychological and sexual adjustment. Sixty-one male partners completed a modified version of the CPAQ-20, as well as various psychological and sexual health measures. Their analyses found no significant correlations between partner acceptance and any of the partner outcomes included in the study. Follow-up analyses controlling for patients' level of acceptance, however, revealed that higher levels of partner acceptance were associated with lower levels of depression and higher levels of sexual satisfaction.

The findings of Pakenham and Samios (2013) and Boerner and Rosen (2015) offer preliminary evidence for the benefits of partner acceptance in a medical context. Despite these promising results, however, both studies are characterized by notable limitations. First, neither study utilized an empirically supported measure of partner acceptance. Pakenham and Samios (2013) used the AAQ, which is a general measure of acceptance designed to assess acceptance of internal thoughts and feelings (e.g., anxiety, depression), rather than partners' acceptance in an illness context. In fact, none of the questionnaire items refer to multiple sclerosis or illness in general. Boerner and Rosen (2015) used an unvalidated modification of the patient-centered CPAQ-20 to reflect partner acceptance without evaluating whether the adapted measure adequately captured partners' acceptance experiences. DeVellis (2012) noted that adapting existing measures without considering the validity of the new measure can be problematic because it may lead to erroneous conclusions. For example, we may conclude that because Boerner and Rosen found no association between partner acceptance and some of the outcome measures that there are no relationships between these variables. However, these null

findings may have been the product of the untested measure used in these studies (i.e., their adapted questionnaire may not have had adequate construct validity). Second, it is also important to note that Boerner and Rosen's study was limited by gender – all of their participants were male. Whether their findings would generalize to female partners is unknown. Thus, although these two studies represent a valuable starting point in the exploration of partner acceptance in a medical context, more research is needed to determine whether partner acceptance is a valuable target for improving partner, relationship, and patient well-being in the context of chronic pain.

Conceptualizing Partner Acceptance of Chronic Pain. Previous attempts to determine the value of partner acceptance of chronic pain have relied on unvalidated measures because researchers have made the assumption that patient and partner chronic pain acceptance are identical constructs (Boerner & Rosen, 2015). Previous researchers have not attempted to define acceptance of chronic pain from the partner perspective or to examine the commonalities and disparities between patient and partner acceptance. To help address this gap in the literature, my Ph.D. Apprenticeship research project was completed with the goals of identifying the features of partner acceptance of chronic pain and developing a definition of the construct that could be used as a foundation for a self-report measure. A mixed gender sample of 21 romantic partners of individuals with arthritis (a common chronic pain condition⁴) were recruited to participate in semi-

⁴ Although certain chronic pain illness characteristics (e.g., treatment availability and effectiveness, illness progression, diagnostic uncertainty) may subtly affect partners' acceptance experiences, for the most part the impacts of chronic pain on partners appear to be consistent regardless of their spouse's specific diagnosis (Breivik et al., 2006). Therefore, we believe the acceptance themes identified in this study are generalizable to partners from chronic pain populations other than arthritis (e.g., low back pain, fibromyalgia).

structured interviews exploring their perspectives about acceptance. They were asked to describe the impact of arthritis on their lives, share their arthritis adjustment experiences, and explain what acceptance meant to them. Overall, the majority of partners perceived acceptance to be a positive process of adjustment that occurs over time and is dynamic in nature, evolving along with the patient's arthritis. Examination of the partner accounts lead to the identification of five themes or processes that are thought to characterize partner acceptance of chronic pain: (1) Understanding the Nature of Arthritis, (2) Believing in the Authenticity of the Patient's Pain, (3) Letting Go of Negative Feelings, (4) Making Practical Adjustments, and (5) Engaging in Pleasurable Activities.

Understanding the Nature of Arthritis involves partners learning that arthritis is a chronic condition for which there is no cure despite the best available treatments. This process begins with partners acquiring knowledge of arthritis symptoms, treatment, and prognosis from medical professionals, patients themselves, and print resources (e.g., the Internet, books). Subsequently, partners begin to assimilate their newfound knowledge and recognize that their spouse will likely never be 100% pain free, even with the most effective treatment options being utilized. Over time, they come to the realization that attempts to control their spouse's pain are unhelpful and unproductive. In cases where the patient's pain is progressive, partners gradually acknowledge that the patient's symptoms, and thus arthritis' impact on their lives as partners, might increase over time.

Believing in the Authenticity of the Patient's Pain involves partners slowly learning to trust that the patient's pain is as persistent and severe as reported. In other words, partners come to understand that the patient's pain is not fabricated or exaggerated. This process appears to unfold as partners learn to identify when the patient

is in pain based on verbal (e.g., groans, sighs) and non-verbal cues (e.g., limping, grimacing, mood).

Letting Go of Negative Feelings involves partners living with negative thoughts and feelings about their spouse's arthritis without dwelling on them. It is well known that partners experience a range of emotions as a result of their spouse's arthritis (e.g., frustration, sadness, guilt, helplessness, worry); however, partners who are accepting acknowledge those feelings and recognize that dwelling on their negative feelings and fighting something they have little power to change are both unproductive and exhausting. Partners in the study described adopting various strategies to help them learn to live with negative feelings, including cognitive reappraisal (e.g., reinterpreting a difficult situation in a way that alters its meaning and changes its emotional impact) and mindfulness (e.g., focusing on the present). Importantly though, partners noted that letting go did not necessarily mean being enthusiastic about having arthritis as a part of their lives, nor did it mean being resentfully resigned to a life including arthritis. Rather, acceptance involved partners taking a tolerant and non-judgemental stance toward their feelings related to their spouse's arthritis.

Making Practical Adjustments involves partners being open to making necessary adjustments to accommodate their spouse's arthritis. According to partners, this process begins with the realization that they can no longer maintain their pre-arthritis lifestyle (i.e., way of living before their spouse's arthritis onset or before they entered the relationship). For the majority of partners, establishing a new normal means shifting their way of thinking about themselves, the patient, and the relationship in the context of arthritis. For example, they might have to make accommodations and sacrifices, change

their expectations, and adjust their priorities. Partners in the study noted that their sense of normality continued to evolve with the patient's arthritis, such that they often had to re-adjust to accommodate the progression of the patient's arthritis.

Engaging in Pleasurable Activities involves partners redirecting their energy toward engaging in valued activities as an individual and a couple. In some cases, couples are able to stay involved in their pre-arthritis activities, but in other instances couples are forced to modify their pre-arthritis activities or find new activities altogether. A number of partners involved in the study stressed the importance of choosing activities that the couple can engage in regardless of the patient's level of pain, as they acknowledged complete symptom relief was unlikely. In addition to staying active as a couple, partners also described the importance of engaging in pleasurable activities independently or with family and friends, even if the patient was unable to participate.

Comparing Partner and Patient Acceptance. Several commonalities and disparities were identified when the partner acceptance themes were compared to the well-validated definitions of experiential and chronic pain acceptance (Hayes et al., 2006; McCracken et al., 2004), suggesting partner and patient acceptance are similar but not identical constructs (see Table 1). In terms of similarities, both definitions focus on refraining from unhelpful attempts to find a cure for chronic pain and making a purposeful effort to move forward with life despite pain. Specifically, the partner acceptance theme Understanding the Nature of Arthritis (Theme 1) reflects aspects of both the Pain Willingness and Chronicity components of patient chronic pain acceptance and the theme of Letting Go of Negative Feelings (Theme 3) is consistent with Hayes and colleagues (2006) definition of experiential acceptance. Furthermore, the partner

Table 1

Names and Definitions of the Five Partner Acceptance Themes and Corresponding Patient Acceptance Themes

Acceptance Theme	Definition	Corresponding Patient Acceptance Theme
1. Understanding the Nature of Arthritis	Understanding that arthritis is a chronic condition for which there is no cure despite the best available treatments	Chronicity ^a Pain Willingness ^a
2. Believing in the Authenticity of the Patient's Pain	Learning to trust that the patient's pain is as persistent and severe as reported (i.e., that it is not exaggerated or fabricated)	—
3. Letting Go of Negative Feelings	Refraining from dwelling on unproductive thoughts and feelings related to their spouse's arthritis	Experiential Acceptance ^b
4. Making Practical Adjustments	Openness to making necessary lifestyle adjustments in order to accommodate their spouse's chronic pain (e.g., altering daily routines, changing expectations)	
5. Engaging in Pleasurable Activities	Finding meaning and fulfillment through valued activities as a couple and an individual despite arthritis	Activity Engagement ^a

Note. A dash (—) indicates no corresponding patient acceptance theme.

^a Based on the components of chronic pain acceptance identified by McCracken et al. (2004).

^b Based on the definition of experiential acceptance proposed by Hayes et al. (2006).

acceptance theme Engagement in Pleasurable Activities (Theme 5) is reflective of the Activity Engagement component of patient chronic pain acceptance. In terms of differences, however, Believing in the Authenticity of the Patient's Pain (Theme 2) appears to be distinct feature of partner acceptance. Given that partners do not experience pain firsthand as patients do, it is not surprising that there are unique aspects of the partner acceptance experience. Additionally, Making Practical Adjustments (Theme 4) does not correspond directly with any facets of experiential or chronic pain acceptance, despite the general agreement in the literature that partners are often forced to make a variety of adjustments as a result of the patient's chronic pain.

Overall, these findings indicate existing patient-centered measures of chronic pain acceptance may capture some, but not all, aspects of partner acceptance. Thus, simply adapting measures of patient chronic pain acceptance for use with partners is insufficient. Rather, the themes outlined above can be used as a starting point and framework for developing a new self-report measure of partner acceptance of chronic pain. Subsequent quantitative analyses will reveal whether these five partner acceptance themes represent distinct factors underlying the partner acceptance construct, which factors contribute the most variance to partner acceptance, and which factors are most predictive of partner outcomes.

1.4 Developing a Measure of Partner Acceptance

A scale is a measurement instrument that combines a collection of items into a composite score in order to reveal levels of a theoretical variable that is not directly observable (DeVellis, 2012). Although some researchers have haphazardly created new scales or adapted existing measures to save time and resources, proper scale development

is a complex, multi-step, iterative process that requires considerable forethought and planning (DeVellis, 2012; Streiner et al., 2008). Fortunately, several authors have published books and articles containing best practice guidelines for scale development and these were used to inform the development and validation of the PAS-CP (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006).

Identify and Define the Construct to be Measured

An essential preliminary step in the scale development process is clearly identifying the construct to be measured (Boateng et al., 2018; DeVellis, 2012; Worthington & Whittaker, 2006). Subsequently, it is recommended that scale developers acquire a strong theoretical understanding of the phenomenon being measured. A firm understanding of associated constructs will help delineate the boundaries of the latent variable of interest (DeVellis, 2012). This process ensures scale items are more representative of the construct of interest than related constructs (i.e., content drift does not occur).

For the purposes of the present study, the underlying construct or latent variable was partner acceptance of chronic pain. The five partner acceptance themes identified in my Ph.D. Apprenticeship study served as the primary theoretical foundation for the scale (i.e., Understanding the Nature of Chronic Pain, Believing in the Authenticity of the Patient's Pain, Letting Go of Negative Feelings, Making Practical Adjustments, Engaging in Pleasurable Activities). To minimize content drift during scale development, existing theories of experiential and chronic pain acceptance were carefully reviewed (Hayes et al., 2006; McCracken et al., 2004).

Determine the Format of the Measure

After identifying and defining the construct of interest, the format of the measure must be chosen (DeVellis, 2012; Streiner et al., 2008). More specifically, decisions need to be made regarding the scale's response options (e.g., type, number) and scoring procedure. Response options are a series of descriptors indicating the respondent's level of agreement with each item (DeVellis, 2012). Scale development experts recommend this step be completed prior to item generation to ensure the items are compatible with the response options (Streiner et al., 2008).

For the current study, the response options of the PAS-CP mirrored the most relevant existing acceptance measure – the CPAQ-20 (McCracken et al., 2004). The CPAQ-20 is scored on a 7-point adjectival scale assessing the truthfulness of each item. The response options are unipolar, meaning the descriptors range from lack of an attribute at one end (i.e., *never true*) to the maximal amount of an attribute at the other end (i.e., *always true*; Streiner et al., 2008). Adjectival scales can be contrasted with Likert scales, which are anchored by bipolar descriptors such as *happy* and *sad* (Streiner et al., 2008). When choosing response options, experts suggest scale developers carefully consider the number of response options presented to respondents (DeVellis, 2012; Streiner et al., 2008). As noted previously, the CPAQ-20 offers seven response options – *never true*, *very rarely true*, *seldom true*, *sometimes true*, *often true*, *almost always true*, and *always true* – which Streiner and colleagues (2008) suggested is an ideal number, because it introduces enough response options to allow for variability in responding, but not too many that respondents cannot discriminate meaningfully between response options.

Scale development experts note there are several approaches to scoring a measure (Streiner et al., 2008). Furthermore, some scales use a weighting technique to put more emphasis on particular items. To ensure conceptual and arithmetic simplicity, the PAS-CP was scored using a simple summing approach and all items were weighted equally. This scoring approach is consistent with the CPAQ-20 and other measures of acceptance (Hayes et al., 2004; McCracken et al., 2004).

Generate an Initial Item Pool

Once the format of the measure has been determined, a large collection of items that are candidates for eventual inclusion in the scale can be generated (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006). The guiding principle of item generation is that each item should represent some aspect of the latent variable of interest. Streiner and colleagues (2008) suggested items can come from a number of sources. For example, novel items can be developed based on existing theory or from interviews with individuals from the population of interest. Furthermore, items can be adapted from existing measures. Scale development experts suggest adapting items from existing scales is beneficial because it saves time and resources, these items have proven useful and psychometrically sound in previous research, and there may be limited ways to describe the same phenomenon (Streiner et al., 2008).

Scale development experts consistently agree that the initial item pool should consist of a significantly greater number of items than will eventually be included in the scale (DeVellis, 2012; Streiner et al., 2008). For example, DeVellis (2012) suggested it is acceptable for the initial item pool to be three to four times larger than the intended final product, so long as the item pool can be administered in one sitting. There should be

enough items in the initial pool to represent all domains of the construct under investigation and important aspects of the latent variable should be represented by a greater number of items (DeVellis, 2012; Streiner et al., 2008). Although item redundancy with regard to grammatical structure and word choice is undesirable, redundant item content is considered acceptable and even encouraged (DeVellis, 2012). Expressing the same idea in numerous ways is recommended in order to find alternative means of tapping into the underlying construct of interest.

In the literature, experts have described several desirable characteristics of scale items. For instance, to ensure item interpretability, it is recommended that all items be clear and unambiguous (e.g., convey no more than one idea, free of jargon and double negatives), concise (i.e., brief but comprehensive), and written at an acceptable reading level (DeVellis, 2012; Streiner et al., 2008). In addition, some experts suggest including reverse worded items to prevent acquiescence, affirmation, and agreement biases (DeVellis, 2012; Streiner et al., 2008; Zhang & Savalei, 2016). There are two main types of reverse worded items: (1) negation items – created by adding words such as ‘not’, ‘never’, or negative prefixes to positively worded items; and (2) polar opposite items – created by using words with an opposite meaning of the intended construct (Zhang et al., 2016).

Expert Review

After the initial item pool has been generated, experts in the field who are knowledgeable about the subject area can review it in order to maximize content validity (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006). DeVellis (2012) noted that this step is especially important when a construct is

being operationalized for the first time, such as with the PAS-CP. Although scale development specialists argue there are no set rules governing the procedure of an expert review (e.g., how many experts to use, how they are found and chosen, how differences among them are reconciled), some general guidelines have been proposed to help direct this stage of the scale development process (DeVellis, 2012; Streiner et al., 2008).

Specifically, Streiner and colleagues (2008) recommend 3-10 experts representing a range of opinions on the construct of interest be invited to provide feedback on the initial item pool. Further, DeVellis (2012) suggested that, prior to providing feedback, experts should be presented with a working definition of the construct of interest to inform their judgments. Experts then can be asked to provide both quantitative and qualitative feedback (i.e., ratings and open-ended comments) on all aspects of the newly developed scale (DeVellis, 2012; Streiner et al., 2008). For example, they can provide feedback on the construct definition and offer suggestions as to how the definition can be expanded or improved. They can also rate the relevance, clarity, and conciseness of each item, as well as features of the overall scale (e.g., instructions, response options, content validity). Furthermore, they can provide open-ended feedback to improve content validity, identify irrelevant or missing items, and identify alternative ways to tap the construct of interest.

Once expert feedback has been obtained, scale developers often face the challenging task of amalgamating the experts' responses and deciding which suggestions to incorporate into the scale (DeVellis, 2012; Streiner et al., 2008). Ultimately, it is up to scale developers to make the final decision as to whether to accept or reject the advice of the experts, as experts can provide "bad advice" in some instances, especially if they are

not familiar with best practice guidelines for scale development (DeVellis). Scale developers must use their knowledge of the process and the construct of interest to make an informed decision about incorporating expert feedback.

Pilot Testing

Once the measure has been reviewed by experts and revised as needed, pilot testing the measure on a small group of respondents from the target population can help ensure respondents understand the questions in the same way (Boateng et al., 2018; Streiner et al., 2008; Worthington & Whittaker, 2006). It is generally recommended that the pilot sample be as diverse as possible to capture the perspectives of a variety of potential respondents. Although there are several methods for conducting pilot studies of new scales (e.g., retrospective interview, think-aloud interview), the retrospective interview method, which requires respondents to complete the questionnaire and then subsequently respond to a series of follow-up questions, is most efficient (Johnson & Christensen, 2014). Pilot study participants can be asked about item clarity and relevance (Worthington & Whittaker, 2006). Furthermore, they can provide their general perceptions of the items, response options, and instructions. Participant feedback can be used to revise the measure as needed (Streiner et al., 2008).

Administer the Measure to a Developmental Sample

After the measure has been pilot tested, it should be administered to a developmental sample (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006). The required sample size for scale development has been hotly debated in the literature and there is no commonly agreed upon formula for determining the appropriate sample size for a factor analysis as means to understand the

factor structure of the instrument (DeVellis, 2012; MacCallum & Widaman, 1999; Streiner et al., 2008). Some researchers recommend minimum necessary sample sizes, such as 100, 200, or 250, whereas other researchers prefer using a participant-to-item ratio, such as 3-6:1, 5:1, or 10:1 (Worthington & Whittaker, 2006). MacCallum and colleagues (1999) argued the necessary sample size is dependent on several factors, including the level of communality between the items and the level of overdetermination of factors, suggesting the appropriate sample size should vary across studies. Taken together, these recommendations indicate small to moderate sample sizes (e.g., 100-200 participants) can be acceptable in some cases, but most scale development experts suggest a large sample of 300 participants, especially if the scale consists of many items (DeVellis, 2012; Worthington & Whittaker, 2006). A large sample ensures the pattern of covariation among items is stable when conducting a factor analysis. Furthermore, a large sample increases diversity and makes it more likely that high and low levels of the construct of interest will be represented (Worthington & Whittaker, 2006). Larger samples also increase the generalizability of results, as they are more likely to include respondents from various demographic backgrounds (e.g., age, gender, race, education, socioeconomic status; Streiner et al., 2008).

Evaluate the Measure

Once a large group of respondents have completed the newly developed scale, the factor structure and psychometric properties (e.g., reliability, validity) of the measure can be evaluated (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006).

Factor Structure. Factor analysis is a statistical procedure used to identify the underlying dimensionality of a set of items based on correlations between items (Boateng et al., 2018; Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). Factors are meaningful subsets of items that measure different aspects of the latent variable (Tabachnick & Fidell, 2013). Factor analysis is an essential component of the scale development process as it helps to support the validity of the scale by determining if the item pool represents one broad construct or several more specific constructs. There are two categories of factor analysis, exploratory or confirmatory, which are ideally conducted in sequence as part of the scale development process (Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). Initially, an exploratory factor analysis (EFA) is conducted to determine the factor structure of the initial item pool (Worthington & Whittaker, 2006). EFA is typically performed first because it allows for item consolidation and generation of hypotheses about underlying processes (Tabachnick & Fidell, 2013). Items may be removed from the scale following an EFA if they do not correlate with other items or they load on multiple factors. Subsequently, confirmatory factor analysis (CFA) is used to confirm the extent to which the factor structure is replicated in a different sample (Tabachnick & Fidell, 2013). CFA requires prior knowledge of the expected relationship between items and factors, which differentiates it from EFA (Worthington & Whittaker, 2006).

Reliability. A scale is said to be reliable if it measures the latent variable in a consistent and predictable way (Boateng et al., 2018; DeVellis, 2012). In other words, a scale is reliable if the amount of random and systematic error inherent in the measurement is minimized (Streiner et al., 2008). Although there are various means of

calculating reliability (e.g., inter-rater reliability, split-half reliability), the forms of reliability most relevant to a self-report scale are internal consistency and temporal stability.

Internal consistency is concerned with the homogeneity (i.e., intercorrelation) of the items within a scale and is represented by Cronbach's coefficient alpha (α), which is defined as the proportion of a scale's total variance that is attributable to the latent variable (DeVellis, 2012). Alpha values range from 0 to 1, but scale development experts suggest values greater than .70 represent adequate internal consistency (Hunsley & Mash, 2008). Higher values (e.g., .90) are preferred when the scale has greater than approximately a dozen items and it is being administered to a large sample (Streiner et al., 2008).

Temporal stability, or test-retest reliability as it is sometimes known, refers to how consistently the scale measures the underlying construct over time (DeVellis, 2012). Although the time between administrations can vary depending on the nature of the latent variable, scale development experts suggest a period of 2-14 days is ideal because it is long enough that respondents will not remember their previous responses, but short enough that there have not been true variations in the level of the latent variable (Streiner et al., 2008). In general, intraclass correlation coefficients (ICC) greater than .75 between respondents' scores across two time points are an indicator of good temporal stability (Koo & Li, 2016).

Validity. A scale demonstrates validity if it accurately measures the latent variable of interest (Boateng et al., 2018; DeVellis, 2012). Importantly, however, validity testing only demonstrates a scale's validity in a certain context with a given sample

(Streiner et al., 2008). A scale cannot be deemed universally valid, especially during initial scale development. Streiner and colleagues (2008) argued validity testing should be considered akin to hypothesis testing, in that researchers should ask “Does the hypothesis of this validation study make sense in light of what the scale is designed to measure?” (p. 231). There are multiple forms of validity that are relevant to the scale construction process (e.g., content validity, criterion validity, construct validity) (DeVellis, 2012; Streiner et al., 2008).

Content validity refers to the extent to which items of the scale are representative of a common latent variable (DeVellis, 2012). Content validity can be maximized by basing items on the conceptual definition of the underlying construct (i.e., the partner acceptance themes) and incorporating expert review to ensure the appropriateness of the items (DeVellis, 2012; Streiner et al., 2008).

Criterion validity assesses the association between the newly developed scale and an established criterion measure (Streiner et al., 2008). More specifically, scale developers can test concurrent validity (i.e., administering the new scale and criterion measure at the same time), predictive validity (i.e., administering the new scale and then the criterion after some delay), or postdictive validity (i.e., administering the criterion and then the new scale after some delay; DeVellis, 2012). In the case of the PAS-CP, there is no specific criterion measure of partner acceptance of chronic pain; however, the AAQ-II, a widely used measure of experiential acceptance (i.e., acceptance of thoughts, feelings, and sensations), is the best available criterion to determine whether there is a relationship between general acceptance and partner acceptance of chronic pain more specifically. A longitudinal study design with an extended follow-up time (i.e., three

months or more) is required to determine whether a measure demonstrates predictive or postdictive validity. Concurrent validity is the only type of criterion validity that can be tested using a cross-sectional study design. Pearson product-moment correlations (r) between the newly developed scale and the criterion measure are used to establish concurrent validity. There is no agreed upon cut-off to determine if a scale has good criterion validity, but higher scores are typically better (DeVellis, 2012).

Construct validity refers to the extent to which the latent variable is associated with other theoretically related variables (DeVellis, 2012; Streiner et al., 2008). As such, construct validation involves not only testing the validity of the scale, but also the underlying theory. Streiner and colleagues (2008) explained that a single study is insufficient to unequivocally “prove” construct validity, but instead suggest that construct validation is an ongoing process of hypothesis testing and construct refinement. Experts recommend that scale developers consider both convergent and discriminant (divergent) validity when evaluating construct validity (Streiner et al., 2008; Worthington & Whittaker, 2006). A scale demonstrates convergent validity if it is strongly correlated with other theoretically related variables. For example, the PAS-CP should be strongly correlated with measures of emotional distress and marital satisfaction. Although there are no universally accepted values to represent adequate convergent validity, it is generally agreed that correlations should be high (e.g., $r = .50 - .90$), but not higher than .90 to risk multicollinearity (DeVellis, 2012). Alternatively, a scale demonstrates discriminant validity if it is weakly correlated with theoretically unrelated variables (Streiner et al., 2008; Worthington & Whittaker, 2006). Previous research on patient chronic pain acceptance, however, has not evaluated discriminant validity due to the

difficulty in identifying variables that are theoretically unrelated to acceptance. This problem extends to the measurement of partner acceptance of chronic pain; thus, there is little opportunity to meaningfully establish whether the PAS-CP demonstrates adequate discriminant validity.

Finally, scale developers should consider face validity during item construction (Streiner et al., 2008). An item is said to have face validity if it appears to measure the latent variable on the surface. Although face validity of scale items may be valuable in some cases, for the purposes of the PAS-CP, strong face validity has the potential to promote socially desirable responding. Specifically, if items explicitly inquire about degree of acceptance partners may be more inclined to respond positively in an attempt to appear morally and socially responsible (Gullickson & LaChapelle, 2018). In other words, partners may identify themselves as accepting because they believe a good partner should be accepting of their spouse's chronic pain. Thus, maximizing face validity will not be an important consideration during the PAS-CP scale development process. In fact, efforts will be made to obscure the relevance of each item to the acceptance construct to minimize social desirability bias.

1.5 Rationale and Purpose of the Present Study

Despite the established consequences of chronic pain for partners, little research has explored how the negative impacts on partners can be mitigated and partner acceptance has received little attention in the literature (Ahern & Follick, 1985; Flor et al., 1987; Roy, 2006; Schwartz & Ehde, 2000; Soderberg et al., 2003; West et al., 2012). In fact, no attempts have been made to define partner acceptance of chronic pain and no psychometrically sound measure of the construct currently exists. As a result, the only

two studies to date that have explored partner acceptance in an illness context utilized unvalidated measures of partner acceptance that may not accurately capture the construct (Boerner & Rosen, 2015; Pakenham & Samios, 2013). To address this gap in the literature, my Ph.D. Apprenticeship study endeavored to define partner acceptance of chronic pain. The study led to the identification of five themes or processes that are thought to characterize partner acceptance in a chronic pain context: (1) Understanding the Nature of Arthritis, (2) Believing in the Authenticity of the Patient's Pain, (3) Letting Go of Negative Feelings, (4) Making Practical Adjustments, and (5) Engaging in Pleasurable Activities. The five themes can now serve as the foundation for the measurement of partner acceptance of chronic pain. Although the scale development process will require more work than what is included in the current dissertation, it represents a valuable first step toward creating a theoretically and psychometrically sound measure of partner acceptance. This foundational work is essential before the measure can be submitted to a confirmatory factor analysis and its relationship to partner and patient outcomes can be thoroughly explored.

The main purpose of the current dissertation was to develop and validate the PAS-CP and, if possible, provide preliminary evidence of the benefits of partner acceptance of chronic pain for partners. The dissertation was completed in two phases utilizing the scale development guidelines outlined by numerous researchers from the health and social sciences (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008; Worthington & Whittaker, 2006). In Study 1 (the development phase), the PAS-CP item pool was generated, reviewed by experts in the field (Part A), and pilot tested on a small sample of partners in the community (Part B). The PAS-CP was adapted based on the feedback

provided by experts and the pilot sample. In Study 2 (the validation phase), a large sample of partners completed the PAS-CP and other measures of partner functioning (e.g., depression, anxiety, stress, relationship satisfaction) via an online study.⁵ Subsequently, the factor structure of the PAS-CP was explored and its preliminary psychometric properties were established. Specific research questions (RQ) and associated hypotheses (H) for each study are presented in the relevant sections.

⁵ Psychological distress and relationship satisfaction variables were chosen based on the available partner literature.

Chapter 2: Study 1A – Expert Review

2.1 Research Question and Hypothesis

RQ: Did the feedback provided by acceptance experts support the content validity of the initial PAS-CP item pool?

*There are no specific hypotheses associated with this research question.

2.2 Methods

Participants

English-speaking individuals from anywhere in the world with comprehensive and authoritative knowledge of acceptance and adjustment to chronic pain/illness were considered experts for the purposes of the present study. A list of experts was generated based on (1) a review of relevant published material (e.g., authors of peer-reviewed journal articles or books), (2) an online search for education providers (e.g., delivering clinical workshops to other professionals or the general public), and (3) identification of specialized therapeutic service providers (e.g., pain management, ACT). Contact information for each expert was retrieved from publicly accessible online sources (e.g., corresponding author information, faculty websites, clinician rosters). Based on expert review guidelines, feedback was needed from at least three experts to ensure content validity (Streiner et al., 2008). Ultimately, a total of 17 experts were chosen and invited to participate.

Creation of the PAS-CP

Prior to the start of Study 1A, the initial PAS-CP item pool was generated based on the five partner acceptance of chronic pain themes outlined in the literature review. The initial item pool consisted of 53 items (see Appendix A). Some items were novel

(i.e., created specifically for the PAS-CP), whereas others were adapted from existing measures of experiential acceptance (e.g., AAQ, AAQ-II), chronic pain acceptance (e.g., CPAQ-20), and illness acceptance (e.g., ICQ, DAAS). As per the recommendation of scale development experts, the initial item pool consisted of a significantly greater number of items than eventually would be included in the scale (DeVellis, 2012). Moreover, positive and reverse worded items were included in the item pool (DeVellis, 2012; Streiner et al., 2008). The format, instructions, and response options were identical to the most widely used patient-centered measure of chronic pain acceptance, the CPAQ-20 (McCracken et al., 2004). The PAS-CP asks respondents to rate the truthfulness of each statement using a 7-point adjectival scale ranging from 0 (*never true*) to 6 (*always true*).

Procedure

Following ethics approval from the University of New Brunswick (#2016-066), experts were contacted via email and invited to follow a secure web-link to provide feedback on the PAS-CP (see Appendix B). The invitation to participate was re-sent two- and four-weeks after initial contact to remind experts of the request (see Appendix B). Experts who visited the survey website provided informed consent (see Appendix C) and then were asked to complete the questionnaire package (see Appendix D). They started by providing background information, such as their profession (e.g., psychology, social work, medicine), area of expertise (e.g., acceptance, chronic pain, couples/relationships), and years of clinical/research experience. Subsequently, they were presented with an overview of the partner acceptance definition/themes and asked to rate their appropriateness and comprehensiveness on a 5-point Likert scale ranging from 0

(*strongly disagree*) to 4 (*strongly agree*). They were also asked to provide open-ended feedback on how the definition of partner acceptance could be expanded or improved. Next, using the same 5-point Likert scale, experts rated the relevance, clarity, and conciseness of each item on the proposed PAS-CP, and rated the appropriateness of several features of the overall scale (e.g., instructions, response options, content validity). Finally, a series of open-ended questions allowed experts to make suggestions for improving the scale, identify irrelevant or missing items, indicate alternative ways of tapping the construct, and provide any additional feedback regarding the PAS-CP. Following completion of the survey, experts were presented with the debriefing form (see Appendix E).

Analyses

Quantitative feedback (e.g., ratings of relevance, clarity, and conciseness; ratings of the appropriateness of instructions and response options; ratings of content validity) was explored using descriptive statistics to determine the construct validity of the PAS-CP. Qualitative comments made by the experts were reviewed and amalgamated. Although content validity cannot be numerically quantified, Hunsley and Mash (2008) indicated that a rating of “good” validity can be assigned to the scale if the construct is clearly defined and all elements of the instrument (e.g., instructions, items) are evaluated by experts.

2.3 Results

Sample

Five out of 17 invited experts (29.4%) provided feedback, one of which only responded to the questions about the construct definition. The experts who responded

were psychologists (four clinical; one experimental). All respondents self-identified as experts in acceptance and chronic pain. In addition, one indicated expertise in contextual behavioural science, one in psychological flexibility, and one in chronic medical conditions. Two of the experts reported splitting their research and clinical time evenly, one was primarily a clinician, one was primarily a researcher, and one was exclusively a researcher. The experts had an average of 21.2 years of clinical experience ($SD = 9.1$; range 12-35 years) and 19.3 years of research experience ($SD = 10.4$; range 5-35 years).

Expert Feedback

Experts generally agreed the definition of partner acceptance was appropriate and comprehensive, although they also recommended some improvements to the definition (see Table 2). To that end, experts made a number of conceptual and linguistic recommendations to refine and enhance the partner acceptance definition. First, a key recommendation made by several of these experts was to simplify the definition of partner acceptance by describing the five themes rather than prematurely grouping them into components. Experts indicated subsequent factor analysis would be a more appropriate way to group the themes into components. Second, experts suggested adding a theme to reflect partners' willingness to be a part of the relationship even with pain present (i.e., Relationship Willingness). Relatedly, experts recommended one of the themes, Understanding the Nature of Chronic Pain, be expanded to include partners' willingness for the patient to be in pain without attempting to reduce, control, or eliminate it. The latter suggestion serves to align the partner acceptance definition more closely with the existing conceptualization of patient chronic pain acceptance, which includes a Pain Willingness component. Third, one expert felt strongly that the definition

Table 2
Overall Expert Ratings of Partner Acceptance Definition and PAS-CP

Rating Category	Mean (SD)
<i>Definition</i>	
Appropriateness	2.80 (1.30)
Comprehensiveness	3.00 (1.41)
Could be improved	2.60 (1.14)
Content missing	1.50 (1.29)
<i>PAS-CP</i>	
Appropriateness of instructions	3.50 (0.58)
Appropriateness of response options	3.50 (0.58)
Overall relevance of items	3.25 (0.96)
Content validity	2.75 (1.26)
<i>Note.</i> Possible mean scores ranged from 0 to 4, with higher scores indicating greater agreement.	

of partner acceptance should focus on actions more than beliefs or a state of mind and the present moment more than the future. Fourth, one expert proposed that Understanding the Nature of Chronic Pain and Believing in the Authenticity of the Patient's Pain may be associated features of partner acceptance rather than part of the core construct. Fifth, a few experts suggested reworking the Letting Go of Negative Feelings theme to reflect living with negative thoughts and feelings rather than overcoming them.

On a linguistic level, experts proposed several wording changes to improve the partner acceptance definition. Specifically, one expert recommended Theme 5 be renamed Engaging in Valued Activities to be consistent with values-based nature of ACT. This expert pointed out that valued activities and pleasurable activities are not necessarily the same. In addition, one expert recommended removing the word "despite" whenever possible, because it implies anger, hatred, or spite. The expert explained ACT theory would suggest it is more appropriate for partners to engage in valued activities "with" chronic pain rather than despite it. Finally, one expert suggested the scale should focus on "I" items rather than "we" items, given the patient's behaviour is out of the partner's control.

With regard to the initial PAS-CP item pool, experts agreed the instructions and response options were appropriate. Nevertheless, one expert recommended response option two could be reworded from *seldom true* to *rarely true* to maintain consistency with response option one *very rarely true*. Experts rated the overall relevance of the PAS-CP items highly and provided ratings for relevance, clarity, and conciseness of each item (see Table 3). Items associated with the themes Letting Go of Negative Feelings, Making Practical Adjustments, and Engaging in Pleasurable Activities were rated as more

Table 3*Item Pool Expert Reviewer Rating*

Item	Relevance <i>M (SD)</i>	Clarity <i>M (SD)</i>	Conciseness <i>M (SD)</i>
Understanding the Nature of Chronic Pain			
1. I feel knowledgeable about my partner's chronic pain condition	2.25 (1.71)	3.25 (0.96)	3.50 (0.58)
2. I know the symptoms of my partner's chronic pain condition	2.25 (1.71)	3.00 (0.82)	3.33 (0.58)
3. I feel like I know very little about how my partner's chronic pain condition is treated*	2.25 (1.71)	3.00 (0.82)	3.00 (0.82)
4. I think my partner is likely always going to experience some chronic pain	2.75 (1.89)	3.00 (0)	3.00 (0.82)
5. I realize my partner's chronic pain condition will never go away completely	2.75 (1.89)	3.50 (0.58)	3.25 (0.96)
6. I sacrifice important things in my life for my partner to have control over his/her chronic pain*	3.50 (0.58)	2.50 (1.29)	3.00 (1.00)
7. Keeping my partner's chronic pain level under control takes first priority*	3.50 (0.58)	3.00 (0.82)	3.50 (0.58)
8. I think my partner needs to concentrate on getting rid of his/her chronic pain*	2.50 (0.58)	3.25 (0.50)	3.25 (0.50)
Believing in the Authenticity of the Patient's Pain			
9. I trust my partner when he/she says he/she is in pain	2.50 (1.73)	3.50 (0.58)	3.75 (0.50)
10. I believe my partner's chronic pain is as bad as he/she says	2.50 (1.73)	3.50 (0.58)	3.50 (0.58)
11. I question whether my partner experiences chronic pain as often as he/she claims*	2.50 (1.73)	3.25 (0.96)	4.00 (0)
12. I think my partner exaggerates his/her chronic pain*	2.50 (1.73)	3.50 (0.58)	3.75 (0.50)
13. I can tell my partner is in pain without him/her having to tell me	2.25 (1.50)	3.25 (0.96)	3.50 (0.58)
14. I know when my partner is having a bad pain day	2.00 (1.41)	3.25 (0.96)	3.50 (0.58)
15. I have trouble recognizing when my partner is in pain*	2.00 (1.41)	3.50 (0.58)	3.50 (0.58)

Letting Go

16. I try to avoid dwelling on negative feelings about my partner's chronic pain condition	3.50 (1.00)	3.00 (0.82)	3.25 (0.96)
17. I am able to let go of negative feelings about my partner's chronic pain condition	3.50 (0.58)	3.25 (0.96)	3.50 (0.58)
18. I have made peace with my partner's chronic pain condition	3.50 (1.00)	2.75 (1.26)	3.50 (0.58)
19. Negative thoughts and feelings about my partner's chronic pain get in the way of living my life*	3.25 (0.50)	2.75 (0.50)	3.25 (0.96)
20. My thoughts/feelings about my partner's chronic pain must change before I can move on with my life*	3.50 (0.58)	3.00 (1.15)	3.25 (0.96)
21. I avoid thinking or talking about my partner's chronic pain condition*	3.75 (0.50)	3.50 (0.58)	3.75 (0.50)
22. I have learned to live with my partner's chronic pain condition	3.50 (0.58)	3.50 (0.58)	3.75 (0.50)
23. I have come to terms with my partner's chronic pain condition	3.50 (0.58)	3.00 (0.82)	3.75 (0.50)
24. I am okay with the way my life is going despite my partner's chronic pain condition	3.25 (0.96)	3.00 (1.15)	3.25 (0.96)
25. I cannot imagine continuing to live with my partner's chronic pain condition*	3.50 (0.58)	2.75 (1.89)	3.50 (0.58)
26. I can never be happy as long as my partner has a chronic pain condition*	3.25 (0.96)	3.50 (0.58)	3.25 (0.96)

Making Practical Adjustments

27. I am willing to making practical changes to my daily routine to ease the burden of my partner's chronic pain condition	3.00 (2.00)	3.00 (1.41)	3.25 (0.96)
28. I am open to making changes to accommodate my partner's chronic pain condition	3.00 (2.00)	2.25 (0.96)	2.33 (0.58)
29. I have learned to adjust my expectations as a result of my partner's chronic pain condition	3.25 (0.96)	2.66 (0.58)	3.00 (1.00)
30. When my partner's pain increases, I am willing to take on his/her responsibilities	2.75 (1.89)	3.00 (0)	3.66 (0.58)

31. I feel like my partner's chronic pain condition is a now a normal part of my life	3.50 (0.58)	3.25 (0.96)	3.50 (0.58)
32. If necessary, I am willing to make further adjustments to accommodate my partner's chronic pain condition in the future	3.25 (0.96)	3.25 (0.96)	3.25 (0.96)
33. I try to avoid making changes to my lifestyle as a result of my partner's chronic pain condition*	3.25 (0.96)	2.50 (1.73)	3.00 (1.15)
34. I go to great lengths to maintain the lifestyle I had before my partner's pain affected my life*	3.00 (1.41)	3.25 (0.96)	3.25 (0.96)
35. I cannot imagine my partner's chronic pain condition being a normal part of my life*	3.00 (1.73)	2.25 (0.96)	3.25 (0.96)
36. It seems impossible to overcome the challenges posed by my partner's chronic pain condition*	2.75 (1.89)	3.00 (1.41)	3.25 (0.96)

Engaging in Pleasurable Activities

37. I try to do activities with my partner even when he/she is in pain	3.25 (0.96)	3.25 (0.96)	3.25 (0.96)
38. I attempt to do things with my partner despite his/her chronic pain condition	3.25 (0.96)	3.25 (0.96)	3.00 (0.82)
39. I make an effort to convince my partner we should socialize even when he/she is in pain	2.75 (1.26)	3.50 (0.58)	3.50 (0.58)
40. I avoid doing things with my partner that may increase his/her pain*	3.50 (0.58)	3.50 (0.58)	3.50 (0.58)
41. It is important that I do things I value even though my partner has a chronic pain condition	3.50 (0.58)	3.50 (0.58)	3.50 (0.58)
42. I think it is important that I live my life no matter what my partner's level of pain is	3.75 (0.50)	3.00 (0.82)	3.50 (0.58)
43. I choose not to let my partner's chronic pain condition limit the activities I do by myself or with others	4.00 (0)	3.50 (0.58)	3.00 (0.58)
44. It is a relief to realize that my partner's pain level does not have to change for me to get on with my life	3.75 (0.50)	3.25 (0.50)	3.25 (0.50)
45. My partner's chronic pain condition stops me from doing what I want to do*	3.50 (0.58)	3.25 (0.96)	3.75 (0.50)

46. When my partner cannot participate in an activity because he/she is in pain, I avoid leaving him/her behind*	2.75 (1.89)	2.50 (1.00)	3.25 (0.96)
47. I believe my life is going well even though my partner has a chronic pain condition	3.75 (0.50)	2.75 (0.50)	3.50 (0.58)
48. I lead a full life even though my partner has a chronic pain condition	3.75 (0.50)	3.25 (0.50)	3.50 (0.58)
49. My partner's chronic pain condition has helped me realize what is important in life	3.00 (1.41)	2.25 (1.26)	3.25 (0.96)
50. My partner's chronic pain condition keeps me from working toward my goals*	3.50 (0.58)	3.50 (0.58)	3.50 (0.58)
51. I think my partner's chronic pain condition prevents me from living a fulfilling life*	3.50 (0.58)	3.50 (0.58)	3.50 (0.58)
52. I think it is necessary for my partner's chronic pain to be under control for me to live my life well*	3.50 (0.58)	3.00 (0.82)	3.00 (0.82)

Note. Items denoted with an asterisk (*) are reverse worded and scored. Possible mean scores ranged from 0 to 4, with higher scores indicating greater agreement.

relevant than the items relating to Understanding the Nature of Chronic Pain and Believing in the Authenticity of the Patient's Pain. The vast majority of items were rated highly on clarity and conciseness. Importantly, although the experts agreed the Making Practical Adjustments theme was relevant to the partner adjustment experience, two experts pointed out that they would not consider it part of acceptance per se, but rather an associated experience. Moreover, they noted that the items could be interpreted in multiple ways (i.e., avoidant or adaptive), and thus the recommendation was made to eliminate the theme and associated items from the pool. Finally, experts' ratings suggested the initial PAS-CP item pool had adequate content validity, although their ratings indicated that changes could be made to improve the overall content validity of the scale.

2.4 Discussion

Principal Findings

The purpose of the expert review was to maximize the content validity of the PAS-CP. To that end, five content experts with relevant backgrounds in research and clinical practice provided quantitative and qualitative feedback on how the definition of partner acceptance and the initial PAS-CP item pool could be improved. The feedback offered by experts was comprehensive, detailed, and thoughtful. Suggestions for revision related to language clarification, strengthening the partner acceptance conceptualization, and increasing the interpretability of the PAS-CP items. Based on the ratings and recommendations provided by these experts, numerous changes were made to the definition of partner acceptance and the initial PAS-CP item pool. For example, reference to the two partner acceptance components were removed, items reflecting a new

Relationship Willingness theme were added, the Making Practical Adjustments theme was eliminated, and items related to the future were removed. A comprehensive list of the revisions can be found in Appendix F. The updated PAS-CP (version 2), based on five partner acceptance themes, can be found in Appendix G.⁶ Although experts' initial ratings of content validity were not as high as one would hope, they suggested the PAS-CP had adequate content validity.

In general, effort was made to follow every expert recommendation, but in a few instances an expert's suggestion was intentionally left unaddressed. For example, one expert suggested that the theme "Believing in the Patient's Pain Experience" might represent an associated feature of partner acceptance rather than part of the core construct and, thus, should be eliminated from the scale. Although this expert's suggestion made sense on a conceptual level, it felt appropriate to wait until the factor analysis stage to determine whether to eliminate the entire theme from the scale. Another example of expert feedback that was left unaddressed at this stage related to the PAS-CP response options. One expert made a minor suggestion about how the wording of the response options could be improved (i.e., change *seldom true* to *rarely true*). Rather than make the change immediately, it seemed appropriate to present the various response option combinations to the pilot participants in Study 1B and let them choose which responses were most clear.

⁶ While Study 1A was being completed, the results of my Ph.D. Apprenticeship project were being prepared for publication. Consequently, some of the expert feedback was incorporated into the manuscript, which was eventually accepted for publication in the Canadian Journal of Pain (Gullickson & LaChapelle, 2018).

Limitations

The expert review was an invaluable step in the scale development process that undoubtedly enhanced the content validity of the PAS-CP; however, it was not without limitations. First, only world-renowned experts in acceptance and chronic pain were included, which limited the pool of experts we could invite to participate. Had the expert pool been expanded to include less well-known ACT clinicians and acceptance researchers, more experts could have been included and additional insights may have been gained; however, such an expansion of the expert pool might have also resulted in an unmanageable amount of feedback that in some cases may have been contradictory. Second, the study is limited by its relatively low response rate (29.4%), which was likely a product of the experts that were recruited. This explanation was supported by the fact that two of the most prolific acceptance researchers responded to the email invitation to participate and indicated their busy research and speaking schedules precluded them from taking part. Although the overall response rate was less than ideal, the current sample of five experts is larger than the minimum of three suggested in scale development guidelines (Streiner et al., 2008). Thus, it is reasonable to suggest the expert review achieved its intended goal of ensuring the PAS-CP has good content validity. Third, the study was limited by the fact that experts were presented with a conceptualization of partner acceptance that had not yet been peer reviewed. Preparing the manuscript for publication in parallel to conducting the expert review lead to some confusion in the evolution of the partner acceptance themes and would not be recommended in the future. Fourth, the Relationship Willingness theme was added based on expert feedback, even though it was not originally identified as a theme in my Ph.D. Apprenticeship study.

Nevertheless, questioning one's commitment to a relationship affected by pain was an experience described by partners in the qualitative study, which supported the theme's inclusion (Gullickson & LaChapelle, 2018). Lastly, experts were not given the opportunity to re-evaluate the partner acceptance definition and item pool after their suggestions were incorporated, which limits our ability to concretely say what the final content validity rating would have been. Although it can be assumed that addressing experts' recommendations increased the content validity of the scale, it is impossible to know for certain the magnitude of the increase in content validity.

2.5 Conclusions

Expert feedback was sought and incorporated into the development of the PAS-CP to maximize the scale's content validity. The high-quality feedback provided by these experts, including their feedback related to the conceptualization of the construct, helped improve the content validity of the scale and highlighted the value of including expert review in the scale development process. The revised PAS-CP (version 2) consisted of 42 items that reflected five themes: Understanding the Nature of Chronic Pain, Believing in the Patient's Pain Experience, Living with Negative Feelings, Relationship Willingness, and Engaging in Valued Activities. Version 2 of the PAS-CP was used in the next phase of the project: pilot testing.

Chapter 3: Study 1B – Pilot Testing

3.1 Research Question and Hypothesis

RQ: Were the PAS-CP items understandable and relevant to partners?

*There are no specific hypotheses associated with this research question.

3.2 Methods

Participants

Individuals in a co-habiting romantic relationship of at least one year with a patient who experiences chronic pain (e.g., arthritis, spinal pain, neuropathic pain syndromes, migraines, muscle pain syndromes) were recruited for the pilot study. Participants had to be at least 21 years of age, fluent in English, and live in the Fredericton area. Partners were excluded from the study if they reported experiencing chronic pain themselves, because it might have affected how they responded to or were affected by their spouse's chronic pain. Partners were recruited via advertisements on online classified websites (e.g., Kijiji), the UNB eNews listserv, and snowball sampling. All partners who expressed interest in the pilot study, but were unable to participate due to scheduling conflicts, were given the opportunity to participate in study 2. Moreover, partners who took part in the pilot study and expressed interest in the validation study were also permitted to participate in study 2. In accordance with scale development guidelines, a sample of approximately 10 partners was considered sufficient for the pilot study (DeVellis, 2012).

Measures

Demographic Questionnaire. Participants were asked to provide demographic (e.g., age, gender, race, education level) and generic medical information (e.g., patient

diagnosis, time since diagnosis) about themselves and their spouse, as well as details about their romantic relationship (e.g., length of relationship).

Partner Acceptance of Chronic Pain. Partners were presented with version 2 of the PAS-CP, which contained 42 items rated on a 7-point scale ranging from 0 (*never true*) to 6 (*always true*). For the purposes of the pilot study, the order of the PAS-CP items was randomized.

Procedure

Recruitment commenced following ethical approval from the University of New Brunswick (#2017-165). Study advertisements (Appendix H) directed interested partners to contact the researcher in order to set up a mutually beneficial time and location to participate in the pilot study. When partners arrived for their scheduled appointment, informed consent was obtained (Appendix I). Subsequently, participants used a pen and paper to fill out the questionnaires (Appendix J) then took part in a retrospective interview (Appendix K). During the interview, participants were asked to identify PAS-CP items that were difficult to understand or did not seem relevant. They also gave their general perceptions of the items, response options, and instructions. Finally, they were asked to describe their thought process in choosing a response option for several items thought to be key to the partner acceptance construct. The researcher wrote down participant responses as they were given, but the sessions were also audio recorded as a backup. The pilot study took approximately 60 minutes per participant to complete. Upon completion of the survey, participants were presented with the debriefing page (Appendix L) and provided with a \$25 gift card as a token of appreciation for their participation.

Analyses

Partners' positive and negative feedback regarding the clarity and relevance of the PAS-CP items were extracted from the researcher's written notes and amalgamated.

Descriptive statistics were used to summarize the sample characteristics.

3.3 Results

Sample

A total of nine partners participated in the pilot study. The average age was 42.2 years old ($SD = 14.2$ years; range 21-64 years old). The majority were female (66.7%), married (66.7%), heterosexual (100.0%), white (100.0%), university educated (100.0%), and employed on a full-time basis (66.7%). The mean relationship length was 16.6 years ($SD = 11.5$ years; range 2.5-37.0 years). The most commonly reported patient chronic pain conditions were arthritis ($n = 5$; 55.6%); back/neck pain ($n = 5$; 55.6%), and migraines/headaches ($n = 4$; 44.4%). The majority of patients experienced more than one chronic pain condition ($n = 6$; 66.7%). The average time since patient symptom onset was 9.4 years ($SD = 6.5$ years). In most cases, patients were diagnosed with chronic pain after the relationship began ($n = 7$; 77.8%).

Pilot Participant Feedback

Pilot study participants generally perceived the PAS-CP instructions to be clear and understandable. One partner felt it was important for the instructions to emphasize partners should be focusing on their own feelings and perspectives rather than the patients'. When asked about the clarity of the response options, feedback was mostly positive, although a number of partners agreed that *very rarely true* should be changed to *almost never true* to maintain linguistic consistency with the opposite end of the scale

(i.e., *almost always true*). Moreover, partners felt the response option *seldom true* should be changed to *rarely true*, because they perceived *seldom* to be a less commonly understood term. Partners recommended the remaining response options stay the same.

Participants provided valuable feedback on the clarity and relevance of the PAS-CP items. The vast majority of items were received positively by partners, although there were several items they had difficulty understanding. For example, participants suggested the item “My partner having control over his/her pain is not as important as other things in my life” be changed so it was no longer reverse worded. Moreover, partners felt the item “I’m willing to let negative feelings about my partner’s chronic pain be there without changing them” should be reworded to emphasize the fact that the item relates to partners’ negative feelings rather than patients’. Relatedly, partners found the item “I put my life on hold because of my partner’s chronic pain” vague. There were a few items partners suggested were incongruent with the response options. That is, “I am willing to stay in my relationship even though my partner has chronic pain” and “I am committed to my partner even though he/she has chronic pain” were perceived to be yes/no questions. Participants recommended these items be reworded to match the 7-point response scale. Interestingly, with regard to relevance, partners who participated in the pilot study did not identify with the items relating to believing in the patient’s pain experience. Many indicated they had never doubted the severity or chronicity of their spouse’s pain and questioned why such items were included in the scale.

There were also a few items to which partners reacted negatively. First, partners took issue with the item “I am okay with the fact that partner’s pain level is not going to change in any lasting way”, arguing that partners may learn to live with their spouse

being in pain, but they are never really okay with it. Second, the item “My negative feelings about my partner’s chronic pain must change before I can move on with my life” made partners think of moving on without their spouse rather than moving forward with their spouse. Finally, partners indicated the item “I choose not to let my partner’s chronic pain condition limit me” could be interpreted as cold indifference toward the spouse’s pain, which was not the intended meaning behind the item.

3.4 Discussion

Principal Findings

The purpose of the pilot study was to ensure the PAS-CP was understandable and relevant to partners. To that end, nine partners completed the PAS-CP and provided feedback on how the instructions, response options, and items could be improved. The feedback offered by pilot study participants was detailed and insightful. Suggestions made by partners related to language clarification, improving the relevance of the items, and eliminating items that were not interpreted as intended. Based on recommendations provided by pilot study participants, numerous changes were made to the PAS-CP (see Table 4 for a summary). The updated 38-item PAS-CP (version 3) can be found in Appendix M.

The feedback provided by partners was a valuable supplement to the recommendations made by expert reviewers in the previous study. Whereas study 1A primarily helped to strengthen the conceptualization of partner acceptance, study 1B allowed us to maximize clarity and conciseness and eliminate items that were not interpreted as intended. Notably, partners found the items relating to believing in the patient’s pain experience to be less relevant. This finding was somewhat unexpected, as it

Table 4

Changes Made to the PAS-CP Based on Pilot Participants' Recommendations

Original (Version 2)	Updated (Version 3)
Instructions	
<p>Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully and then rate the <u>truth</u> of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers.</p>	<p>Below you will find a list of statements about <u>your</u> thoughts and feelings toward your partner's chronic pain condition. Read each item carefully and then rate the <u>truth</u> of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers. Remember, this questionnaire is about you and your experiences <u>as a partner</u>.</p>
Response Options	
<p>2 = <i>very rarely true</i> 3 = <i>seldom true</i></p>	<p>2 = <i>almost never true</i> 3 = <i>rarely true</i></p>
Reworded Items	
<p>I am okay with the fact that my partner's pain level is not going to change in any lasting way.</p>	<p>I understand my partner's pain is not going to improve in any lasting way.</p>
<p>My partner having control over his/her pain is not as important as other things in my life.</p>	<p>Other things in life are more important than my partner having control over his/her pain.</p>
<p>I sacrifice things that are important to me for my partner to have control over his/her chronic pain.</p>	<p>I would sacrifice things that are important to me for my partner to have control over his/her chronic pain.</p>

Keeping my partner's chronic pain level under control is my first priority.

I urge my partner to avoid putting himself/herself in situations where his/her pain might increase.

I am able to move past negative feelings about my partner's chronic pain without dwelling on them.

I'm willing to let negative feelings about my partner's chronic pain be there without changing them.

I feel like my partner's chronic pain condition is now a normal part of my life.

I am committed to my partner even though he/she has chronic pain.

I make an effort to do things with my partner no matter what his/her pain level is.

I encourage my partner to do things even though he/she has chronic pain.

My partner's chronic pain level has to change for me to get on with my life.

Keeping my partner's chronic pain under control is my first priority.

I urge my partner to avoid doing things that might increase his/her pain.

I can move past negative feelings about my partner's chronic pain without dwelling on them.

I'm willing to let my negative feelings about my partner's chronic pain be there without changing them.

I feel like my partner's chronic pain is a normal part of my life.

My partner's chronic pain condition makes me question my commitment to the relationship.

I make an effort to find things I can do with my partner even though he/she has pain.

I encourage my partner to do things with me even though he/she has chronic pain.

My partner's pain has to change for me to get on with my life.

Eliminated Items

My negative feelings about my partner's chronic pain must change before I can move on with my life.

-

I am willing to stay in my relationship even though my partner has chronic pain. -

I will do anything to maintain the lifestyle I had before my partner's pain affected my life. -

I choose not to let my partner's chronic pain condition limit me. -

I put my life on hold because of my partner's chronic pain. -

Added Items

- I encourage my partner to live life rather than searching for a cure for his/her chronic pain.

was a theme that was originally identified from partners' accounts in our previous qualitative study (Gullickson & LaChapelle, 2018). Nevertheless, it supports the views of the expert reviewers who suggested that believing in the patient's pain experience may be an associated feature of acceptance rather than part of the core construct. The four items related to this theme were retained in version 3 for exploratory purposes; however, we anticipated they would not emerge as a unique factor and thus would not be included in the final scale.

Limitations

The pilot study provided a wealth of useful information, but it also had several notable limitations. First, although the PAS-CP items were written at a 6th grade reading level as recommended by scale development experts, it was not explicitly assessed whether the PAS-CP items were understandable to partners with lower reading capabilities or academic achievement. The partners who participated in the pilot study were almost all university educated, which is likely a product of our primary recruitment approach (i.e., UNB eNews listserv). It is possible that partners who have fewer years of education or poorer literacy may have provided additional feedback about the interpretability of the items. Second, the nature of the study may have prompted partners with certain experiences or characteristics to volunteer. That is, partners in the current study were all comfortable meeting in person and open to sharing their adjustment experiences with the researchers. Moreover, pilot study participants reported very little distress and few difficulties adjusting to their spouse's chronic pain. This reality suggests the sample may not be representative of the larger population of partners, particularly those who are less

accepting, having difficulty adjusting, or are uncomfortable talking about their experiences.

3.5 Conclusions

The PAS-CP was pilot tested on a small sample of partners from the community to maximize the scale's clarity and relevance. Similar to the findings of Study 1A, the feedback provided by partners was very useful and highlighted the value of including a pilot study in the scale development process above and beyond the expert review. The revised PAS-CP (version 3) consisted of 38 items that reflected five themes:

Understanding the Nature of Chronic Pain, Believing in the Patient's Pain Experience, Living with Negative Feelings, Relationship Willingness, and Engaging in Valued Activities. Version 3 of the PAS-CP was used in the next phase of the project: scale validation.

Chapter 4: Study 2 – Scale Validation

4.1 Research Questions and Hypotheses

RQ1: What was the factor structure of the PAS-CP?

H1: It was anticipated the five partner acceptance themes, upon which the PAS-CP was created, would emerge as factors (Understanding the Nature of Chronic Pain, Believing in the Patient's Pain Experience, Living with Negative Feelings, Relationship Willingness, and Engaging in Valued Activities); however, given the exploratory nature of the factor analysis, the possibility for alternative numbers of factors was also considered.

RQ2: Did the PAS-CP demonstrate adequate reliability (e.g., internal consistency, temporal stability)?

H2: The PAS-CP items would have adequate internal consistency as demonstrated by Cronbach's alpha values greater than .70.

H3: The PAS-CP would show adequate temporal stability as demonstrated by an intraclass correlation of greater than .75 between partners' PAS-CP total scores at baseline and after a two-week delay.

RQ3: Did the PAS-CP demonstrate adequate concurrent validity (i.e., criterion validity)?

H4: The PAS-CP would show adequate concurrent validity as demonstrated by a positive correlation between partners' total scores on the PAS-CP and a more general measure of experiential acceptance.

RQ4: Did the PAS-CP demonstrate adequate convergent validity (i.e., construct validity)?

H5: Convergent validity would be demonstrated by negative correlations between partner acceptance and psychological distress, such that higher total scores on the PAS-CP would be associated with lower scores on a measure of depression, anxiety, and stress symptoms.

H6: Convergent validity would be further demonstrated by a positive correlation between partner acceptance and relationship satisfaction, such that higher total scores on the PAS-CP would be associated with higher relationship satisfaction scores.

4.2 Methods

Participants

In order to be eligible for the validation study, participants had to be in a current, co-habiting romantic relationship of at least 1 year with a patient who experienced chronic pain (e.g., arthritis, spinal pain, neuropathic pain syndromes, migraines, musculoskeletal pain syndromes). All participants had to be at least 21 years of age, fluent in English, and reside in North America. Partners were excluded from the study if they report experiencing chronic pain themselves because it might have affected how they responded to or were affected by their spouse's chronic pain.

Based on the recommendations of scale development and factor analysis experts, the goal was to recruit a generously large sample of approximately 300 partners (DeVellis, 2012; MacCallum & Widaman, 1999; Streiner et al., 2008). Participants from across North America were recruited directly, but also indirectly via patients, in two phases. In phase 1 (community recruitment), participants from the general population were recruited using online and paper advertisements (Appendix N). Electronic advertisements were distributed to chronic pain organizations (e.g., Chronic Pain

Coalition, American Chronic Pain Association, Arthritis Society, Chronic Pain Association of Canada), university listservs, chronic pain support groups, pain bloggers, and online classified websites in Canada (e.g., Kijiji). In addition, paper advertisements were placed at universities (i.e., University of New Brunswick, University of Regina), medical facilities (i.e., Saint John Regional Hospital, Dr. Everett Chalmers Regional Hospital, Atlantic Pain Clinic), and community centers (e.g., YMCA, grocery stores). Throughout phase 1, snowball sampling was also utilized (i.e., participants were encouraged to pass on the study information to other eligible individuals they know). To speed up data collection, recruitment was expanded in phase 2, wherein participants were recruited using the online crowdsourcing platform Amazon Mechanical Turk (MTurk). Recruitment continued for 11 months, but was discontinued when study participation slowed to almost nothing despite continuing recruitment efforts.

Measures

Background Information. Participants were asked to provide demographic (e.g., age, gender, race, education level) and generic medical information (e.g., patient diagnosis, time since diagnosis) about themselves and their spouse, as well as details about their romantic relationship (e.g., length of relationship).

Partner Acceptance of Chronic Pain. Partners were presented with version 3 of the PAS-CP, which contained 38 items rated on a 7-point scale ranging from 0 (*never true*) to 6 (*always true*). Responses were not based on a specific time frame. For the purposes of the validation study, the order of the PAS-CP items was randomized across participants.

Psychological Health. The Depression Anxiety Stress Scale-21 (DASS-21; Antony et al., 1998) is a shortened version of the original 42-item DASS developed by Lovibond and Lovibond (1995). The DASS-21 consists of three subscales: (1) Depression (DASS-D) – measuring symptoms typically associated with dysphoric mood (e.g., sadness, worthlessness), (2) Anxiety (DASS-A) – measuring physical symptoms of anxiety (e.g., increased heart rate, trembling, difficulty breathing, panic), and (3) Stress (DASS-S) – measuring symptoms such as tension, irritability, and overreaction to stressful events. Each of these three subscales consists of seven items, which are rated on a 4-point Likert scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*) according to how the respondent felt in the past week. Scores for each subscale are summed and multiplied by two to allow for comparison with the 42-item DASS. Subscale scores can range from 0 to 42, with higher scores indicating a greater number of depression, anxiety, and stress symptoms. The DASS-21 subscales have shown good to excellent internal consistency (depression $\alpha = .94$; anxiety $\alpha = .87$; stress $\alpha = .91$) in clinical and community samples (Antony et al., 1998). Concurrent validity has been demonstrated via significant correlations with other measures of depression and anxiety. Specifically, the DASS-D correlated most highly with the Beck Depression Inventory (BDI) and the DASS-A correlated most highly with the Beck Anxiety Inventory (BAI), whereas the DASS-S correlated to a moderately high level with both the BDI and BAI (Antony et al., 1998).

Relationship Satisfaction. The Global Measure of Relationship Satisfaction (GMREL; Lawrance et al., 2011) was used to assess partners' overall relationship satisfaction. This self-report measure asked respondents to rate their relationship on five

7-point dimensions: *good–bad, pleasant–unpleasant, positive–negative, satisfying–unsatisfying, valuable–worthless*. Responses were not based on a specific time frame (e.g., lifetime satisfaction, past week satisfaction). Total scores range from 5 to 35, with higher scores indicating greater relationship satisfaction. The GMREL has demonstrated excellent internal consistency using a variety of samples (e.g., cohabitating couples, married couples, sexual-minority women; $\alpha = .90 - .96$) and adequate test-retest reliability at three month follow-up ($r = .70$; Lawrance et al., 2011). Furthermore, its construct validity has been established via significant correlations with other measures of relationship adjustment (e.g., Dyadic Adjustment Scale), as well as with various indicators of positive relationship functioning (e.g., communication).

Experiential Acceptance. The AAQ-II (Bond et al., 2011) is a 7-item measure of experiential avoidance (or experiential acceptance when reverse scored). Respondents were asked to rate each statement on a 7-point Likert scale ranging from 0 (*never true*) to 6 (*always true*). Responses were not based on a specific time frame. Total scores range from 7-49, with higher scores indicating greater experiential avoidance (and lower scores representing greater experiential acceptance). The AAQ-II has demonstrated good internal consistency across six diverse samples (average $\alpha = .84$), as well as good test-retest reliability at 3 and 12 months (.81 and .79, respectively; Bond et al., 2011). Moreover, higher scores on the AAQ-II are significantly correlated with measures of depression, anxiety, and stress, demonstrating its construct validity (Bond et al., 2011).

Procedure

Following ethical approval from the University of New Brunswick (#2018-065), the University of Regina (#2018-254), and Horizon Health Network (#2018-2637), the

study was posted on Checkbox, a secure online survey platform. Community participants were directed to the survey via the link on the study advertisements and MTurk participants accessed the survey by signing up for the study via their MTurk worker account (Appendix N). When they reached the survey page, all participants were presented with the information and consent form (Appendix O). Subsequently, participants were presented with the questionnaire package in a standardized order: demographic questionnaire, PAS-CP, DASS-21, GMREL, and AAQ-II (Appendix P). For both community and MTurk participants, items to assess eligibility and data quality were included in the questionnaire package (e.g., attention checks, English proficiency items, eligibility checks). After finishing the questionnaires, participants were presented with the debriefing page (Appendix Q) and provided with information about the follow-up survey, which involved repeating the PAS-CP two weeks later to allow for evaluation of temporal stability. Following the debriefing, community participants had the option of providing an email address to enter the survey draw (i.e., \$25 CAD Amazon gift card; 1 in 12 odds) and \$1 USD was deposited into the worker account of all MTurk participants who provided quality data. The survey took approximately 20 minutes to complete.

The invitation to participate in the follow-up study was sent to all MTurk participants and community participants who expressed interest in the follow-up at the time of debriefing (Appendix R). Participants who visited the follow-up survey website were presented with the information and consent page (Appendix S), completed version 3 of the PAS-CP (Appendix M), and then were presented with the debriefing page (Appendix T). Community participants were once again given the opportunity to provide

their email to be entered into a draw for a \$25 CAD Amazon gift card (1 in 25 odds⁷) and \$1 USD was deposited into the worker account of all MTurk participants. The follow-up survey took approximately 10 minutes to complete.

Analyses

Once collected, data were screened to ensure all participants met the eligibility criteria, passed the attention checks distributed throughout the survey, and completed the survey in a reasonable timeframe. Next, data was cleaned according to the procedures outlined by Tabachnick and Fidell (2013). Specifically, the dataset was screened for missing values, univariate and multivariate outliers, normality, linearity, and homoscedasticity. Descriptive statistics were then computed to describe the sample characteristics with regard to demographic information. One-way ANOVAs and chi-squared tests were used to compare the demographic characteristics of the two subsamples.

The initial pool of 38 PAS-CP items was submitted to a series of preliminary analyses to ensure only the best items were included in the factor analysis (Boateng et al., 2018; Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). In particular, frequency distributions for each PAS-CP item were calculated to identify items with low variability or extremely skewed response distributions and corrected item-total correlations were calculated to identify items that did not correlate with the sum of the

⁷ The incentive for the follow-up study is the same monetary value as the validation study; however, the odds of winning decreased because it required a significantly smaller time commitment.

other items. Subsequently, an EFA using a principal-axis factoring extraction⁸ and an oblique rotation⁹ was conducted to determine the factor structure of the PAS-CP (RQ1) and reduce the number of items for the final version (Boateng et al., 2018; Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). The Kaiser-Myer-Olin (KMO) value was used to evaluate the factorability of the correlation matrix. Factor retention was determined by examining Kaiser's criterion (i.e., factors with eigenvalues greater than one), the scree plot (i.e., graphical levelling-off of the eigenvalues), the results of a parallel analysis (i.e., identifying true eigenvalues that are greater than eigenvalues generated from a Monte-Carlo simulated matrix created from random data of the same size), approximate simple structure (i.e., factors with strong loadings and minimal cross-loading), number of items per factor (i.e., at least three items per factor), and conceptual interpretability (i.e., theoretical consistency of the solution). Next, items were considered for deletion based on factor loadings (i.e., items with loadings less than .32 on any factor) and cross-loading on multiple factors (i.e., items that loaded on more than one factor with less than .15 difference between loadings), although interpretability of factors was also considered when making final decisions regarding item retention or deletion (Tabachnick & Fidell, 2013). As a last step, the final solution was re-calculated, including the retained items and forcing the determined number of factors.

⁸ EFA was chosen over Principal Components Analysis (PCA) because the goal of scale development is to understand latent factors that account for shared variance. EFA, which extracts a solution based on shared variance, is therefore more appropriate than PCA, which calculates a solution based on total variance. In most cases, EFA and PCA produce similar solutions, although EFA results may be more conservative (i.e., account for less variance, produce relatively weaker factor loadings) because only shared variance is reflected in the solution. Principal axis factoring was chosen over other EFA extraction methods (e.g., maximum likelihood) because it is the most robust to violations of multivariate normal distribution.

⁹ Oblique rotation (Direct Oblimin; $\delta = 0$) was chosen over orthogonal rotation because existing acceptance theory suggested the factors would be correlated. Nevertheless, both oblique and orthogonal rotations were explored to determine how rotation affected the final solution.

PAS-CP factor scores at baseline and two-week follow-up were then calculated and screened for outliers, normality, linearity, and homoscedasticity. Composite scores were also calculated for the DASS-21, GMREL, and AAQ-II and descriptive statistics were run. One-way ANOVAs were used to compare community and MTurk participant's scores on all outcome measures.

Following creation of the final PAS-CP, preliminary exploration of the measure's reliability and validity commenced. To determine whether the PAS-CP demonstrated adequate reliability (RQ2), the internal consistency and temporal stability of the measure were analyzed. Internal consistency was tested by calculating Cronbach's alpha (α) for each identified factor and the overall scale (Tabachnick & Fidell, 2013). Values $\geq .70$ were considered an indicator of adequate internal consistency (Hunsley & Mash, 2008). Temporal stability (or test-retest reliability) was established by examining the ICC value between partners' PAS-CP scores at baseline and two-week follow-up (Tabachnick & Fidell, 2013). Specifically, ICC estimates and their 95% confidence intervals were calculated based on a single-rating, absolute-agreement, 2-way mixed-effects model (Koo & Li, 2016). A priori power analysis (90% power) suggested a sample of approximately 13 to 30 partners would be sufficient to detect a good or moderate intraclass correlation, respectively, for test-retest reliability (Bujang & Baharum, 2017). Koo and Li (2016) suggested ICC values between 0.75 and 0.9 are indicative of good temporal stability, whereas values between 0.5 and 0.75 are indicative of moderate temporal stability. A two-week follow-up period was chosen because it was deemed long enough to ensure participants could not remember their baseline responses, but short enough that there

would not be true variations in the underlying construct being measured (Streiner et al., 2008).

To determine whether the PAS-CP demonstrated adequate validity (RQ3 & RQ4), the criterion and construct validity of the scale were assessed. One significant barrier to assessing concurrent validity is that no criterion measure of partner acceptance of chronic pain exists. Furthermore, there is no “gold standard” measure of general experiential acceptance. For the purposes of the current study, the most widely used measure of experiential acceptance, the AAQ-II, was the best available criterion measure. Therefore, the Pearson product-moment correlation between partners’ scores on the PAS-CP and AAQ-II was analyzed to provide preliminary evidence of concurrent validity (Streiner et al., 2008). Finally, the PAS-CP’s construct validity was demonstrated via measures of convergent validity. Specifically, convergent validity was determined by calculating the Pearson product-moment correlations between partner acceptance of chronic pain and several theoretically relevant outcome variables (e.g., symptoms of stress, depression, and anxiety; relationship satisfaction). Analysis of the correlation coefficients also indicated whether greater partner acceptance was associated with better partner outcomes. For both concurrent and convergent validity, an r value of $\geq .50$ was considered an indicator of good validity (Cohen, 2013).

4.3 Results

Eligibility and Data Quality Screening

A total of 277 partners responded to the online survey during the study period (182 community; 95 MTurk). Among the community subsample, 21 participants were screened out for: 1) being less than 21 years of age; 2) using an IP address from outside

North America; 3) completing the survey more than once; 4) failing one or more attention checks; 5) invariable response set; or 6) completing the survey in less than 5 minutes.

Among the MTurk subsample, 34 participants were screened out for: 1) using an IP address from outside North America; 2) failing one or more attention checks; 3) demonstrating a lack of English proficiency; 4) completing the survey in less than five minutes; or 5) failing to provide the MTurk survey completion code¹⁰. In total, 222 participants passed the eligibility and data quality screening (161 community; 61 MTurk).

Data Cleaning

SPSS Missing Values Analysis software was used to determine the amount and pattern of missing data. No variable was missing more than 5% of its values; however, two participants were screened out for missing more than 10% of the items on the PAS-CP (1 community; 1 MTurk). Five participants who discontinued the survey after the PAS-CP were retained for the purpose of the exploratory factor analysis, but were the subject of listwise deletion in the correlation analyses. Little's Missing Completely at Random (MCAR) test was statistically significant, $\chi^2(2567) = 2902.90, p < .001$, suggesting the missing data could not be assumed to be completely random. Given no variable was missing more than 5% of its values, however, the pattern of missing data was not expected to have a significant impact on the results. Based on the recommendation of Tabachnick and Fidell (2013), missing values were imputed using estimation-maximization.

¹⁰ At the end of the survey, MTurk participants were provided with a survey completion code they were required to enter into their MTurk worker account to be compensated for completing the survey. If no code was provided, the worker was not compensated (as per section 3b of the MTurk Participant Agreement) and their responses were considered invalid.

To retain the largest sample size possible, three univariate outliers that fell beyond 3.29 standard deviations from the mean score on the DASS-D composite score and were discontinuous from the rest of the sample were individually recoded to be one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2013). Three participants were excluded from the sample after they were determined to be multivariate outliers. Normality was assessed by examining histograms and skewness/kurtosis values. Linearity and homoscedasticity were determined by reviewing the scatterplots for each composite variable. A square root transformation was applied to the DASS-D score to account for moderate positive skew. Transformation was also attempted on the DASS-A and GMREL composites due to slight positive and negative skew, respectively, however significant increases in kurtosis resulted. Thus, the DASS-A and GMREL composites remained untransformed. All analyses involving the DASS-D were run with and without the transformation to determine if transformation impacted the results. A total of 217 participants remained in the sample after the data cleaning procedure (158 community; 59 MTurk).

Follow-Up Participation

Of the 217 participants, 83.9% expressed interest in participating in the follow-up and were sent an email invitation to do so fourteen days after their initial participation ($n = 182$). In total, 88 partners completed the follow-up (51 community; 37 MTurk), which represented a 48% response rate. Partners completed the follow-up an average of 16.34 days after their initial participation ($SD = 4.82$).

Sample Characteristics

Demographic information is presented for the total sample, as well as the community and MTurk subsamples in Table 5. Statistical comparison of these two subsamples revealed no significant differences in age, $F(1, 215) = .72, p = .40, \eta_p^2 = .003$, gender, $\chi^2(3) = 2.67, p = .45$, ethnicity, $\chi^2(7) = 13.44, p = 0.62$, employment status, $\chi^2(2) = 3.17, p = .21$, relationship status, $\chi^2(1) = .10, p = 0.75$, or relationship length, $F(1, 207) = .152, p = .70, \eta_p^2 = .001$. With regard to patient pain characteristics, there were no significant differences in pain condition ($ps > .05$), duration of pain symptoms, $F(1, 216) = .78, p = .38, \eta_p^2 = .004$, or time of pain onset relative to relationship formation, $\chi^2(1) = .11, p = .74$. Significant differences were found, however, in country of residence, $\chi^2(1) = 49.50, p < .001$, and education level, $\chi^2(4) = 9.70, p = .05$. Participants from the community subsample were primarily Canadian, whereas partners from the MTurk subsample were mostly American¹¹. Although both subsamples were highly educated, partners from the community subsample were more likely to have at least some post-secondary education compared to the MTurk subsample¹². These observed differences between the samples were expected based on data collection sources and were relatively minor, therefore these two samples were merged for the purposes of the factor analysis.

¹¹ It was expected that the MTurk subsample would be primarily American given 75% of the overall MTurk worker pool is from the USA while only 1.1% are from Canada (Difallah et al., 2018). Moreover, recruitment strategies for the community subsample were primarily directed toward a Canadian audience.

¹² It is likely the differences in post-secondary education between the two subsamples are a product of country of residence. Canadian adults are slightly more likely to have a university/college education, particularly at the graduate degree level, compared to American adults (Organization for Economic Cooperation and Development, 2019).

Table 5

Demographic Characteristics for the Community Subsample, MTurk Subsample, and Total Sample

Variable	Community (N = 158)	MTurk (N = 59)	Total Sample (N = 217)
Age (years)			
M (SD)	38.34 (11.91)	36.80 (11.76)	37.92 (11.86)
Gender <i>n</i> (%)			
Female	74 (46.8)	30 (50.8)	104 (47.9)
Male	77 (48.7)	29 (49.2)	106 (48.8)
Other (e.g., transgender)	4 (2.5)	-	4 (1.9)
Country of Residence ^a <i>n</i> (%)			
Canada	124 (78.5)	16 (27.1)	140 (64.5)
United States of America	34 (21.5)	43 (72.9)	77 (35.5)
Ethnicity <i>n</i> (%)			
White	135 (85.4)	44 (74.6)	179 (82.5)
Black	7 (4.4)	5 (8.5)	12 (5.5)
Hispanic/Latin American	6 (3.8)	4 (6.8)	10 (4.6)
Other (e.g., Asian, Indigenous)	10 (6.2)	6 (10.2)	16 (7.4)
Highest Level of Education ^a <i>n</i> (%)			
Completed high school	5 (3.2)	7 (11.9)	12 (5.5)
Some university/college	28 (17.7)	12 (20.3)	40 (18.4)
Undergraduate degree/diploma	86 (54.4)	33 (55.9)	119 (54.8)
Graduate degree	37 (23.4)	7 (11.9)	44 (20.3)
Other (e.g., no high school)	2 (1.3)	-	2 (0.9)
Employment Status <i>n</i> (%)			
Full-time	117 (74.1)	49 (83.1)	166 (76.5)
Part-time	12 (7.6)	5 (8.5)	17 (7.8)
Other (e.g., retired, student)	29 (18.4)	5 (8.5)	34 (15.7)
Relationship Status <i>n</i> (%)			
Married	90 (57.0)	35 (59.3)	125 (57.6)
Unmarried but cohabitating	68 (43.0)	24 (40.7)	92 (42.4)
Relationship Length (years)			
M (SD)	12.17 (10.88)	11.51 (11.13)	11.99 (10.93)
Patient Chronic Pain Type ^b <i>n</i> (%)			
Arthritis/Joint pain	67 (42.4)	26 (44.1)	93 (42.9)
Back pain	77 (48.7)	34 (57.6)	111 (51.2)
Neuropathic pain	26 (16.5)	7 (11.9)	33 (15.2)

Headaches	43 (27.2)	17 (28.8)	60 (27.6)
Muscle pain syndromes	2 (1.3)	8 (13.6)	10 (4.6)
Abdominal/Visceral pain	27 (17.1)	4 (6.8)	10 (4.6)
Physical trauma	11 (7.0)	3 (5.1)	14 (6.5)
Other pain	30 (19.0)	-	30 (13.8)
Time Since Pain Onset (years)			
M (<i>SD</i>)	8.60 (6.77)	7.69 (6.60)	8.35 (6.73)
Pain Onset Chronology <i>n</i> (%)			
Before the relationship began	56 (35.4)	22 (37.3)	78 (35.9)
After the relationship began	102 (64.6)	36 (61.0)	138 (63.6)
^a Denotes statistically significant differences between these two subsamples. All other comparisons were not significant.			
^b Participants were instructed to check all that apply.			

Demographic comparisons were also made between partners who participated in the follow-up study and those who did not. Several significant differences were identified between the groups. First, partners from the MTurk subsample were more likely to participate in the follow-up than partners from the community sample, $\chi^2(1) = 16.50, p < .001$ ¹³. Second, with regard to age, individuals who completed the follow-up study were approximately four years older on average than individuals who did not complete the follow-up study, $F(1, 215) = 5.45, p = .02, \eta_p^2 = .025$ ¹⁴. No significant differences were found with regard to gender, $\chi^2(3) = 1.19, p = .76$, country of residence, $\chi^2(1) = 0.13, p < .72$, marital status, $\chi^2(1) = 2.21, p = .14$, ethnicity, $\chi^2(7) = 8.29, p = .31$, education, $\chi^2(4) = 7.19, p = .13$, employment status, $\chi^2(6) = 7.19, p = .30$, or relationship length, $F(1, 207) = 2.05, p = .15$. These observed differences between the samples were expected and were characterized by small effect sizes, these two subsamples were combined for the purposes of the ICC analysis.

Exploratory Factor Analysis

The initial step in the factor analytic process was to reverse score reverse worded PAS-CP items to ensure high values on both the positive and reverse worded items indicated greater acceptance of the patient's chronic pain. Frequency distributions and descriptive statistics on the 38 original PAS-CP items revealed 11 items with low response variability and significantly skewed distributions. Specifically, a high

¹³ It was expected that MTurk participants would be more likely to complete the follow-up study given there was guaranteed compensation for doing so. Community participants were eligible to enter their name into another gift card draw if they completed the follow-up study, but it was not guaranteed compensation.

¹⁴ Although there was a statistically significant difference in age between partners who participated in the follow-up study and those who did not, the effect size was small and is unlikely to have a significant impact on the results.

percentage of participants selected 0 (*never true*) in response to items: (Q13) I am considering leaving my relationship because of my partner's chronic pain (70.5%), (Q16) I cannot imagine continuing to be in a relationship with someone who has chronic pain (62.7%), (Q23) I cannot imagine continuing to live with the consequences of my partner's chronic pain (56.2%), (Q6) My partner's chronic pain makes me question my commitment to the relationship (53.0%), (Q37) My partner's pain has to change for me to get on with my life (51.2%), (Q36) I think my partner exaggerates his/her chronic pain (49.3%), (Q35) I feel like I can never be happy because of my partner's chronic pain (46.5%), (Q4) I question whether my partner experiences chronic pain as often as he/she claims (44.2%), and (Q19) The impact of my partner's chronic pain on my life is too much to handle (43.4%). In addition, a large proportion of partners selected 6 (*always true*) in response to the items: (Q27) I trust my partner when he/she says he/she is in pain (51.6%), and (Q38) I believe my partner's chronic pain is as severe as he/she says (47.5%). Based on the distribution of responses for each item, the items were significantly skewed and characterized by non-normal distributions. Given that some authors argue univariate and multivariate normality are important assumptions of exploratory factor analysis, the decision was made to reject all 11 items from the pool (Bandalos, 2018; Tabachnick & Fidell, 2013). This modification resulted in the elimination of all items related to Believing in the Patient's Pain Experience and all but two items related to Relationship Willingness. The remaining 27 PAS-CP items were retained for subsequent analysis.

Corrected item-total correlations revealed two items that were negatively correlated with all other items within the scale: (Q21) I would sacrifice things that are

important to me for my partner to have control over his/her chronic pain ($r = -.207$), and (Q29) I am willing to let my negative feelings about my partner's chronic pain be there without changing them ($r = -.059$). Five additional items had weak corrected item-total correlations less than the recommended value of .30 (Worthington & Whittaker, 2006): (Q31) Keeping my partner's chronic pain under control is my first priority ($r = .029$), (Q1) I urge my partner to avoid doing things that might increase his/her pain ($r = .049$), (Q2) I encourage my partner to concentrate on finding a cure for his/her chronic pain ($r = .174$), (Q15) I avoid thinking about my partner's chronic pain and how it affects me ($r = .177$), and (Q7) Other things in life are more important than my partner having control over his/her pain ($r = .179$). Consequently, the decision was made to reject those seven items from the pool (Bandalos, 2018; Boateng et al., 2018; Worthington & Whittaker, 2006). Five of these items were related to Understanding the Nature of Chronic Pain and two were related to Living with Negative Feelings. Twenty items were retained for subsequent analysis.

Twenty items were submitted to an EFA using a principal-axis factoring extraction and an oblique rotation. The KMO value was 0.90, which is higher than the recommended cut-off of 0.80, suggesting sampling adequacy was achieved. Several methods were used to determine the number of factors to retain. Kaiser's criterion (i.e., eigenvalues greater than 1) suggested a four-factor solution, the scree plot (i.e., graphical levelling-off of the eigenvalues) indicated a two-factor solution, and the parallel analysis (i.e., eigenvalues greater than the randomly-generated eigenvalues produced by the

Monte-Carlo simulated matrix) suggested up to 19 factors could be retained¹⁵. Based on these statistical methods, two-, three- and four-factor solutions were considered in terms of approximate simple structure (i.e., factors with strong loadings and minimal cross-loading), number of items per factor (i.e., at least three items per factor), and conceptual interpretability (i.e., theoretical consistency of the solution).

Initial Factor Solution. With regard to approximate simple structure, the 20-item, four-factor solution was characterized by strong loadings on Factors 1, 2, and 3 and moderate loadings on Factor 4, suggesting Factor 4 was not well determined (see Table 6). Items 17 and 30 were found to cross-load equally on multiple factors, which undermined the clarity of the solution. In terms of number of items per factor, Factors 3 and 4 only had two uniquely loading items each, which is fewer than the three items per factor recommended in the literature (Boateng et al., 2018; Worthington & Whittaker, 2006). As for conceptual interpretability, the four factors seemed reasonable in light of existing acceptance theory. That is, Factor 1 (Values-Driven Action) appeared to be related to engaging in values-driven action regardless of the patient's chronic pain, Factor 2 (Chronicity) appeared to be related to understanding the persistent and incurable nature of the patient's chronic pain, Factor 3 (Joint Activities) appeared to be related to engaging in joint activities even though the patient has chronic pain, and Factor 4 (Independent Activities) appeared to be related to partners engaging in independent activities even though the patient has chronic pain. However, the interpretation was

¹⁵ None of the randomly generated eigenvalues produced in the parallel analysis were greater than the true eigenvalues generated by the EFA, suggesting none of the true eigenvalues were the product of chance. Although this information is useful, it does not provide a clear indication of how many factors to retain. Thus, other factor retention methods were weighted more heavily.

Table 6*Initial 4-Factor Direct-Oblimin Solution (20 Items)*

Item	Factor 1	Factor 2	Factor 3	Factor 4
10. My partner's chronic pain prevents me from living a fulfilling life*	.787	.019	.005	.016
26. My partner's chronic pain stands in the way of me doing what is important to me*	.759	.035	-.056	.011
14. I am unable to do things I value as a result of my partner's chronic pain*	.745	.014	-.104	-.115
33. My partner's chronic pain keeps me from working toward my goals*	.699	-.004	.050	-.062
22. I find myself dwelling on my partner's chronic pain*	.634	.024	.002	.110
8. It seems impossible to overcome the challenges posed by my partner's chronic pain*	.630	-.069	.056	-.045
9. I am okay with the way my life is going even through my partner has chronic pain	.525	.237	.060	-.183
17. I avoid trying to do activities with my partner because he/she has chronic pain*	.498	-.143	.424	.421
5. I lead a full life even though my partner has chronic pain	.464	.092	.049	-.310
30. I can move past my negative feelings about my partner's chronic pain without dwelling on them	.361	.359	.053	-.029
24. I acknowledge my partner's chronic pain will never go away completely	-.118	.900	-.017	.059
3. I understand my partner's pain is not going to improve in any lasting way	.011	.699	-.100	.012
12. I can live with the fact that my partner will probably have pain for the rest of his/her life	.208	.600	.130	-.037
18. I feel like my partner's chronic pain is a normal part of my life	.176	.516	.192	-.004
32. I have learned to live with my partner's chronic pain	.313	.509	.258	.022
20. I encourage my partner to live life rather than searching for a cure for his/her pain	-.064	.422	.102	-.076
25. I encourage my partner to do things with me even though he/she has chronic pain	-.129	.051	.806	-.112
34. I make an effort to find things I can do with my partner even though he/she has chronic pain	.028	.154	.552	-.017
11. I do things I value even though my partner has chronic pain	.261	.108	.260	-.428
28. I do what is important to me even when my partner is in pain	.152	-.028	.177	-.425

Note. Items denoted with an asterisk (*) are reverse worded and scored

complicated by items that cross-loaded, items that did not make perfect conceptual sense with the other items on a given factor (e.g., Items 22 and 30), the low number of items on Factors 3 and 4, and the negative loadings observed on the two unique items contributing to Factor 4.

In the end, the four-factor solution had some interesting statistical and conceptual qualities, but was not viable because of the low number of items on Factors 3 and 4. Given that both factors made some degree of theoretical sense, the scale development literature suggests the appropriate course of action is to return to item generation for those two hypothesized factors, collect new data, and repeat the EFA process (Boateng et al., 2018; Worthington & Whittaker, 2006); however, for practical reasons that option was not possible¹⁶. Thus, alternative solutions with fewer factors were explored through the iterative process of item deletion. First, the two items that loaded uniquely on Factor 4 were deleted (i.e., Items 11 and 28) and the analysis was repeated. The resulting three-factor solution was characterized by only two unique items on Factor 3 and three additional items with significant cross-loading. Therefore, the two items that loaded exclusively on Factor 3 were deleted (i.e., Items 25 and 34) and the analysis was repeated. The resulting two-factor solution was once again characterized by significant cross-loading on three items (i.e., Items 17, 30, and 32). Thus, all three items were deleted and the remaining 13 items were re-submitted to the EFA to determine the final solution.

Final Factor Solution. As before, the final solution was evaluated in terms of approximate simple structure, number of items per factor, and conceptual interpretability

¹⁶ The conceptual significance of eliminating Factors 3 and 4 will be reviewed in section 4.4.

(Boateng et al., 2018; Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). With regard to approximate simple structure, the 13-item, two-factor solution was characterized by strong loadings and minimal cross-loading (see Table 7). In terms of number of items per factor, Factor 1 consisted of eight items and Factor 2 consisted of five items, which is more than the recommended minimum number of three items per factor (Boateng et al., 2018; Worthington & Whittaker, 2006). As for conceptual interpretability, both factors made theoretical sense, with Factor 1 (Values-Driven Action) representing partners finding fulfillment through engagement in valued activities regardless of the patient's chronic pain and Factor 2 (Chronicity) relating to understanding the persistent and incurable nature of the patient's chronic pain. The final solution explained 49.33% of the variance after rotation. There was a moderate positive correlation between Factors 1 and 2 ($r = .38$), suggesting the factors were related but not redundant¹⁷. The final, 13-item, PAS-CP was thereafter referred to as the PAS-CP-13 to distinguish it from all previous and future versions.

Descriptive Statistics

Pearson correlations suggested there was no association between partners' total scores on the PAS-CP-13 and age ($r = .03$; $p = .670$) or relationship length ($r = .10$; $p = .152$). Moreover, one-way ANOVAs revealed no significant differences in PAS-CP-13

¹⁷ Based on the interpretive rule-of-thumb proposed by Cohen (2013), r values of $|.1|$ were considered weak, values of $|.3|$ were considered moderate, and values of $|.5|$ were considered strong. These interpretive guidelines will be used throughout the dissertation.

Table 7*Final 2-Factor Direct Oblimin Solution (13 Items)*

Item	Factor 1	Factor 2
10. My partner's chronic pain prevents me from living a fulfilling life*	.806	-.017
33. My partner's chronic pain keeps me from working toward my goals*	.757	-.019
26. My partner's chronic pain stands in the way of me doing what is important to me*	.751	-.021
14. I am unable to do things I value as a result of my partner's chronic pain*	.736	-.036
8. It seems impossible to overcome the challenges posed by my partner's chronic pain*	.661	-.069
22. I find myself dwelling on my partner's chronic pain*	.597	-.028
9. I am okay with the way my life is going even through my partner has chronic pain	.589	.273
5. I lead a full life even though my partner has chronic pain	.536	.182
24. I acknowledge my partner's chronic pain will never go away completely	-.144	.898
3. I understand my partner's pain is not going to improve in any lasting way	-.044	.681
12. I can live with the fact that my partner will probably have pain for the rest of his/her life	.266	.612
18. I feel like my partner's chronic pain is a normal part of my life	.256	.550
20. I encourage my partner to live life rather than searching for a cure for his/her pain	-.013	.483

Note. Items denoted with an asterisk (*) are reverse worded and scored.

total score based on gender, $F(3,210) = .09, p = .968, \eta_p^2 = .001$, or ethnicity, $F(7,209) = 1.45, p = .188, \eta_p^2 = .046$. In contrast, patient pain duration was significantly correlated with PAS-CP-13 total scores, suggesting partners whose spouse had been experiencing chronic pain for longer reported higher scores on the PAS-CP-13 ($r = .26; p < .001$). In addition, significantly different PAS-CP-13 total scores were found between partners whose spouse was diagnosed with pain before compared to after the relationship began, $F(1,214) = 6.91, p = .009, \eta_p^2 = .031$. This result suggests partners whose spouse was diagnosed with chronic pain before the relationship began scored significantly higher on the PAS-CP-13 compared to partners whose spouse was diagnosed with chronic pain after the relationship began.

Means and standard deviations for each outcome measure are presented by subsample and total sample in Table 8. Pearson product-moment correlations between all measures other than the PAS-CP-13 are presented in Table 9. One-way ANOVAs revealed significant differences between the community and MTurk subsamples on the PAS-CP-13 total score, $F(1,217) = 6.56, p = .011, \eta_p^2 = .030$, PAS-CP-13 Values-Driven Action factor score, $F(1,217) = 8.21, p = .005, \eta_p^2 = .037$, DASS-S, $F(1,216) = 11.58, p = .001, \eta_p^2 = .051$, DASS-A, $F(1,216) = 7.15, p = .008, \eta_p^2 = .032$, DASS-D, $F(1,216) = 7.51, p = .007, \eta_p^2 = .034$, GMREL, $F(1,216) = 14.49, p < .001, \eta_p^2 = .063$, and AAQ-II, $F(1,212) = 6.43, p = .012, \eta_p^2 = .030$. Examination of variable means suggested that partners from the MTurk subsample scored slightly higher on measures of partner acceptance, relationship satisfaction, and experiential acceptance, and slightly lower on measures of depression, anxiety, and stress symptoms compared to partners from the

Table 8

Means and Standard Deviations on All Outcome Measures for the Community Subsample, MTurk Subsample, and Total Sample

Measure	Community <i>M (SD)</i>	MTurk <i>M (SD)</i>	Total Sample <i>M (SD)</i>
PAS-CP-13 ^a	63.42 (13.10)	68.39 (11.65)	64.77 (12.89)
Values-Driven Action ^a	39.44 (9.26)	43.36 (8.07)	40.51 (9.10)
Chronicity	23.97 (6.05)	25.03 (6.03)	24.26 (6.05)
PAS-CP-13 Follow-Up	64.65 (13.80)	69.68 (10.27)	66.76 (12.62)
Values-Driven Action	40.65 (9.46)	43.35 (7.71)	41.78 (8.82)
Chronicity	24.00 (6.38)	26.32 (5.22)	24.98 (6.00)
DASS-S ^a	14.96 (8.97)	10.17 (9.88)	13.65 (9.45)
DASS-D ^a	10.85 (8.94)	6.93 (10.38)	9.78 (9.49)
DASS-A ^a	9.12 (8.63)	5.73 (7.40)	8.19 (8.43)
GMREL ^a	28.50 (5.09)	31.41 (4.73)	29.30 (5.15)
AAQ-II ^{ab}	36.01 (9.47)	39.68 (9.33)	37.03 (9.55)

Note. PAS-CP-13 = Partner Acceptance Scale for Chronic Pain – 13 items (possible range in scores 13-91); DASS-S = Depression, Anxiety, Stress Scale – Stress Subscale (possible range in scores 0-42); DASS-D = Depression, Anxiety, Stress Scale – Depression Subscale (possible range in scores 0-42); DASS-A = Depression, Anxiety, Stress Scale – Anxiety Subscale (possible range in scores 0-42); GMREL = Global Measure of Relationship Satisfaction (possible range in scores 5-35); AAQ-II = Acceptance and Action Questionnaire – II (possible range in scores 7-49).

^a Denotes statistically significant differences between these two subsamples. All other comparisons were not significant.

^b AAQ scores were reverse scored so higher values represent greater experiential acceptance.

Table 9
Pearson Product-Moment Correlations Between Outcome Measures

	AAQ-II	DASS-D^a	DASS-A	DASS-S	GMREL
AAQ-II	-				
DASS-D	-.71	-			
DASS-A	-.69	.67	-		
DASS-S	-.71	.74	.68	-	
GMREL	.37	-.45	-.30	-.33	-

Note. AAQ-II = Acceptance and Action Questionnaire – II; DASS-D = Depression, Anxiety, Stress Scale – Depression Subscale; DASS-A = Depression, Anxiety, Stress Scale – Anxiety Subscale; DASS-S = Depression, Anxiety, Stress Scale – Stress Subscale; GMREL = Global Measure of Relationship Satisfaction. All correlations were statistically significant at $p < .01$.

^a Correlations using the untransformed DASS-D variable are presented for ease of interpretation and because the results were not substantially different when the transformed DASS-D variable was used.

community subsample. Despite these statistically significant differences, effect sizes were small, indicating that these differences were unlikely to have practical significance. In addition, no significant differences were observed for the PAS-CP-13 Chronicity factor score, $F(1,217) = 1.32, p = .252, \eta_p^2 = .006$, PAS-CP-13 Follow-Up total score, $F(1,88) = 3.50, p = .065, \eta_p^2 = .039$, PAS-CP-13 Follow-Up Values-Driven Action factor score, $F(1,88) = 2.04, p = .157, \eta_p^2 = .023$, or PAS-CP-13 Follow-Up Chronicity factor score, $F(1,88) = 3.30, p = .073, \eta_p^2 = .037$. Thus, the decision to merge these two sample sources was sound.

The majority of partners from the total sample were psychologically well-adjusted, with mean scores on measures of depression, anxiety, and stress symptoms in the “normal” range and relatively high experiential acceptance scores (Lovibond & Lovibond, 1995). Nevertheless, approximately 30% of partners scored in the “moderate” to “extremely severe” symptom ranges on one or more of the depression, anxiety, and stress scales, suggesting a notable proportion of partners were experiencing psychological distress (Lovibond & Lovibond, 1995). Moreover, approximately 21% of partners reported low scores¹⁸ on the measure of experiential acceptance, indicating at least some partners were generally avoidant of coming into contact with their negative feelings (not specific to their spouse’s chronic pain). At the relationship level, the majority of partners reported high relationship satisfaction, suggesting their relationships were characterized as “good”, “pleasant”, “positive”, “satisfying”, and “valuable”. Approximately 7% of

¹⁸ There are no well-established clinical cut-offs for the AAQ-II, so for the purposes of this estimate, scores that fell at or below 28 (half the total range for the scale) were considered “low”.

partners, however, scored relatively low¹⁹ on the GMREL, indicating they had a tendency to describe their relationship as “bad”, “unpleasant”, “negative”, “unsatisfying” or “worthless”.

Reliability

Cronbach’s alpha (α) values for the PAS-CP-13 total and factor scores at baseline and follow-up were all greater than .80 (see Table 10), suggesting the PAS-CP-13 demonstrated good internal consistency at both time points (Hunsley & Mash, 2008). ICC estimates between partners’ PAS-CP-13 total and factor scores at baseline and two-week follow-up were all .75 or greater (see Table 11), which is an indicator of good temporal stability or test-retest reliability (Koo & Li, 2016).

Validity

Pearson product-moment correlations between the PAS-CP-13 and all other measures are presented in Table 12. A moderate positive correlation was observed between the PAS-CP-13 and the AAQ-II, providing modest support for the concurrent validity of the PAS-CP-13. Moderate negative correlations were observed between the PAS-CP-13 and measures of depression, anxiety, and stress symptoms, indicating higher scores on the PAS-CP-13 were associated with fewer symptoms of depression, anxiety, and stress. Of all the DASS-21 subscales, the DASS-D was most strongly associated with the PAS-CP-13, particularly the Values-Driven Action factor. Notably, a strong positive correlation was observed between the PAS-CP-13 and GMREL, suggesting that higher scores on the PAS-CP-13 were associated with greater relationship satisfaction,

¹⁹ There are no well-established cut-offs for the GMREL, so for the purposes of this estimate, scores that fell at or below 20 (half the total range for the scale) were considered “low”.

Table 10
Internal Consistency for All Measures

Measure	α
PAS-CP-13	.87
Values-Driven Action Factor	.88
Chronicity Factor	.80
PAS-CP-13 Follow-Up	.88
Values-Driven Action Factor	.88
Chronicity Factor	.82
DASS-S	.87
DASS-D	.91
DASS-A	.86
GMREL	.92
AAQ-II	.92

Note. PAS-CP-13 = Partner Acceptance Scale for Chronic Pain – 13 items; DASS-S = Depression, Anxiety, Stress Scale – Stress Subscale; DASS-D = Depression, Anxiety, Stress Scale – Depression Subscale; DASS-A = Depression, Anxiety, Stress Scale – Anxiety Subscale; GMREL = Global Measure of Relationship Satisfaction; AAQ-II = Acceptance and Action Questionnaire – II.

Table 11
Intraclass Correlation Coefficients (ICC) Between Baseline and Follow-Up

Scale	ICC^a	95% CI
PAS-CP-13 Total Score	.80	.71 - .86
Values-Driven Action Factor	.76	.66 - .84
Chronicity Factor	.75	.64 - .83

Note. CI = confidence interval.
^a Based on a single-rating, absolute-agreement, 2-way mixed-effects model.

Table 12
Pearson Product-Moment Correlations Between PAS-CP-13 and Outcome Measures

	AAQ-II (<i>n</i> = 212)	DASS-D^a (<i>n</i> = 216)	DASS-A (<i>n</i> = 216)	DASS-S (<i>n</i> = 216)	GMREL (<i>n</i> = 216)
PAS-CP-13 Total Score	.31	-.41	-.33	-.26	.53
Values-Driven Action	.26	-.39	-.28	-.24	.57
Chronicity	.28	-.29	-.29	-.19	.28

Note. PAS-CP-13 = Partner Acceptance Scale for Chronic Pain – 13 items; DASS-S = Depression, Anxiety, Stress Scale – Stress Subscale; DASS-D = Depression, Anxiety, Stress Scale – Depression Subscale; Depression, Anxiety, Stress Scale – Anxiety Subscale; GMREL = Global Measure of Relationship Satisfaction; AAQ-II = Acceptance and Action Questionnaire – II. All correlations were statistically significant at $p < .01$.

^a Correlations using the untransformed DASS-D variable are presented for ease of interpretation and because the results were not substantially different when the transformed DASS-D variable was used.

especially with regard to Values-Driven Action. Together, these correlations provide modest evidence of convergent validity.

4.4 Discussion

Principal Findings

The purpose of Study 2 was to develop and validate the PAS-CP, a self-report questionnaire measuring partners' acceptance of their spouse's chronic pain. A sample of 217 partners, recruited from the community and MTurk, provided high quality data that contributed to the creation of the PAS-CP. The sample was diverse in terms of age, gender, country of residence, relationship status, relationship length, patient chronic pain type, and patient chronic pain duration, suggesting the sample was representative of a wide range of partners. The majority of partners reported little to mild psychological distress and high relationship satisfaction, but there was variability in the scores on outcome measures across the total sample, indicating at least some partners experienced significant psychological distress and low relationship satisfaction. The initial PAS-CP item pool presented to participants consisted of 38 items, but 18 items were rejected from the pool due to low response variability and weak corrected item-total correlations. Thus, twenty items were submitted to the EFA using a principal-axis factoring extraction and an oblique rotation, which resulted in a 13-item, 2-factor final solution, subsequently referred to as the PAS-CP-13. The final factor solution explained 49.33% of the variance in the item set after rotation.

Factor Structure. It was anticipated that five partner acceptance themes (i.e., Understanding the Nature of Chronic Pain, Believing in the Patient's Pain Experience, Living with Negative Feelings, Relationship Willingness, Engaging in Valued Activities)

would emerge as factors (Hypothesis 1). The results of the EFA did not support this hypothesis; rather, a two-factor solution supported by the data was adopted and meaningful interpretation was undertaken, as recommended by Worthington and Whitaker (2006). The final PAS-CP-13 solution consisted of two factors: (1) Values-Driven Action and (2) Chronicity.

Values-Driven Action. The emergence of Factor 1 suggested the PAS-CP-13 measures partners' finding fulfillment through engagement in valued activities regardless of the patient's chronic pain. The content captured in the Values-Driven Action factor is comparable to the concepts that underlie the Values and Committed Action pillars of psychological flexibility, as well as the Activity Engagement factor of the CPAQ (Hayes et al., 2006; McCracken et al., 2004). Moreover, consistent with existing patient-focused literature, significant correlations between the PAS-CP-13 Values-Driven Action factor and measures of psychological distress and relationship satisfaction suggested stronger values-based action is related to better partner outcomes (Reneman et al., 2010; Veehof et al., 2016). These findings provided an indication that engagement in values-based activity is an important aspect of the adjustment process for partners, similar to its benefits for patient adjustment. As a result, it also seems likely that acceptance and commitment-based therapies aimed at increasing engagement in valued activities would be an ideal treatment target for partners, as it is for patients (Hayes et al., 2006). A couples-based intervention incorporating values clarification and values-based action exercises, such as the one proposed by Cano and colleagues (2018), may be particularly beneficial.

Chronicity. The emergence of Factor 2 suggested the PAS-CP-13 also measures partners' understanding of the persistent and incurable nature of their spouse's chronic

pain. Although the Chronicity factor does not directly correspond with experiential acceptance theory, because it is specific to the chronic pain experience (Hayes et al., 2006), it is similar to an identically named factor that was originally derived during the creation of the CPAQ (McCracken, 1999; McCracken et al., 2004). Two factor analysis studies conducted by McCracken and colleagues identified a Chronicity factor that represented patients recognizing pain may not change. In their research, regression analyses suggested this factor was a significant predictor of depression symptoms and pain-related anxiety symptoms, but contributed less variance than the Activity Engagement and Pain Willingness factors of the CPAQ (McCracken et al., 2004). Therefore, the Chronicity factor was not retained as part of the final version of the CPAQ. In the current study, a similar result was observed: Chronicity was significantly correlated with relationship satisfaction and partner depression, anxiety, and stress symptoms, yet most correlations were stronger for the Values-Driven Action factor. Nevertheless, it did not seem appropriate to eliminate the Chronicity factor so early in the scale development process. Rather, the factor was retained in the final version of the PAS-CP-13 to allow future research to explore its utility. In particular, further study is required to determine if the Chronicity factor can be improved to better predict partner outcomes or if it is better thought of as a precursor to acceptance.

Joint and Independent Activities. Factors 3 and 4 were eliminated from the PAS-CP-13 because each factor did not have the minimum number of unique items recommended for factor stability (Boateng et al., 2018; Worthington & Whittaker, 2006). Factor 3, which was labelled Joint Activities and consisted of two unique items with strong and moderate positive factor loadings, represented partners' efforts to engage in

joint activities with the patient regardless of chronic pain. Theoretically, these two items that loaded on Factor 3 were expected to load on Factor 1 with other items created to reflect the Engagement in Valued Activities theme (Gullickson & LaChapelle, 2018). One possible explanation for these two items loading on their own factor is that they are the only items in the pool that make reference to couple-based activities, which could have affected how partners interpreted the items or might suggest there is some conceptual difference between engaging in individual- vs. couple-based valued activities. The strong factor loadings suggest there is value in creating additional items to represent Factor 3 and subsequently repeating the factor analytic process (Boateng et al., 2018; Worthington & Whittaker, 2006). Doing so would help determine if Factor 3 is truly an independent factor that is meaningfully associated with partner and relationship outcomes, if it is better conceptualized as part of the Values-Driven Action factor, or if it should be eliminated from the scale permanently.

Factor 4, which was labelled Independent Activities, consisted of two unique items with moderate negative factor loadings that were originally created to reflect Engagement in Valued Activities (Gullickson & LaChapelle, 2018). There was no obvious conceptual reason these two items would load on a unique factor. The negative factor loadings suggested Factor 4 could be a method factor (i.e., the items loaded on this factor because of their negative relationship to all the other items, rather than because they represent a unique construct). Alternatively, the negative loadings could be an indicator that partners did not interpret these items in the expected way. That is, partners responses reflected a tendency not to engage in personally valued activities due to the patient's chronic pain, which is in direct contrast to items that loaded on Factor 1.

Although it is unlikely these two items represent a truly unique facet of partner acceptance, conducting qualitative think-aloud interviews with partners might clarify how these items were interpreted and give some indication as to whether generating additional items to represent this factor would be worthwhile.

Believing in the Patient's Pain Experience. All four items pertaining to Believing in the Patient's Pain Experience were eliminated from the item pool prior to the EFA due to low response variability, which suggested doubting the patient's pain was not a common experience among partners in this relatively well-adjusted sample. This perspective was reflected in the pilot study, as participants from Study 1B did not identify with these items. These findings are counter to the experiences of some partners in our previous study (Gullickson & LaChapelle, 2018), in which participants endorsed doubts about the authenticity of their spouse's chronic pain. It may be that the current sample did not include a sufficient number of partners who were having difficulty believing in the patient's pain experience and, consequently, struggling to adjust to their spouse's chronic pain. Alternatively, it could be that this theme is not central to the conceptualization of partner acceptance. Including more partners with a variety of adjustment experiences (e.g., shorter time since chronic pain diagnosis) may have resulted in better response distributions and the retention of these items in the factor analysis. On a conceptual level, however, the exclusion of these items from the EFA is not entirely unexpected given that the experts in Study 1A suggested Believing in the Patient's Pain Experience is more likely an associated feature of partner acceptance. Nevertheless, there may be value in further exploring the experiences of partners who have difficulty believing in the authenticity of their spouse's pain. This experience could represent a valuable treatment

target to be addressed for a minority of partners who are struggling to adjust to their spouse's chronic pain. Interventions that focus on improving open and empathic communication could be helpful in this regard (Cano et al., 2018).

Living with Negative Feelings. Items originally created to reflect the Living with Negative Feelings theme did not load onto a single factor, contrary to what was hypothesized. Rather, three items loaded on the Values-Driven Action factor, four items were eliminated from the item pool prior to the EFA for a variety of reasons (e.g., low response variability, negative or low corrected item-total correlations), and one item was deleted from the final EFA solution due to significant cross-loading on multiple factors. On a conceptual level, there is little doubt that Living with Negative Feelings is an integral part of the partner acceptance experience; thus, other explanations for this theme's exclusion must be considered. Similar to other themes, it is possible the sample of partners was too well-adjusted to experience the negative feelings tapped by these items. Alternatively, these items may not have been nuanced enough to sufficiently capture partners' experiences, may not have been interpreted by partners as expected, or may have had significant conceptual overlap with other items. Likely, a combination of these factors was to blame for a factor reflecting Living with Negative Feelings not emerging from the EFA. This outcome is particularly problematic because Living with Negative Feelings is the theme that reflects experiential acceptance (i.e., willingness to be in contact with negative thoughts and feelings). The absence of an experiential acceptance factor means the PAS-CP-13 does not measure acceptance as intended.

Qualitative interviews with acceptance experts and partners are needed to better understand partners' experiences of living with negative feelings about their spouse's

chronic pain. Content experts may be able to provide conceptual clarity and assist with generating additional scale items that tap into experiential acceptance. Partners can provide insight into how these original items were interpreted and comment on their specific experiences with negative feelings about their spouse's chronic pain.

Understanding experiential acceptance on a conceptual level will improve our ability to generate additional scale items to capture the Living with Negative Feelings theme.

Subsequently, another EFA can be conducted to determine if experiential acceptance represents a unique factor and how it is related to partner adjustment.

Relationship Willingness. Similar to other themes, items originally created to reflect the Relationship Willingness theme did not load onto a single factor as expected. Of particular note are the five items that were eliminated from the item pool prior to the EFA due to low response variability. Despite some partners in the Gullickson and LaChapelle (2018) study describing ambivalence about staying in the relationship because of chronic pain, and the recommendation of the expert reviewers in Study 1A to include items reflecting this theme, the vast majority of partners who participated in the present study reported strong relationship willingness. There are a number of possible reasons for the observed low response variability. First, it is possible the wording of these items affected how partners responded. For instance, items may have been too definitive and/or the reverse wording may have dissuaded partners from agreeing with the item. Second, partners may have been affected by social desirability bias due to social norms about being a supportive partner, wherein they were hesitant to admit they had considered leaving the relationship. Partners who completed the survey in the presence of their spouse might have been particularly likely to engage in socially desirable responding.

Third, the sample may not have included enough partners who were having difficulty adjusting to their spouse's chronic pain or were considering terminating their relationship.

It is evident the initial item pool did not adequately capture Relationship Willingness; however, partners and acceptance experts both supported its continued presence as an important facet of partner acceptance, which suggests it should not yet be eliminated based on low response variability alone. Future item generation efforts should focus on creating more nuanced items and recruiting a sample with diverse adjustment experiences (e.g., those in current and recently terminated relationships) to improve the likelihood that Relationship Willingness items will not be eliminated from the item pool prior to the EFA. Moreover, strategies for overcoming or accounting for social desirability can be included in future surveys to ensure the effect of socially desirable responding is kept to a minimum (Nederhof, 1985).

Pain Willingness. In the patient chronic pain acceptance literature, Pain Willingness refers to patients' willingness to refrain from attempts to control, reduce, or eliminate their pain (McCracken, 1999; McCracken et al., 2004). When the initial PAS-CP item pool was created, several items were included within the Understanding the Nature of Chronic Pain theme to reflect the same idea from the partner perspective. Unexpectedly, such items were eliminated from the item pool prior to the EFA based on their corrected item-total correlations. That is, three items reflecting partner pain willingness were not significantly correlated with the rest of the items in the pool. One additional item was negatively correlated with the other items in the pool, suggesting this item was not interpreted by partners in the expected way. On their face, these findings

might make it appear as if pain willingness is not a distinct part of partner pain acceptance; however, given that pain willingness is such a key facet of patient chronic pain acceptance, and the fact that these items were not of sufficient quality to be included in the EFA, more research is needed to explore the meaning of pain willingness from the partner perspective. In particular, it would be helpful to better understand partners' perceived control over their spouse's chronic pain. If future research determines pain willingness is not part of the partner acceptance construct, then this would mean prior adaptations of the CPAQ for use with partners may have been inappropriate.

PAS-CP-13 Psychometric Properties. Following the factor analysis, the preliminary psychometric properties of the PAS-CP-13 were evaluated. The analyses were considered preliminary in nature, because making concrete conclusions about the psychometric properties of a measure based on a first-of-its-kind exploratory study is not recommended by scale development experts (Worthington & Whittaker, 2006). Nevertheless, it was important to measure the preliminary reliability and validity of the PAS-CP to establish a psychometric baseline and to inform future research on the scale.

Reliability. High internal consistency values and good temporal stability provided preliminary support for the reliability of the PAS-CP-13. Consistent with Hypothesis 2, the total score and factor scores of the PAS-CP-13 had Cronbach's alpha values at or above .80 at baseline and at two-week follow-up. Furthermore, ICC values for the PAS-CP-13 total score and factor scores were at or above .75 after a two-week delay, which supported Hypothesis 3. Overall, these findings suggested the PAS-CP-13: (1) consistently yielded similar scores and (2) measured the construct reliably over time (Hunsley & Mash, 2008; Koo & Li, 2016). Although high internal consistency and good

temporal stability are signs of a psychometrically reliable measure, additional research, including a CFA, is needed to make stronger conclusions about the overall reliability of the PAS-CP-13.

Validity. Examination of concurrent and convergent validity provided modest support for the validity of the PAS-CP-13. Consistent with Hypothesis 4, a statistically significant positive correlation between partners' PAS-CP total score and the AAQ-II, a more general measure of experiential acceptance, was observed. The correlation was moderate in strength, suggesting the two scales are related, but do not measure identical constructs. This finding is not surprising given that the final version of the PAS-CP focused on Values-Driven Action and Chronicity rather than experiential acceptance of unpleasant thoughts, emotions, and memories, which is the focus of the AAQ-II. Furthermore, the AAQ-II was not the ideal criterion measure from the outset. The AAQ-II was chosen a priori as a measure of concurrent validity because of its theoretical breadth, brevity (i.e., 7 items), and widespread use, but it is not designed to measure experiential acceptance in a chronic pain context. Finding an appropriate scale to assess concurrent validity likely will be an ongoing research problem given that there is currently no "gold standard" measure of experiential acceptance and no existing measures of partner acceptance of chronic pain (Gámez et al., 2011; McAndrews et al., 2019). The patient-focused CPAQ has had similar difficulties establishing concurrent validity because no criterion measure of chronic pain acceptance exists either (Reneman et al., 2010).

The convergent validity of the PAS-CP-13 was expected to be demonstrated by negative correlations between the PAS-CP-13 total score and the depression, anxiety, and

stress subscales of the DASS-21 (Hypothesis 5), as well as a positive correlation between the PAS-CP-13 total score and relationship satisfaction scores measured by the GMREL (Hypothesis 6). Consistent with these hypotheses, partners with higher scores on the PAS-CP-13 reported significantly fewer symptoms of depression, anxiety, and stress, as well as significantly greater relationship satisfaction. The strength of these correlations suggested the PAS-CP-13 is moderately associated with psychological distress and strongly associated with relationship satisfaction.

At the factor level, Factor 1 (Values-Driven Action) was more strongly correlated with all outcomes than Factor 2 (Chronicity), which provides evidence that engaging in values-driven action regardless of the patient's chronic pain is more strongly associated with psychological health and relationship satisfaction than accepting the chronicity of the patient's chronic pain. With regard to the different measures of psychological distress, the PAS-CP total and factor scores were most strongly associated with the DASS-D ($r = -.41$ to $-.29$), followed by the DASS-A ($r = -.33$ to $-.29$), and the DASS-S ($r = -.26$ to $-.19$). These results indicated there is variability in the strength of the relationship between the PAS-CP-13 and several aspects of psychological distress; however, higher PAS-CP-13 scores are most strongly related to the experience of fewer depressive symptoms. It is possible these relationships would have been even stronger if not for low DASS-21 score variability. As stated previously, the current sample was well adjusted, with the majority of partners reporting depression, anxiety, and stress symptom scores in the "normal" or "mild" range (Lovibond & Lovibond, 1995). If the sample had included a larger proportion of partners who reported "moderate" or "severe" psychological distress, it is likely these correlations would have been stronger.

Overall, findings from the current study provided modest support for the concurrent and convergent validity of the PAS-CP-13. Nevertheless, the measure is plagued by significant issues with content validity. That is, the PAS-CP-13 does not measure what it was intended to measure based on existing acceptance theory (e.g., Living with Negative Feelings, Pain Willingness), which could explain why convergent validity was not as strong as expected for measures of psychological distress. Revision and expansion of the PAS-CP-13 to include other theoretically relevant factors (e.g., Living with Negative Feelings, Relationship Willingness) will serve to improve content validity, and perhaps consequently, other forms of validity.

Relationship to Demographic and Pain Variables. PAS-CP-13 scores did not significantly differ based on a number of important demographic variables, such as age, gender, ethnicity, and relationship length. This finding supports the conclusion that partners' engagement in valued activities and understanding of the chronicity of the patient's chronic pain does not differ significantly based on demographic group. Patient research has reported similar null findings with regard to chronic pain acceptance and demographic characteristics (McCracken et al., 2004). PAS-CP-13 total scores did differ, however, based on the duration of the patient's chronic pain and whether the patient was diagnosed with chronic pain before or after the relationship began. Specifically, partners whose spouse had longer history of pain and already had pain before the relationship began reported higher scores on the PAS-CP-13. Given that average relationship length was longer for partners whose spouse was diagnosed before the relationship began, it seems relationship length may be a better predictor of partners' engagement in valued

activities and understanding of the persistent and incurable nature of chronic pain. The clinical significance of this relationship will need to be explored in future studies.

Partner Outcomes. The majority of partners who participated in Study 2 reported being psychologically well adjusted and satisfied with their romantic relationships; nevertheless, approximately 30% of the total sample scored in the “moderate” to “extremely severe” symptom range on the measure of depression, anxiety, and stress (Lovibond & Lovibond, 1995). Furthermore, approximately 7% of partners reported low relationship satisfaction scores. Consistent with existing literature, this finding suggests that at least a proportion of the partners in the current study were experiencing substantial psychological distress and reduced relationship satisfaction in a chronic pain context (Ahern & Follick, 1985; Dueñas et al., 2016; Flor et al., 1989; Roy, 2006; Schwartz & Ehde, 2000; West et al., 2012). This finding highlights the fact that at least some partners may need professional help adjusting to their spouse’s chronic pain and there is value in exploring constructs, like acceptance, that may promote positive adjustment to chronic pain at the individual and relationship levels.

Limitations

Research Design. The current study utilized a cross-sectional design, such that partner acceptance of chronic pain, depression, anxiety, and stress symptoms, relationship satisfaction, and experiential acceptance were assessed at only one time point. This type of design does not account for the fact that partners’ scores on these measures have the potential to change over time. For example, partners from the study by Gullickson and LaChapelle (2018) reported that fluctuations in patients’ pain-related disability requires partners to constantly re-adjust to chronic pain, which in turn might lead to variations in

acceptance, psychological distress, or relationship satisfaction. Moreover, it is possible certain facets of partner acceptance (e.g., Believing in the Patient's Pain Experience) occur earlier in the adjustment process and therefore might not be captured by collecting data at only one time point. Relatedly, the correlational nature of the current study prevents causal conclusions from being made about the direction of the relationships between the variables. For instance, it is unclear whether partner acceptance of chronic pain predicts relationship satisfaction or vice versa. Longitudinal research designs would help to address these limitations.

The use of an online, self-report survey also can be considered a limitation. The online format was chosen so the study could be completed across a wide geographical area and to maximize the opportunity to sample a variety of partners, but it is possible some partners were unable to participate due to lack of access to the Internet or lack of technological literacy. In addition, the exclusive use of retrospective self-report measures increases the risk of biased responding. In particular, social desirability bias is a concern in this case, given that participants may have felt internal or external pressure to present themselves as supportive, loving, and accepting partners (Krumpal, 2013). The inclusion of a social desirability measure or the incorporation of other methods of reducing socially desirable responding would be a valuable addition to future studies in this area (Nederhof, 1985). Finally, the study is limited by the fact that the PAS-CP had not been tested in an online format in the past. Study 1B utilized a retrospective interview format, which required partners to complete the PAS-CP using pen and paper. It is unclear if there are statistically and clinically significant differences in partners scores on the PAS-CP when the measure is completed online versus on paper.

Item Wording. Unexpectedly, in the final PAS-CP-13 solution, all of the reverse worded items loaded on Factor 1. Although the decision to include reverse worded items was made with good intentions (i.e., to reduce acquiescence bias), it is possible item wording inadvertently contaminated the structure of the scale to create a method factor. One possible explanation for this phenomena is that partners interpreted items differently depending on whether they were positively or reverse worded, even if these items were designed to measure similar content (e.g., “I am not able to do things I value as a result of my partner’s chronic pain” versus “I do things I value even though my partner has chronic pain”). Conducting think-aloud interviews to explore participants’ cognitive processes when responding to different types of reverse worded items could shed light on how reverse worded items are interpreted (Johnson & Christensen, 2014). Future research exploring the effect of including negation and polar opposite reverse worded items in the PAS-CP would be valuable. An impressive paper by Zhang and colleagues (2016) serves as a model for how such a study could be conducted.

Another possible explanation for positive and reverse worded items loading on different factors has to do with the way acceptance is conceptualized. Psychological flexibility theory posits that experiential acceptance and experiential avoidance are on opposite ends of the same spectrum (Hayes et al., 2006). By that logic, positively worded items would represent experiential acceptance and reverse worded items would represent experiential avoidance. Reverse scoring reverse worded items would ensure the scale is measuring acceptance rather than avoidance. Recently, however, researchers have proposed that acceptance and avoidance might not be two ends of the same spectrum, but rather distinct, related constructs, similar to positive and negative affect (Gámez et al.,

2011; McAndrews et al., 2019). This distinction might explain why positively worded items (presumably measuring acceptance) would load on a different factor than reverse worded items (presumably measuring avoidance). More research is needed to further explore this possibility. Nevertheless, great consideration should be given to the inclusion of positive and reverse worded items during item generation.

Item Reduction. Prior to running an EFA, item reduction is considered to ensure only the most functional items are included (Boateng et al., 2018). One form of item reduction is to identify items with low response variability and, consequently, significant skewness and non-normal distributions (Tabachnick & Fidell, 2013). Such an analysis was conducted by McCracken and colleagues (2004) during development of the CPAQ-20. In the current study, 11 items were eliminated prior to the EFA due to low response variability. Some scale development resources, however, do not consider univariate normality to be an assumption of EFA, which might suggest elimination of these items was unnecessary (Boateng et al., 2018). Therefore, the current study is limited, in that exclusion of the 11 items with low response variability may have impacted the factor solution that emerged.

Sampling Procedures. The current study employed a convenience sample of participants from the community and MTurk. The inclusion of participants from MTurk in social science research has been considered a limitation by some researchers, particularly due to concerns about data quality (Sheehan, 2018). In the current study, however, a number of strategies recommended in the literature were used to ensure high data quality, including eligibility, attention, and English proficiency checks (Desimone et al., 2015; Kees et al., 2017; Keith et al., 2017; Sheehan, 2018). The grouping of the

community and MTurk subsamples was not an ideal scenario, but was deemed appropriate for a number of reasons. First, demographic differences between these two subsamples were minor. Second, the significant differences in scores on outcome measures between these two groups were small and unlikely to have an effect on the results. Third, and perhaps most importantly, a large sample size was required for the factor analysis (MacCallum & Widaman, 1999). Even still, the results of the factor analysis indicated a larger sample size may have been needed. In particular, relatively low communalities were observed and the factors were not all well determined. Several studies have suggested an increased sample size can improve the quality of the factor solution when such conditions are present (Hogarty et al., 2005; MacCallum & Widaman, 1999). In the current study, additional recruitment was not possible due to time and resource constraints, as well as difficulties recruiting partners over the already outlined recruitment period. Issues such as these will be explored further in the next chapter.

The lack of recruitment efforts directed at participants from a clinical sample (i.e., partners of patients from a chronic pain clinic) also can be seen as a limitation of the current study. Typically, patients who present to chronic pain clinics report high psychosocial disability and psychiatric comorbidity, and as such, the impact of chronic pain on their partners is significant (Mailis-Gagnon et al., 2007; May et al., 2018). It follows that at least some partners from a clinical sample might have greater difficulty adjusting to their spouse's chronic pain, which would be an important contrast to the relatively well-adjusted majority of partners who were included from the community and MTurk. Including partners with a range of adjustment experiences in future research will

serve to strengthen the conclusions that can be made about partner acceptance (e.g., experiencing more psychological distress, shorter time since chronic pain diagnosis).

Finally, although the sample was diverse in terms of age, gender, country of residence, relationship status, relationship length, patient chronic pain type, and patient chronic pain duration, the majority of partners who participated in the study were White, heterosexual, and university educated. As such, the extent to which these results are generalizable to other groups, such as those with diverse cultural backgrounds, sexual orientations, and levels of education, is unknown.

Eligibility Criteria. In hindsight, it is possible some of the inclusion and exclusion criteria may have hampered recruitment and unintentionally influenced the findings. First, by limiting participation to only those partners in current romantic relationships, the valuable experiences of partners who recently terminated their relationship (perhaps because of their spouse's chronic pain) was lost. Specifically, including partners who recently ended a relationship with an individual with chronic pain could have increased variability in responses to the Relationship Willingness items or perhaps even the Believing in the Authenticity of the Patient's Pain Experience items. In addition, excluding partners who reported having a chronic pain condition themselves may have substantially reduced the number of individuals eligible to participate. For instance, older partners may have been more likely to have a chronic pain condition themselves given rates of chronic pain increase across the lifespan (Moulin et al., 2002; Schopflocher et al., 2011). This exclusion may mean that older partners were disproportionately excluded from participating in the study. Although the decision to

exclude partners with chronic pain was made for theoretical reasons, future research may need to reconsider this exclusion criterion.

4.5 Conclusions

EFA resulted in the creation of the PAS-CP-13, a 13-item self-report scale that measures partners' engagement in values-driven action regardless of their spouse's chronic pain (Factor 1) and understanding of the persistent and incurable nature of their spouse's chronic pain (Factor 2). The scale demonstrated good reliability (i.e., internal consistency, temporal stability) and modest concurrent and convergent validity. Although the PAS-CP-13 was developed as a measure of partners' acceptance of their spouses' chronic pain, the final version of the questionnaire did not include a factor that adequately reflects experiential acceptance (i.e., willingness to be in contact with negative thoughts, feelings, and sensations) or pain acceptance (i.e., willingness to refrain from attempts to control, reduce, or eliminate pain; Hayes et al., 2006; McCracken et al., 2004). In fact, numerous items thought to represent partner acceptance were eliminated from the item pool before or during the EFA for statistical reasons. These finding suggests the PAS-CP-13 in its current form is not necessarily a measure of acceptance, but rather a measure of partners' engagement in values-driven action regardless of the patient's chronic pain and partners' understanding of the chronicity of their spouse's chronic pain. As such, the scale has inadequate content validity (i.e., does not measure what it is theoretically intended to measure). Additional research is needed to generate new items that capture acceptance, fully understand the significance of other themes that did not emerge from the factor analysis, and create a theoretically and psychometrically sound measure of partner acceptance. An overall discussion of the scale development

process, implications for the conceptualization and measurement of partner acceptance, the contributions of all three studies, clinical implications, limitations, and future research directions will be presented in the next chapter.

Chapter 5: General Discussion

5.1 Scale Development

Existing literature on the scale development process provides step-by-step guidelines for researchers interested in creating a new scale or adapting an existing one (Boateng et al., 2018; DeVellis, 2012; Streiner et al., 2008). Yet, constructing a scale based on the recommendations of scale development experts does not guarantee a scale will turn out as expected or be immediately ready to use in research and clinical practice. In reality, scale development is a dynamic and iterative process of examination and revision, particularly when a construct is being operationalized for the first time (DeVellis, 2012; Worthington & Whittaker, 2006). Such was the case with the PAS-CP. The current dissertation was informed by scale development guidelines at every phase (i.e., identifying and defining the construct to be measured, determining the format of the measure, generating the initial item pool, expert review, pilot testing administering the measure to a developmental sample, evaluating the measure). The resultant scale had several strengths, including two theoretically relevant factors and good reliability; however, it was limited by modest concurrent and convergent validity, as well as inadequate construct validity (i.e., it did not end up being a measure of acceptance *per se*). Ultimately, the current dissertation generated more questions than it did answers and highlighted the iterative nature of scale development. That is, the PAS-CP-13 serves as an example of the need to return to the earliest stages of scale development and proceed with the process again until a theoretically and psychometrically sound measure emerges (Boateng et al., 2018; Worthington & Whittaker, 2006). In the case of the PAS-CP-13, it is necessary to revisit the partner acceptance construct definition and generate additional

items that may be able to capture it. Additional expert review and pilot testing is needed to improve the measure as well. Subsequently, another EFA is required to determine whether new items add to the measure in theoretical and statistical ways. It is possible this complex process may need to be repeated a number of times before a worthy measure is created.

In retrospect, there are numerous aspects of the current dissertation that could have been approached differently to improve the outcome. Consideration of these points is recommended for future scale development efforts. First, the expert review could have been enhanced by widening the pool of experts to include less well-known ACT clinicians and acceptance researchers who, although not world-renowned, would have valuable experience and knowledge to contribute. Inviting a wider variety of experts to participate could have resulted in a greater representation of expert participants, with the potential benefit of additional ideas for improvement of the partner acceptance conceptualization and initial item pool. Furthermore, it would have been valuable to present the revised item pool to these experts a second time after their initial feedback was incorporated to ensure the scale still had good content validity before proceeding to the next stage of scale development. Alternatively, given the limited time experts are able to collaborate with fellow researchers, the revised item pool could be shared with a different group of experts for feedback. Second, utilizing a think-aloud interview format for the pilot study rather than a retrospective interview format could have provided additional information about how items were interpreted by partners. In addition, including a greater number of partners and placing an emphasis on including partners with a range of adjustment experiences and differing levels of academic achievement

could have maximized the value of the pilot study. Finally, revising the inclusion criteria to allow partners from recently terminated relationships may have increased variability in the sample. That is, partners from recently terminated relationships may have been less well-adjusted, experienced more psychological distress, or reported poorer relationship satisfaction, which would have ensured the sample represented the experiences of a wider range of partners. Recruiting partners from clinical populations, such as those with spouses affiliated with a pain clinic, could also help in recruiting a more diverse sample.

The ultimate purpose of any scale is to facilitate assessment, whether that be for research or clinical purposes (DeVellis, 2012). Accordingly, theoretically and psychometrically sound measures are the foundation of good research and clinical practice (Hunsley & Mash, 2007, 2008). Unfortunately, many commonly used scales have not undergone rigorous development and validation, likely because scale development is a multi-step, time-consuming, resource-heavy process (DeVellis, 2012; Hunsley et al., 2015; Hunsley & Mash, 2008; Streiner et al., 2008). Although it is understandable that researchers (and funders) want to conduct research efficiently, and continuously increase their ability to measure new constructs or answer new research questions, cutting corners with scale development only serves to undermine the integrity of the evidence base (Hunsley & Mash, 2007). For example, adapting existing measures for use with different populations without rigorously evaluating the theoretical and psychometric implications of doing so can lead to spurious results, which in turn can taint subsequent research.

With the importance of evidence-based assessment in mind, it is recommended that the PAS-CP-13 not be used in research and clinical practice at this point. Although it

measures Values-Driven Action and Chronicity in a reliable way, it does not capture acceptance as it was supposed to and, as such, its relationship to hypothetically related psychological distress variables was not as strong as expected. This outcome is a disappointing conclusion, but one that is required to maintain the integrity of any subsequent research on partner acceptance in a chronic pain context. Promisingly, there is strong reason to believe the PAS-CP-13 can be expanded and its psychometric properties improved with future work.

5.2 Partner Acceptance

Conceptualization

Acceptance is a nuanced construct that is difficult to define (McAndrews et al., 2019). My Ph.D. Apprenticeship study (Gullickson and LaChapelle, 2018) was the first to attempt to conceptualize partners' acceptance of their spouses' chronic pain. This foundational study led to the identification of the themes thought to characterize partner acceptance in a chronic pain context; however, the qualitative study was only a first step toward defining partner acceptance and more work would be needed to advance the conceptualization. In the current dissertation, each step of the scale development process contributed to the evolution of the conceptualization of partner acceptance. The expert, pilot, and validation studies provided support for some themes being revised, one theme being eliminated, and a new theme to be added. Although not all the themes emerged as factors in the final EFA solution, the results of this dissertation suggest a number of partner acceptance themes that are worthy of further study: (1) Chronicity – understanding of the persistent and incurable nature of the spouse's chronic pain; (2) Partner Pain Willingness – disengaging from attempts to cure, control, or avoid the

spouse's pain; (3) Living with Negative Feelings – willingness to be in contact with negative thoughts, feelings, and sensations related to the spouse's pain without trying to avoid, change, or eliminate them; (4) Believing in the Patient's Pain Experience – trusting in the persistence and severity of the patient's pain; (5) Values-Driven Action – engaging in values-driven action regardless of the patient's chronic pain; and (6) Relationship Willingness – commitment to the relationship affected by chronic pain.

It is important to note that the themes listed above represent hypothesized facets of partner acceptance that require additional exploration. It is possible that some themes are more central to the partner acceptance construct (e.g., Values-Driven Action, Living with Negative Feelings) and others are more peripheral or even represent associated features of partner acceptance (e.g., Believing in the Patient's Pain Experience). The current dissertation clearly highlights the need for additional research to refine the construct definition. Placing emphasis on clarifying the construct definition is highly recommended before returning to item generation and re-engaging in the scale development process. Qualitative research designs that include partners and content experts would be particularly valuable.

Measurement

The current dissertation also has significant implications for the measurement of partner acceptance in a chronic pain context. Although the PAS-CP-13 did not turn out as expected and is not currently recommended for use in research or clinical practice, it was a valuable first attempt to operationalize partner acceptance. Acceptance theory would suggest partner acceptance remains worthy of measurement and continues to have the potential to predict positive partner and patient outcomes (A-Tjak et al., 2015; Reneman

et al., 2010; Veehof et al., 2016). Moreover, recent research supports the creation and use of context-specific measures of acceptance (i.e., those that measure acceptance of a particular experience or condition) over measures of general experiential acceptance whenever possible (Ong, Lee, et al., 2019). Continued efforts to create a measure of partner acceptance may take time and resources, but it is a worthwhile endeavor because it has the potential to contribute to the literature in a unique way.

At this point, there is value in commenting on the use of the AAQ-II and other measures of experiential acceptance with partners in a medical context. The results of Study 2 suggested higher experiential acceptance (as measured by the AAQ-II) was strongly related to fewer symptoms of depression, anxiety, and stress, yet moderately associated with greater relationship satisfaction. Although these results appear promising, particularly for measures of psychological distress, it is possible this is a product of inadequate validity. Previous research has criticized the AAQ-II for having poor discriminant validity (i.e., tapping into neuroticism/negative affect more so than experiential acceptance), low item sensitivity, and weaker treatment sensitivity than other measures of experiential acceptance (Benoy et al., 2019; Gámez et al., 2011; Rochefort et al., 2018; Tyndall et al., 2019; Wolgast, 2014). The very strong correlations observed between the AAQ-II and DASS-21 subscales in the current study might similarly suggest the AAQ-II is tapping into negative affect more so than experiential acceptance. Although the AAQ-II remains the most widely used measure of experiential acceptance, there is currently no consensus on which measure of experiential acceptance is the “gold standard” (McAndrews et al., 2019). Several alternative measures of general experiential

acceptance have been created to overcome the limitations of the AAQ-II, but none have been used in partner research to date (Gómez et al., 2011; Rochefort et al., 2018).

The absence of a validated measure of partner acceptance represents a gap in the literature that limits researchers' ability to explore the relationship between partner and patient outcomes in a medical context. Previous studies have attempted to bridge the gap by using the AAQ-II or adapting the CPAQ for use with partners, but a lack of consensus about the definition or facets of partner acceptance raises questions about what construct those scales were actually measuring and casts doubt on the validity of their findings (Boerner & Rosen, 2015; Pakenham & Samios, 2013). Unfortunately, the current dissertation did not produce a theoretically and psychometrically sound scale as intended, so there remains no way to properly measure partner acceptance in a medical context. Future research is urgently needed to address this measurement problem and create opportunities for partner acceptance to be explored.

5.3 Contributions and Clinical Implications

As highlighted throughout the document, the current research contributes to the literature in a number of valuable ways. First, it adds to the conceptualization of partner acceptance by building on my Ph.D. Apprenticeship study (Gullickson & LaChapelle, 2018), which was the first to attempt to define partner acceptance of chronic pain. This dissertation highlighted the importance of some previously identified themes (e.g., Values-Driven Action, Chronicity) and raised interesting questions about the relevance of others (e.g., Partner Pain Willingness, Living with Negative Feelings, Believing in the Patient's Pain Experience, Relationship Willingness). Although the conceptualization should still be considered a work-in-progress, a number of important conceptual

questions were raised from the current data that can be explored with future research. Second, the current project is the first to attempt to measure partners' acceptance of their spouse's chronic pain. Up to this point, there was no context-specific measure of acceptance for partners and previous research on partners had utilized unvalidated measures. The PAS-CP-13 in its current form is not recommended for use in research and clinical practice, but it represents a foundation upon which to build. Third, the current research serves as an example of proper psychological scale development, which is often lacking in the literature. As discussed previously, a number of aspects of the scale development process could have been approached differently to improve the outcome, but that does not take away from the contribution made by the project.

Finally, the current dissertation has implications for clinical practice. The majority of partners from Study 2 reported no significant psychological distress and high relationship satisfaction. Approximately 30% of partners, however, reported moderate to extremely severe psychological distress and 7% reported lower relationship satisfaction scores. These findings suggest a small, but still significant, proportion of partners may have been experiencing clinically significant adjustment difficulties at the time they participated in the online survey. Importantly, it is likely these results are an underestimate of the percentage of partners from the larger partner population who are struggling because the inclusion criteria and recruitment method were, in hindsight, unintentionally skewed towards partners who were well-adjusted. Furthermore, the cross-sectional nature of the study did not account for partners who had experienced psychological distress or low relationship satisfaction in the past or will in the future. Although a specific estimate of the percentage of partners from the population who

experience clinically significant adjustment difficulties is beyond the scope of the current dissertation, it seems fair to say that at least some partners will likely require psychological intervention to help them cope with their spouse's chronic pain. This finding supports the inclusion of partners in chronic pain treatment and suggests some partners may be in need of individual psychotherapy.

Historically, chronic pain interventions have primarily focused on the patient and utilized cognitive-behavioural or acceptance-based techniques (Edhe et al., 2014; Veehof et al., 2016). Once research began establishing the significant impacts of chronic pain on partners and the importance of marital functioning and partners' responses to pain for the patients' well-being, the value of including partners in the treatment of chronic pain was underscored (Leonard et al., 2006). In the ensuing years, inclusion of partners in chronic pain interventions has ranged from spouse-assisted treatments for patients to couples therapy approaches that focus on patients and partners equally (Cano et al., 2018; Keefe et al., 1999; Martire et al., 2010). Less attention has been paid, however, to individual treatments directed at partners who are struggling with their spouse's chronic pain (Martire et al., 2010). The findings from the current research provide valuable information on potential treatment targets when working with partners in a chronic pain context. For example, the moderate to strong correlations between the Values-Driven Action factor and measures of psychological distress and relationship satisfaction suggest it might be beneficial for clinicians to assist partners in clarifying their values and increasing valued action. Moreover, clinicians can provide partners with evidence-based information about chronic pain and its treatment to help them understand the persistent and incurable nature of chronic pain.

5.4 General Limitations

The limitations of each individual study have been already discussed in previous chapters, but several systemic limitations should be noted. Namely, lack of access to financial resources, a pressured timeline, and no affiliation with an established participant pool hampered the project. The current dissertation was conducted on an extremely small budget that did not allow for paid online advertisements and limited the amount of compensation provided to experts and community participants. Expanding recruitment efforts to the MTurk subsample was essential, but it came at a significant financial cost. Additional funding would have allowed for a larger advertising budget that could have reached more partners, greater compensation to entice experts and partners to participate, and increased manpower to conduct more pilot study interviews. Researchers interested in engaging in the scale development process are encouraged to seek out and secure adequate funding to maximize the potential of their projects. In terms of timeline, the current research was conducted over the course of four years of graduate study. In hindsight, the time it would take to do each phase of this work was underestimated when the project was conceptualized. Each of the three studies would have been enhanced had more time been feasibly allocated for each step. For example, Study 1A could have included the opportunity to present the partner acceptance conceptualization and initial item pool to experts a second time, Study 1B could have utilized more time-consuming think-aloud interviews, and Study 2 could have allowed for a longer recruitment period. This work highlights the time-consuming, iterative process of scale development. Lastly, recruitment efforts were hampered by a lack of affiliation with clinics or groups where

there is a consistent stream of new patients and partners. Affiliation with a pain clinic or chronic pain partner support group might have aided recruitment and resulted in larger sample sizes for the pilot and validation studies. The current dissertation highlights the importance of collaboration within the chronic pain research and clinical communities.

5.5 Future Directions

To address the limitations of the current dissertation and build on its findings, a number of qualitative and quantitative research directions are recommended.

Refining the Conceptualization of Partner Acceptance

It is strongly recommended that efforts to refine the conceptualization of partner acceptance of chronic pain be undertaken before returning to item generation and repeating the scale development process. Qualitative interviews or focus groups with partners and content experts have the potential to clarify the partner acceptance construct definition, which is the foundation upon which the measure is built. First and foremost, the revised partner acceptance themes should be discussed with partners to ensure the themes are reflective of partners' lived experiences. Partners may be able to provide additional insights about Living with Negative Feelings, Partner Pain Willingness, Relationship Willingness, to name a few. Once these themes have been further elucidated, they can be presented to experts in the field to ensure the conceptualization also fits with existing acceptance theory. It may be necessary to repeatedly consult with partners and other relevant stakeholders until a construct definition is agreed upon.

Exploratory Factor Analysis

The results of the current research highlight the need to return to item generation and repeat the EFA, which is not unusual when a construct is being operationalized for

the first time (Worthington & Whittaker, 2006). Specifically, new items need to be created and existing items need to be revised once the conceptualization of partner acceptance has been clarified. The current research suggests new or revised items need to be generated to capture the Joint Activities and Independent Activities factors and the Relationship Willingness theme, and the inclusion of reverse worded items needs to be reconsidered. Returning to item generation and repeating the EFA has the potential to improve the quality of the factor solution, increase the number of factors that emerge, and improve the preliminary psychometric properties of the PAS-CP.

Supplementing item generation with qualitative, think-aloud interviews could provide additional insight into how specific items are interpreted by partners. Although the retrospective interview method was chosen for Study 1B for efficiency purposes, it seems the think-aloud interview method, wherein partners would be asked to “think out loud” as they consider their response to each item, might provide valuable information that will further shape the scale development process (Johnson & Christensen, 2014). For example, as noted previously, partners might be able to explain the differences in how conceptually similar items are interpreted depending on whether they are positive or reverse worded items.

As discussed above, changes to recruitment strategy and the eligibility criteria should be also considered in future research. Focusing recruitment techniques on both community and clinical samples, as well as loosening eligibility criteria related to current relationship status, will allow for a more diverse sample that reflects a range of adjustment experiences. These changes may also help recruit a larger sample for subsequent studies. Although there is no specific sample size ideal for every EFA, the

current study would suggest a sample size of at least 300 is merited, particularly once additional items are generated. It will be important to evaluate communality values and consider overdetermination of factors when judging the adequacy of the sample size (Hogarty et al., 2005; MacCallum & Widaman, 1999). Additional partners may need to be recruited if low communalities are observed and the factor structure is not well determined (Hogarty et al., 2005; MacCallum & Widaman, 1999).

Confirmatory Factor Analysis

Once a theoretically meaningful factor structure is established via EFA, a CFA can be used to confirm the new measure's hypothesized factor structure in a new sample of partners (Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). Structural equation modeling can be used to test the relationships between the items and factors, and determine whether the data fit the proposed model (Worthington & Whittaker, 2006). Comparing competing theoretically plausible models with different numbers of factors will provide additional support for the measure's construct validity. CFA will also allow for the measure's psychometric properties to be formally evaluated (Boateng et al., 2018). CFA is an essential step in the scale development process that must be completed before the measure can be used in clinical practice (DeVellis, 2012).

Dyadic Adjustment

Development and validation of the PAS-CP was undertaken with the long-term goal of being able to explore the relationship between partner and patient acceptance of chronic pain. Once a measure of partner acceptance (with a stable factor structure and good psychometric properties) is available, researchers will be able to answer a variety of research questions, including (1) are patients who accept their chronic pain more likely to

have accepting partners (or vice versa); (2) does greater patient and partner chronic pain acceptance predict better partner and patient outcomes (e.g., patient pain disability, patient and partner psychological distress, relationship satisfaction); and (3) can partner acceptance be bolstered with clinical intervention?

Partner Interventions

As noted above, psychotherapy interventions designed particularly for partners are lacking. This may be why some partners involved in this program of research have described themselves as the “silent partner”. Although some partner-assisted and couples-based interventions for chronic pain have been developed, there has yet to be widespread inclusion of partners in chronic pain treatment (Cano et al., 2018; Keefe et al., 1999; Martire et al., 2010). Future research aimed at establishing evidence-based treatments for partners is required. Such research should focus on determining which therapeutic skills are most effective in improving partner adjustment. The current research provides ideas for potential treatment targets (e.g., Values-Driven Action, Chronicity). Furthermore, additional research is required to determine which form of treatment (i.e., individual patient therapy, individual partner therapy, couples therapy) is appropriate for couples with varying presentations (Leonard et al., 2006; Martire et al., 2010). For example, partners who report good relationship satisfaction but high psychological distress might benefit from an individual partner therapy approach, whereas partners who report poor relationship satisfaction and high psychological distress might be better suited to a couples therapy approach (Cano et al., 2018).

5.6 Conclusions

The current program of research served as a reminder that acceptance is a very difficult construct to define and scale development is a complex, iterative process. These results highlighted the fact that the partner acceptance conceptualization is a work in progress and, consequently, so is its measurement. The PAS-CP-13 represented a valuable step toward operationalizing partner acceptance, but the scale is not yet suitable for use in research and clinical practice for theoretical and psychometric reasons. Nevertheless, acceptance theory would suggest partner acceptance remains worthy of study because it has the potential to promote positive partner and patient outcomes (A-Tjak et al., 2015; Reneman et al., 2010; Veehof et al., 2016). Moreover, recent research supports the creation and use of context-specific measures of acceptance over measures of general experiential acceptance (Ong, Lee, et al., 2019).

Although the PAS-CP-13 did not turn out as expected, the current dissertation contributes to the literature in a meaningful way. In terms of the conceptualization of partner acceptance, this dissertation highlighted the importance of some previously-identified themes (e.g., Values-Driven Action, Chronicity) and raised interesting questions about the relevance of others (e.g., Partner Pain Willingness, Living with Negative Feelings, Believing in the Patient's Pain Experience, Relationship Willingness). Numerous avenues for future research were identified, all of which will serve to advance the conceptualization. With regard to measurement, the current dissertation highlights numerous steps that can be taken in future scale development efforts to improve the theoretical and psychometric properties of the PAS-CP. Finally, from a clinical perspective, our findings confirm that a proportion of partners experience clinically

significant psychological distress or low relationship satisfaction and may be in need of individual or couple's psychotherapy to help them adjust to their spouse's chronic pain.

Perhaps most importantly, the current dissertation resulted in the identification of a number of important future research directions. Additional research is needed to refine our understanding of partners' acceptance of their spouses' chronic pain. Subsequently, new scale items can be generated, the item pool can be re-submitted to an EFA, and the factor structure and psychometric properties of the newly created scale can be confirmed by a CFA. Ultimately, the goal to develop and validate a theoretically and psychometrically sound measure of partner acceptance remains a worthwhile endeavor.

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Appendices

Appendix A: PAS-CP Version 1 (Pre-Expert Review)

Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully, then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would select 7. Please do your best to respond to every item.

1	2	3	4	5	6	7
Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True

Understanding the nature of chronic pain

1. I feel knowledgeable about my partner's chronic pain condition
2. I know the symptoms of my partner's chronic pain condition
3. I feel like I know very little about how my partner's chronic pain condition is treated*
4. I think my partner is likely always going to experience some chronic pain
5. I realize my partner's chronic pain condition will never go away completely
6. I sacrifice important things in my life for my partner to have control over his/her chronic pain**^a
7. Keeping my partner's chronic pain level under control takes first priority**^a
8. I think my partner needs to concentrate on getting rid of his/her chronic pain**^a

Believing in the authenticity of the patient's chronic pain

9. I trust my partner when he/she says he/she is in pain
10. I believe my partner's chronic pain is as bad as he/she says
11. I question whether my partner experiences chronic pain as often as he/she claims*
12. I think my partner exaggerates his/her chronic pain*
13. I can tell my partner is in pain without him/her having to tell me
14. I know when my partner is having a bad pain day
15. I have trouble recognizing when my partner is in pain*

Letting go

16. I try to avoid dwelling on negative feelings about my partner's chronic pain condition
17. I am able to let go of negative feelings about my partner's chronic pain condition
18. Even though I cannot control my partner's chronic pain condition I can choose how I respond to it
19. Negative thoughts and feelings about my partner's pain get in the way of living my life**^a
20. My thoughts and feelings about my partner's pain must change before I can move on with my life**^a

21. I avoid thinking or talking about my partner's chronic pain condition*
22. I have learned to live with my partner's chronic pain condition^c
23. I have come to terms with my partner's chronic pain condition^c
24. I am okay with the way my life is going despite my partner's chronic pain condition
25. I cannot imagine continuing to live with my partner's chronic pain condition*
26. I can never be happy as long as my partner has a chronic pain condition*

Making practical adjustments

27. I am willing to making practical changes to my daily routine to ease the burden of my partner's chronic pain condition
28. I am open to making changes to accommodate my partner's chronic pain condition
29. I have learned to adjust my expectations as a result of my partner's chronic pain condition
30. When my partner's pain increases, I am willing to take on his/her responsibilities^a
31. I feel like my partner's chronic pain condition is now a normal part of my life
32. If necessary, I am willing to make further adjustments to accommodate my partner's chronic pain condition in the future
33. I try to avoid making changes to my lifestyle as a result of my partner's chronic pain condition*
34. I go to great lengths to maintain the lifestyle I had before my partner's pain affected my life*
35. I cannot imagine my partner's chronic pain condition being a normal part of my life*
36. It seems impossible to overcome the challenges posed by my partner's chronic pain condition*

Engagement in pleasurable activities

37. There are activities I can do with my partner even when he/she is in pain^a
38. As a couple, we are able to do things together despite my partner's chronic pain condition^a
39. My partner and I are still able to socialize even when he/she is in pain^d
40. As a couple, we avoid putting ourselves in situations that might increase my partner's pain^{*a}
41. My partner and I are not able to do things we enjoy as a result of his/her chronic pain condition*
42. It is important that I do things I value even though my partner has a chronic pain condition^d
43. I think it is important that I live my life no matter what my partner's level of pain is^a
44. I choose not to let my partner's chronic pain condition limit the activities I do by myself or with others
45. It is a relief to realize that my partner's pain level does not have to change for me to get on with my life^a
46. My partner's chronic pain condition stops me from doing what I want to do*

47. When my partner cannot participate in an activity because he/she is in pain, I avoid leaving him/her behind*^d
48. I believe my life is going well, even though my partner has a chronic pain condition^a
49. I lead a full life even though my partner has a chronic pain condition^a
50. My partner's chronic pain condition has helped me realize what is important in life^c
51. My partner's chronic pain condition keeps me from working toward my goals*^d
52. I think my partner's chronic pain condition prevents me from living a fulfilling life*^b
53. I think it is necessary for my partner's pain to be under control for me to live my life well*^a

Key

* Negatively worded/reverse scored

^a Adapted from the Chronic Pain Acceptance Questionnaire-20 (McCracken et al., 2004)

^b Adapted from the Acceptance and Action Questionnaire-II (Bond et al., 2011)

^c Adapted from the Illness Cognition Questionnaire (Evers et al., 2001)

^d Adapted from the Diabetes Acceptance and Action Scale (unpublished manuscript)

Appendix B: Study 1A Invitation Email and Reminder Emails

Subject Line: Your Expert Opinion is Needed

Dear Dr. [Name of expert],

My name is Kirsten Gullickson. I am a PhD candidate in clinical psychology at the University of New Brunswick working under the supervision of Dr. Diane LaChapelle. As part of my dissertation research, **I am currently endeavoring to create a new self-report measure of romantic partners' chronic pain acceptance, tentatively titled the Partner Acceptance Scale for Chronic Pain (PAS-CP)**. The initial PAS-CP item pool reflects the findings of a qualitative study I recently completed, wherein a construct definition of partner acceptance was proposed based on the self-described acceptance experiences of 21 partners of patients with arthritis (Gullickson & LaChapelle, under review).

As you know, expert review is a valuable step in the scale development process, especially when a newly defined construct is being operationalized for the first time. Therefore, **I am now looking for experts in the field to provide feedback on the partner acceptance construct definition and the content validity of the PAS-CP via an online study that should take approximately 45 minutes to complete**. As part of your participation in this study, you will be asked a series of closed- and open-ended questions related to the appropriateness and comprehensiveness of the partner acceptance construct definition, the relevance, clarity, and conciseness of the PAS-CP items, and the content validity of the PAS-CP. The feedback you provide will be amalgamated with the comments of other experts so the partner acceptance construct definition and PAS-CP can be re-formulated as necessary.

Given your experience [details of expertise], I believe your feedback would be invaluable to this project. **If you are interested in participating, please click on the secure web-link displayed below to reach the survey website.**

[Link to Check Box Study]

This project has been approved by the Department of Psychology Research Ethics Committee and the University of New Brunswick Research Ethics Board (REB# 2016-066). If you have any questions, comments, or concerns, please feel free to contact me (kgullick@unb.ca) or my research supervisor Dr. LaChapelle (diane.lachapelle@unb.ca). I greatly appreciate you taking the time to participate in this study and I look forward to receiving your expert feedback.

Sincerely,

Kirsten Gullickson
PhD Student in Clinical Psychology, University of New Brunswick

Experts Reminder Email (2-weeks after initial invitation)

Subject Line: Reminder: Your Expert Opinion is Needed

Dear Dr. [Name of expert],

Approximately 2 weeks ago you received an e-mail invitation to provide expert feedback on a newly proposed conceptualization of partner acceptance of chronic pain and the associated self-report measure, the Partner Acceptance Scale for Chronic Pain (PAS-CP). **If you have not yet had a chance to respond, I implore you to consider being a part of this study.** Given your experience [details of expertise], I believe your feedback would be invaluable to this project. The original invitation to participate is copied below for your convenience.

I greatly appreciate you taking the time to contribute to my dissertation research and I look forward to receiving your expert feedback.

[Link to Check Box Study]

Sincerely,

Kirsten Gullickson
PhD Student in Clinical Psychology, University of New Brunswick

Experts Reminder Email (4-weeks after initial invitation)

Subject Line: Last Chance: Your Expert Opinion is Needed

Dear Dr. [Name of expert],

I am contacting you for the **third and final time** to invite you to provide expert feedback on a newly proposed conceptualization of partner acceptance of chronic pain and the associated self-report measure, the Partner Acceptance Scale for Chronic Pain (PAS-CP). **If you have not yet had a chance to respond, I implore you to consider being a part of this study.** Given your experience [details of expertise], I believe your feedback would be invaluable to this project. The original invitation to participate is copied below for your convenience.

I greatly appreciate you taking the time to contribute to my dissertation research and I look forward to receiving your expert feedback.

[Link to Check Box Study]

Sincerely,

Kirsten Gullickson
PhD Student in Clinical Psychology, University of New Brunswick

Appendix C: Study 1A Information and Consent Form

The Partner Acceptance Scale for Chronic Pain (PAS-CP): Expert Evaluation of a Newly Developed Measure

Background

Chronic pain has a pervasive negative impact on patients and their romantic partners. Although research has shown that patients who are more accepting of their chronic pain condition report better physical, mental, and occupational functioning, until recently, there was no proposed conceptualization of partner acceptance of chronic pain. Based on our qualitative study of 21 partners of patients with arthritis, we have recently proposed a model of partner acceptance (Gullickson & LaChapelle, manuscript under review). The proposed model has now been used as a framework for developing a new self-report measure of partner acceptance, the Partner Acceptance Scale for Chronic Pain (PAS-CP).

Participation Details

The purpose of this study is to solicit expert feedback on the partner acceptance construct definition and to ensure the content validity of the initial PAS-CP item pool. Specifically, you will be presented with the partner acceptance construct definition and asked to provide feedback on its appropriateness and comprehensiveness, as well as to provide suggestions regarding how the definition could be expanded or improved. Next, you will rate each PAS-CP item's relevance to the construct, as well as the clarity and conciseness of the item. You will also be asked to rate features of the overall scale (e.g., instructions, response options, and content validity). Finally, a series of open-ended questions will allow you to make suggestions for improving the scale, identify redundant or irrelevant items, identify missing items/domains, indicate alternative ways of tapping the construct, and provide any additional feedback regarding the PAS-CP. Participation in the study is expected to take approximately 45 minutes. The feedback you provide will be amalgamated with the comments of other experts. The partner acceptance construct definition and the PAS-CP will then be re-formulated as necessary.

Identifying information

In order to ensure the feedback provided is from experts, you will be asked to provide your name when giving consent to participate in the study. However, your name will not be linked to the feedback you provide and you will not be identified by name in the final report. Furthermore, the feedback provided by experts will be amalgamated, so no one expert's opinion is singled out. You will also be asked to describe your area of expertise by responding to a series of background questions (e.g., profession, area of expertise, years of experience).

Benefits and risks associated with participating

Participating in this study means you are contributing to my dissertation research, which aims to conceptualize and operationalize the partner acceptance construct. Specifically, you will be helping to refine the partner acceptance construct definition and aid in the validation of the PAS-CP, a measure that has the potential to positively impact research and clinical practice in the field of chronic pain. It is our hope that the PAS-CP will be

utilized to assess partner acceptance and its relationship to partner, patient, and relationship outcomes. The only cost to you will be the time it takes to complete the survey. There are no known risks involved in this study.

Data security

Several measures will be taken to protect your identity and the feedback you provide: (1) All data will be collected via a secure, password protected website that can only be accessed by the researchers; (2) The secure website where data will be stored is protected by a firewall and is regularly updated to ensure its security; (3) Data that is downloaded from the secure website will be password protected and stored on a secure computer in the Rehabilitation Psychology Research Lab at the University of New Brunswick; and (4) All data will be destroyed within seven years.

Voluntary participation

Taking part in this study is entirely voluntary. Should you choose not to take part, or if you wish to withdraw from the study at any time after starting, you may do so without consequences. You also have a right to refuse to respond to individual questions.

Access to study results

A summary of study results will be available once the PAS-CP is fully validated. You will be given the opportunity to request a copy of the study results when you consent to participate.

Ethical approval

This project is on file with the Research Ethics Board, University of New Brunswick (REB# 2016-066). If you have any questions or concerns about your rights or treatment as a research participant, you may contact the Acting Chair of the Psychology Research Ethics Committee, Dr. Ryan Hamilton, at (506) 453-5030 or the Chair of the UNB Research Ethics Board, Dr. Steven Turner at (506) 453-5189.

Contacting the researchers

Please feel free to contact the researchers listed below if you have any questions, comments, or concerns about this study.

Kirsten Gullickson, B.A.
Primary Researcher
E-mail: kgullick@unb.ca
Phone: (506) 292-2441

Diane LaChapelle, Ph.D., L.Psyc.
Research Supervisor
E-mail: diane.lachapelle@unb.ca
Phone: (506) 458-7744

By providing my name below, I signify that I have read and understood the information above and agree to participate in the study being conducted by Kirsten Gullickson and her supervisor Dr. Diane LaChapelle of the Department of Psychology, University of New Brunswick.

Type first and last name

Please check the box below if you would like to receive a copy of the study results via email once they become available.

I am interested in receiving a copy of the study results

Appendix D: Study 1A Questionnaires

Profession:

- Clinical Psychologist
- Experimental Psychologist
- Counseling Psychologist
- Psychiatrist
- Social worker
- Other (please specify: _____)

Please indicate your area of expertise as it relates to this study (check all that apply):

- Acceptance
- Chronic pain
- Other chronic medical conditions (e.g., diabetes, multiple sclerosis)
- Couples/relationships
- Other (please specify: _____)

Please indicate which statement below best describes the way you spend your professional time in your indicated area of expertise:

- Exclusively research
- Exclusively clinical work
- Primarily research with supplemental clinical work
- Primarily clinical work with supplemental research
- Equal parts research and clinical work
- Other (please specify: _____)

How long have you been a clinician in your indicated area of expertise (if applicable)?
_____years

How long have you been a researcher in your indicated area of expertise (if applicable)?
_____years

Part I: Defining Partner Acceptance

Context: The following conceptualization of partner acceptance is based upon a recent qualitative study that involved 23 partners of patients with arthritis sharing their personal experiences and views about acceptance (Gullickson & LaChapelle, unpublished manuscript). Based on the semantic and latent content of the partners' narratives, several acceptance-related themes were identified and grouped into two primary components, which are described below. Please note that the definition provided has been adapted to reflect acceptance of chronic pain more generally. This decision was made after careful

consideration of the many commonalities between arthritis and other chronic pain conditions.

Instructions: Please read the definition of partner acceptance provided before and while you respond to the questions listed below.

Partner acceptance of chronic pain can be conceptualized as an adaptive process characterized by a series of cognitive shifts, emotional realizations, and behavioural adjustments over time. There are two hypothesized components of partner acceptance: Embracing Chronic Pain and Living Life Despite Chronic Pain.

Embracing Chronic Pain involves a willingness to incorporate the patient's chronic pain condition and its consequences into everyday life. It is characterized by a cognitive shift wherein partners change the way they think about themselves, the patient, and the relationship as a result of chronic pain. Specifically, partners learn to understand that their spouse is likely to experience persistent pain, which will negatively affect their spouse's functioning, and by association, impact their life as a partner. They also begin to believe in the authenticity of their spouse's pain. Partners eventually come to the realization that controlling or eliminating the patient's pain is not a necessary precursor to a meaningful life. Although partners may never feel positively about chronic pain, they gradually let go of the negative feelings they have about their spouse's condition and learn to embrace chronic pain as a part of their life.

Living Life Despite Chronic Pain involves partners making behavioural adjustments to ensure they continue to live a fulfilling life despite their spouse's chronic pain condition. In order to move forward, partners work with their spouse to make necessary changes to routines, expectations, and priorities at the individual and relationship levels. Consequently, partners begin to establish a new normal that accommodates the patient's chronic pain condition. Partners also commit to engaging in pleasurable activities, independently and as part of a couple, as a supplement to their daily responsibilities in and out of the home. Doing so allows partners to achieve a sense of fulfillment regardless of the challenges posed by their spouse's chronic pain condition.

Feedback:

Please respond to the following questions using the scale provided below:

- 0 = strongly disagree
 1 = disagree
 2 = neither agree nor disagree
 3 = agree
 4 = strongly agree

This is an appropriate definition of partner acceptance	0	1	2	3	4
This is a comprehensive definition of partner acceptance	0	1	2	3	4
This definition of partner acceptance could be improved	0	1	2	3	4

Please take as much space as you need to respond to each of the questions below:

Please describe how the definition of partner acceptance can be expanded.

Please indicate any sections of the definition you feel are not a component of partner acceptance.

Please describe how the definition of partner acceptance can be simplified.

Please provide any additional feedback you may have.

Part II: Evaluating the Partner Acceptance Scale for Chronic Pain (PAS-CP)

Context: In an effort to operationalize the partner acceptance construct definition, the PAS-CP item pool was created by generating novel items and adapting items, with the permission of the original authors, from existing acceptance measures (e.g., Acceptance and Action Questionnaire, Chronic Pain Acceptance Questionnaire). For the purposes of this study, the items are grouped together by theme for ease of evaluation. Currently, the PAS-CP contains numerous similarly-worded items that may appear redundant, but the decision to include more items than necessary was made strategically. The length of the item pool will be reduced via statistical analyses in the next phase of the study.

Instructions: The PAS-CP is presented below. Please read each section and respond to the corresponding questions.

The Partner Acceptance Scale for Chronic Pain (PAS-CP)

Instructions: Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully, then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would select 7. Please do your best to respond to every item.

1	2	3	4	5	6	7
Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True

Feedback:

Please answer the following questions using the scale below. You may wish to return to these questions after you read through the item pool.

0 = strongly disagree
1 = disagree
2 = neither agree nor disagree
3 = agree
4 = strongly agree

The scale instructions are appropriate	0	1	2	3	4
The response options are appropriate	0	1	2	3	4

If appropriate, please provide suggestions as to how the scale instructions or response options can be improved.

Feedback:

Please indicate whether you find each item to be relevant, clear, and concise according to the following scale:

- 0 = strongly disagree
- 1 = disagree
- 2 = neither agree nor disagree
- 3 = agree
- 4 = strongly agree

Items preceded by a superscript x are negatively worded. A brief description of each theme is provided to assist with your evaluation.

Understanding the Nature of Chronic Pain: partners learn about the symptoms, prognosis, and treatment of chronic pain; partners learn that their spouse is likely to experience persistent pain; partners begin to understand that controlling pain is not always possible

	Item	Relevant					Clear					Concise				
1.	I feel knowledgeable about my partner’s chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
2.	I know the symptoms of my partner’s chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
3.	^x I feel like I know very little about how my partner’s chronic pain condition is treated	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
4.	I think my partner is likely always going to experience some chronic pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
5.	I realize my partner’s chronic pain condition will never go away completely	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
6.	^x I sacrifice important things in my life for my partner to have control over his/her chronic pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
7.	^x Keeping my partner’s chronic pain level under control takes first priority	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

8. ^x I think my partner needs to concentrate on getting rid of his/her chronic pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Believing in the Authenticity of the Patient's Chronic Pain: partners learn to trust in the chronicity and severity of their spouse's pain; partners begin to learn the verbal and non-verbal signs that indicate when their spouse is in pain

Item	Relevant					Clear					Concise				
9. I trust my partner when he/she says he/she is in pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
10. I believe my partner's chronic pain is as bad as he/she says	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
11. ^x I question whether my partner experiences chronic pain as often as he/she claims	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
12. ^x I think my partner exaggerates his/her chronic pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
13. I can tell my partner is in pain without him/her having to tell me ^x	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
14. I know when my partner is having a bad pain day	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
15. ^x I have trouble recognizing when my partner is in pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

Letting Go: partners learn to refrain from dwelling on their negative feelings about their spouse's chronic pain; partners develop a neutral or positive outlook about their spouse's chronic pain

Item	Relevant					Clear					Concise				
16. I try to avoid dwelling on negative feelings about my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
17. I am able to let go of negative feelings about my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

18. Even though I cannot control my partner's chronic pain condition I can choose how I respond to it	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
19. ^x Negative thoughts and feelings about my partner's chronic pain get in the way of living my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
20. ^x My thoughts/feelings about my partner's chronic pain must change before I can move on with my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
21. ^x I avoid thinking or talking about my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
22. I have learned to live with my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
23. I have come to terms with my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
24. I am okay with the way my life is going despite my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
25. ^x I cannot imagine continuing to live with my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
26. ^x I can never be happy as long as my partner has a chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

Making Practical Adjustments: partners make practical adjustments in and out of the home at the individual and relationship levels to accommodate their spouse's chronic pain; a new normal is established

Item	Relevant					Clear					Concise				
27. I am willing to making practical changes to my daily routine to ease the burden of my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
28. I am open to making changes to accommodate my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

29. I have learned to adjust my expectations as a result of my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
30. When my partner's pain increases, I am willing to take on his/her responsibilities	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
31. I feel like my partner's chronic pain condition is a now a normal part of my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
32. If necessary, I am willing to make further adjustments to accommodate my partner's chronic pain condition in the future	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
33. ^x I try to avoid making changes to my lifestyle as a result of my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
34. ^x I go to great lengths to maintain the lifestyle I had before my partner's pain affected my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
35. ^x I cannot imagine my partner's chronic pain condition being a normal part of my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
36. ^x It seems impossible to overcome the challenges posed by my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

Engagement in Pleasurable Activities: partners engage in pleasurable activities, independently, and as part of a couple; partners achieve a sense of fulfillment despite the challenges posed by their spouse's chronic pain

Item	Relevant					Clear					Concise				
37. There are activities I can do with my partner even when he/she is in pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
38. As a couple, we are able to do things together despite my partner's chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
39. My partner and I are still able to socialize even when he/she is in pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

40. ^x As a couple, we avoid putting ourselves in situations that might increase my partner's pain	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
41. ^x My partner and I are not able to do things we enjoy as a result of his/her chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
42. It is important that I do things I value even though my partner has a chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
43. I think it is important that I live my life no matter what my partner's level of pain is	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
44. I choose not to let my partner's chronic pain condition limit the activities I do by myself or with others	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
45. It is a relief to realize that my partner's pain level does not have to change for me to get on with my life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
46. ^x My partner's chronic pain condition stops me from doing what I want to do	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
47. ^x When my partner cannot participate in an activity because he/she is in pain, I avoid leaving him/her behind	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
48. I believe my life is going well even though my partner has a chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
49. I lead a full life even though my partner has a chronic pain condition	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
50. My partner's chronic pain condition has helped me realize what is important in life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
51. ^x My partner's chronic pain condition keeps me from working toward my goals	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
52. ^x I think my partner's chronic pain condition prevents me from living a fulfilling life	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
53. ^x I think it is necessary for my partner's chronic pain to be under control for me to live my life well	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

General Feedback:

Please answer the following questions according to the scale below:

- 0 = strongly disagree
- 1 = disagree
- 2 = neither agree nor disagree
- 3 = agree
- 4 = strongly agree

Overall, the PAS-CP items are relevant	0	1	2	3	4
There are items or domains missing from the PAS-CP	0	1	2	3	4
The PAS-CP has adequate content validity	0	1	2	3	4

Please take as much space as you need to respond to each of the questions below:

Please identify how the PAS-CP item pool be improved.

Please identify any items or domains that may be missing from the PAS-CP.

Please identify any alternative ways of tapping the partner acceptance construct that come to mind.

Please provide any additional comments about the PAS-CP.

Appendix E: Study 1A Debriefing Form

Thank you for providing your expert opinion. Your input will help us refine the partner acceptance construct definition and validate the Partner Acceptance Scale for Chronic Pain (PAS-CP), a measure that has the potential to positively impact research and clinical practice in the field of chronic pain. It is our hope that the PAS-CP will be utilized to assess partner acceptance and its relationship to partner, patient, and relationship outcomes. We anticipate that partners who are more accepting of their spouse's chronic pain will report better individual and relationship outcomes. We also expect to find that greater partner acceptance is related to better patient outcomes. In the long term, this information may be used to enhance intervention efforts aimed at improving dyadic adjustment to chronic pain.

Please feel free to contact the researchers listed below if you have any questions, comments, or concerns about this study.

Kirsten Gullickson, B.A.
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Phone: (506) 292-2441

Diane LaChapelle, Ph.D., L.Psyc.
Research Supervisor
E-mail: diane.lachapelle@unb.ca
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Appendix F: Changes to PAS-CP Based on Experts' Recommendations

Definition of Partner Acceptance of Chronic Pain

- Removed reference to the two-component model (i.e., Embracing Chronic Pain, Living Life Despite Chronic Pain)

- Renamed numerous themes:
 - “Believing in the Authenticity of the Patient’s Pain” became “Believing in the Patient’s Pain Experience”
 - “Letting Go” became “Living with Negative Feelings”
 - “Engaging in Pleasurable Activities” became “Engaging in Valued Activities”

- “Understanding the Nature of Chronic Pain” theme was reconceptualized to focus on understanding the chronicity of the pain and refraining from attempts to reduce/control/eliminate the patient’s pain

- “Living with Negative Feelings” theme was revised to focus on living with negative feelings about the patient’s chronic pain rather than overcoming them

- “Making Practical Adjustments” theme eliminated due to the impossibility of differentiating acceptance- and avoidance-based adjustments

- Added “Relationship Willingness” theme that reflects partners’ willingness to commit themselves to a pain-affected relationship

- Revised definition to focus more on actions than beliefs or thoughts

PAS-CP Item Pool

- Eliminated 23 items:
 - Items related to knowledge of pain symptoms and treatment (theme 1)
 - Items related to partners recognizing the patient is in pain (theme 2)
 - Items related to “Making Practical Adjustments” (theme 4)
 - Items focused on “we” activities that may be influenced by the patient’s level of acceptance (theme 5)
 - Future-oriented items

- Reworded 23 items:
 - General wording changes to ensure items reflect actions rather than thoughts or beliefs
 - Items related to willingness to experience negative feelings rather than overcoming them (theme 3)
 - Items with ambiguous language (e.g., accommodate, change expectations)
 - Items referencing “pleasurable activities” were revised to say “valued activities” (theme 5)

- Added 17 items:
 - Items related to attempts to control, reduce, or eliminate pain (theme 1)
 - Items related to “Relationship Willingness” (new theme 6)
 - Items related to the partner’s openness to engaging in shared activities (theme 5)

Note. A detailed description of each updated theme can be found in Appendix F

Appendix G: PAS-CP Version 2 (Post-Expert Review)

Directions: Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully and then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers.

1	2	3	4	5	6	7
Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True

Understanding the Nature of Chronic Pain – Living with the patient's chronic pain without trying to eliminate, reduce, or control it

1. I acknowledge my partner's chronic pain condition will never go away completely.
2. I can live with the fact that my partner will probably have pain for the rest of his/her life.
3. I am okay with the fact that my partner's pain level is not going to change in any lasting way.
4. I encourage my partner to concentrate on finding a cure for his/her chronic pain.*
5. My partner having control over his/her pain is not as important as other things in my life.
6. I sacrifice things that are important to me for my partner to have control over his/her chronic pain.*
7. Keeping my partner's chronic pain level under control is my first priority.*
8. I urge my partner to avoid putting himself/herself in situations where his/her pain might increase.*

Believing in the Patient's Pain Experience - Trusting that the patient's pain is as persistent and severe as reported (i.e., that it is not exaggerated or fabricated)

9. I trust my partner when he/she says he/she is in pain.
10. I believe my partner's chronic pain is as severe as he/she says.
11. I think my partner exaggerates his/her chronic pain.*
12. I question whether my partner experiences chronic pain as often as he/she claims.*

Living with Negative Feelings – Living with negative thoughts and feelings about the patient's pain without dwelling on them

13. I am able to move past negative feelings about my partner's chronic pain without dwelling on them.
14. I'm willing to let negative feelings about my partner's chronic pain be there without changing them.
15. I am okay with the way my life is going even though my partner has chronic pain.

16. My negative feelings about my partner's chronic pain must change before I can move on with my life.*
17. I avoid thinking about my partner's chronic pain condition and how it affects me.*
18. I find myself dwelling on my partner's chronic pain.*
19. I feel like I can never be happy because of my partner's chronic pain condition.*
20. It seems impossible to overcome the challenges posed by my partner's chronic pain condition.*

Relationship Willingness - Willingness to remain committed to an arthritis-affected relationship

21. I feel like my partner's chronic pain condition is now a normal part of my life.
22. I have learned to live with my partner's chronic pain condition.
23. I am willing to stay in my relationship even though my partner has chronic pain.
24. I am committed to my partner even though he/she has chronic pain.
25. I cannot imagine continuing to be in a relationship with someone who has chronic pain.*
26. I am considering leaving my relationship because of my partner's chronic pain.*
27. I cannot imagine continuing to live with the consequences of my partner's chronic pain.*
28. The impact of my partner's chronic pain on my life is too much to handle.*
29. I will do anything to maintain the lifestyle I had before my partner's pain affected my life.*

Engagement in Valued Activities – Redirecting energy toward engaging in valued activities as an individual and a couple

30. I make an effort to do things with my partner no matter what his/her pain level is.
31. I encourage my partner to do things with me even though he/she has chronic pain.
32. I avoid trying to do activities with my partner because he/she has chronic pain.*
33. I do things I value even though my partner has chronic pain.
34. I do what is important to me even when my partner is in pain.
35. I choose not to let my partner's chronic pain condition limit me.
36. I am not able to do things I value as a result of my partner's chronic pain.*
37. I lead a full life even though my partner has chronic pain.
38. My partner's pain level has to change for me to get on with my life.*
39. My partner's chronic pain condition stands in the way of me doing what's important to me.*
40. I put my life on hold because of my partner's chronic pain.*
41. My partner's chronic pain condition keeps me from working toward my goals.*
42. My partner's chronic pain condition prevents me from living a fulfilling life.*

Appendix H: Study 1B Advertisement

DOES YOUR SPOUSE HAVE CHRONIC PAIN?

Researchers at the University of New Brunswick, led by PhD student Kirsten Gullickson, are looking for **partners of individuals with chronic pain** to take part in a research study. We need your feedback on a new questionnaire we are creating especially for partners in a chronic pain context.

You are eligible to participate if you are a **healthy man or woman who has been in a co-habiting romantic relationship of at least 1 year with someone who experiences chronic pain** (e.g., arthritis, neck/back pain, migraines, fibromyalgia, etc.). You must also be at least 21 years of age, fluent in English, and live in the Fredericton area. You are not eligible to participate if you experience chronic pain yourself.

If you participate in the study, you will be asked to meet with the researcher in person at the University of New Brunswick. You will provide basic demographic information (e.g., age, gender, race) about yourself and your romantic partner, then complete our questionnaire, which is designed to assess adjustment to chronic pain from the partner perspective. After you finish, you will be asked to provide feedback on various aspects of the questionnaire. The study is expected to take no more than 1 hour to complete. Participation is voluntary and all identifying information will be kept confidential. All partners will receive a \$25 gift card as a token of appreciation for participating.

If you are interested in finding out more about the study, please contact Kirsten at **kgullick@unb.ca** or **(306) 501-4571**. Getting more information about the study will in no way obligate you to participate.

Appendix I: Study 1B Information and Consent Form



Information for Participants

Introduction

Chronic pain not only affects patients, but also their romantic partners. Partners are often required to make significant lifestyle adjustments as a result of their spouse's chronic pain condition. We are developing a new questionnaire that relates to partners' experiences coming to terms with their loved ones' chronic pain. The purpose of this study is to make sure the questionnaire is understandable and relevant to partners who live with their spouse's chronic pain on a daily basis.

Who is eligible to participate?

In order to be eligible for the study, you must currently be in a co-habiting romantic relationship of at least 1 year with a patient who experiences chronic pain (e.g., arthritis, back pain, neuropathic pain syndromes, migraines, muscle pain syndromes). You must also be at least 21 years of age, fluent in English, and live in the Fredericton area. You are not eligible to participate if you have a chronic pain condition yourself or if you or your spouse are currently diagnosed with a serious medical illness (e.g., cancer).

What Will Participating Involve?

Partners will be asked to meet the researcher at the University of New Brunswick to participate in the study. First, you will provide background information about yourself (e.g., age, gender, race, education) and your romantic partner's chronic pain condition (e.g., diagnosis, date of diagnosis). Next you will be asked to complete our new questionnaire and then provide positive and negative feedback. For example, you may be asked if any of the items were difficult to understand. You may also be asked to describe why you chose a certain response option for some of the items. Each session will be audio recorded so your feedback is documented.

What Risks and Benefits are Associated with Participating?

There are minimal risks involved in this study. Specifically, responding to the questionnaire, which requires you to draw on your personal experiences, has the potential to make some people emotional. Please note, however, that you are not obligated to respond to every question if you are uncomfortable in any way (i.e., you can choose to respond or not respond to each question). The only cost to you will be the time you take to participate, which we estimate to be no more than 1 hour. In appreciation for participating, we are providing each partner with a \$25 gift card.

Is This Confidential and Who Will Know What I Say?

Your individual responses will be kept confidential. Furthermore, you will not be asked for any identifying information on the questionnaires. Any details that might reveal your identity will be excluded from discussions, study reports, and presentations. If you provide your email address at the end of the survey it will in no way be connected to your survey responses. Paper copies of both questionnaires and the audio recordings of each

session will be stored in a locked office at the University of New Brunswick and held for a maximum of 7 years, at which time they will be destroyed.

Is My Participation Voluntary?

Taking part in this study is entirely voluntary. Should you choose not to take part, or if you wish to withdraw from the study at any time after starting, you may do so without consequences. You have a right to refuse to respond to individual questions, or to withdraw completely, in which case you can inform the researcher. Should you choose to withdraw once the study begins, you will still receive the \$25 gift card.

Will I Have Access to Study Results?

A summary of study results will be available once all data have been collected and analyzed. This will likely take more than 1 year. You can provide your contact information at the end of the survey should you wish to receive a copy of the findings.

Ethical Approval

This project is on file with the University of New Brunswick Research Ethics Board (REB #XXX). If you have any questions or concerns about your rights or treatment as a research participant, you may contact the interim Chair of the Psychology Research Ethics Committee, Dr. Heather Sears at (506) 453-4707 or the Chair of the UNB Research Ethics Board, Dr. Steven Turner at (506) 453-5189.

What If I Have More Questions?

Please feel free to contact the researchers listed below to ask any questions you may have about this study.

Kirsten Gullickson
E-mail: kgullick@unb.ca
Phone: (306) 501-4571

Dr. Diane LaChapelle
E-mail: diane.lachapelle@unb.ca
Phone: (506) 458-7744

By signing your name below, you are confirming you have read and understood this information and consent to participate in the study being conducted by Kirsten Gullickson and her supervisor Dr. Diane LaChapelle of the Department of Psychology, University of New Brunswick.

Name (print): _____

Signature: _____

Date: _____

Appendix J: Study 1B Questionnaires

Demographic Questionnaire

Lets begin with some information about you. Please fill in the blanks or check (✓) the appropriate box. There are no right or wrong answers. Please try to be as accurate as possible and remember this information is confidential. Please do not put your name anywhere on this questionnaire.

What is your age? _____

What is your gender?

- Male Female Transgender male Transgender female
 Other (please specify) _____

Which of the following best describes your current relationship status?

- Single Dating Married Common law/domestic partnership
 Widowed Separated Divorced Other (please specify) _____

Approximate length of the relationship: _____ years

Have you been living with your current romantic partner for at least 1 year?

- Yes No

What is your race?

- White
 Black
 Indigenous
 Hispanic/Latin American
 Asian
 Middle Eastern
 East Indian
 Other (please specify) _____

What is the highest level of education you have achieved?

- 8th grade or less Some high school Completed high school
 Some university/college Undergraduate degree/diploma Graduate degree

Which of the following best describes your current employment status?

- Employed full-time Employed part-time Unemployed (disability)
 Home-maker Retired Unemployed (other reason)
 Student
 Other (please specify) _____

Have you been diagnosed with a chronic pain condition?

- Yes No

Are you currently diagnosed with a serious acute medical condition (e.g., cancer)?

- Yes No

If yes, please specify: _____

Now lets get some information about your romantic partner and his/her chronic pain. Please fill in the blanks or check (√) the appropriate box. There are no right or wrong answers. Please try to be as accurate as possible and remember this information is confidential. Do not put your romantic partner's name anywhere on this questionnaire.

What is your romantic partner's age? _____

What is your romantic partner's gender?

- Male Female Transgender male Transgender female
 Other (please specify)_____

What is your romantic partner's race?

- White
 Black
 Indigenous
 Hispanic/Latin American
 Asian
 Middle Eastern
 East Indian
 Other (please specify) _____

What type of chronic pain condition does your romantic partner have?

- Arthritis/joint pain (e.g., rheumatoid arthritis, osteoarthritis)
 Back pain (e.g., neck pain, upper or lower back pain)
 Neuropathic pain syndromes (e.g., post-surgical pain, diabetic neuropathy)
 Headaches (e.g., migraines)
 Muscle pain syndromes (e.g., fibromyalgia)
 Abdominal/visceral pain (e.g., angina)
 Physical trauma (e.g., broken bones)
 Other (please specify) _____

How many years ago did your romantic partner's symptoms appear? _____

How many years ago was your romantic partner diagnosed with a chronic pain condition? _____

When was your romantic partner diagnosed with chronic pain?

- Before your relationship began After your relationship began

Other than chronic pain, is your romantic partner currently diagnosed with a serious acute medical condition (e.g., cancer)?

- Yes No

If yes, please specify: _____

How did you hear about this study?

- Newsletter Email to a listserve Chronic pain website/blog Kijiji
- Chronic pain clinic Poster in my community Newspaper/radio From a friend
- Online crowdsourcing platform (e.g., MTURK) Other (please specify) _____

PAS-CP

Instructions: On the next page you will be presented with the Partner Acceptance Scale for Chronic Pain (PAS-CP). Please read through and complete all the items as directed. If you come to an item that you find difficult to understand or you don't feel is relevant to your experiences as a partner of someone with chronic pain, please do your best to answer the item, but make a mark beside it so we can discuss it afterward. When you are finished, you will be asked to provide positive and negative feedback on the items, response options, and questionnaire instructions.

Directions: Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully, then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers.

1	2	3	4	5	6	7
Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True

1. I'm willing to let negative feelings about my partner's chronic pain be there without changing them.	1	2	3	4	5	6	7
2. I have learned to live with my partner's chronic pain condition.	1	2	3	4	5	6	7
3. I avoid trying to do activities with my partner because he/she has chronic pain.	1	2	3	4	5	6	7
4. My negative feelings about my partner's chronic pain must change before I can move on with my life.	1	2	3	4	5	6	7
5. It seems impossible to overcome the challenges posed by my partner's chronic pain condition.	1	2	3	4	5	6	7
6. I urge my partner to avoid putting himself/herself in situations where his/her pain might increase.	1	2	3	4	5	6	7
7. I will do anything to maintain the lifestyle I had before my partner's pain affected my life.	1	2	3	4	5	6	7
8. I am able to move past negative feelings about my partner's chronic pain without dwelling on them.	1	2	3	4	5	6	7
9. My partner's chronic pain condition stands in the way of me doing what's important to me.	1	2	3	4	5	6	7
10. I sacrifice things that are important to me for my partner to have control over his/her chronic pain.	1	2	3	4	5	6	7
11. I do what is important to me even when my partner is in pain.	1	2	3	4	5	6	7
12. I question whether my partner experiences chronic pain as often as he/she claims.	1	2	3	4	5	6	7
13. I think my partner exaggerates his/her chronic pain.	1	2	3	4	5	6	7
14. I cannot imagine continuing to live with the consequences of my partner's chronic pain.	1	2	3	4	5	6	7
15. The impact of my partner's chronic pain on my life is too much to handle.	1	2	3	4	5	6	7
16. I am considering leaving my relationship because of my partner's chronic pain.	1	2	3	4	5	6	7

17. I encourage my partner to do things with me even though he/she has chronic pain.	1	2	3	4	5	6	7
18. I am okay with the fact that my partner's pain level is not going to change in any lasting way.	1	2	3	4	5	6	7
19. I am not able to do things I value as a result of my partner's chronic pain.	1	2	3	4	5	6	7
20. I do things I value even though my partner has chronic pain.	1	2	3	4	5	6	7
21. I am okay with the way my life is going even though my partner has chronic pain.	1	2	3	4	5	6	7
22. I put my life on hold because of my partner's chronic pain.	1	2	3	4	5	6	7
23. I am willing to stay in my relationship even though my partner has chronic pain.	1	2	3	4	5	6	7
24. I feel like I can never be happy because of my partner's chronic pain condition.	1	2	3	4	5	6	7
25. I find myself dwelling on my partner's chronic pain.	1	2	3	4	5	6	7
26. My partner's chronic pain condition keeps me from working toward my goals.	1	2	3	4	5	6	7
27. I trust my partner when he/she says he/she is in pain.	1	2	3	4	5	6	7
28. I lead a full life even though my partner has chronic pain.	1	2	3	4	5	6	7
29. I choose not to let my partner's chronic pain condition limit me.	1	2	3	4	5	6	7
30. My partner having control over his/her pain is not as important as other things in my life.	1	2	3	4	5	6	7
31. I can live with the fact that my partner will probably have pain for the rest of his/her life.	1	2	3	4	5	6	7
32. I cannot imagine continuing to be in a relationship with someone who has chronic pain.	1	2	3	4	5	6	7
33. My partner's chronic pain condition prevents me from living a fulfilling life.	1	2	3	4	5	6	7
34. I am committed to my partner even though he/she has chronic pain.	1	2	3	4	5	6	7
35. I acknowledge my partner's chronic pain condition will never go away completely.	1	2	3	4	5	6	7
36. Keeping my partner's chronic pain level under control is my first priority.	1	2	3	4	5	6	7
37. I make an effort to do things with my partner no matter what his/her pain level is.	1	2	3	4	5	6	7
38. My partner's pain level has to change for me to get on with my life.	1	2	3	4	5	6	7
39. I believe my partner's chronic pain is as severe as he/she says.	1	2	3	4	5	6	7

40. I encourage my partner to concentrate on finding a cure for his/her chronic pain.	1	2	3	4	5	6	7
41. I avoid thinking about my partner's chronic pain condition and how it affects me.	1	2	3	4	5	6	7
42. I feel like my partner's chronic pain condition is now a normal part of my life.	1	2	3	4	5	6	7

Appendix K: Study 1B Interview Questions

- How helpful were the instructions?
 - Were they clear and understandable?
 - Is there any other information that could be included in the instructions that would have helped you complete the questionnaire?

- What are your thoughts on the response options?
 - Were the response options easy to understand?
 - Did you find it difficult to pick a response option?

- What are your thoughts on the questionnaire items?
 - Did you find the items clear and easy to understand?
 - Were there any items that didn't make sense?
 - Would you change the wording of any of the items to make them easier to understand?

- Did the items seem relevant to you as a partner of someone with chronic pain?
 - Which items did you find most relevant to your experiences?
 - Were there any items that stuck out to you as not relevant?
 - Can you explain your thought process when you answered the question _____ (e.g., items 4, 10, 22, 32, 44, 50)?

- Are there any other thoughts about the PAS-CP you would like to share?

* *Indented bullet points are optional probes that will be asked as needed.*

Appendix L: Study 1B Debriefing Form

Thank you for your participation in this study! Previous research has shown that patients with chronic pain who are more accepting tend to have better outcomes in a number of areas (e.g., physical, emotional, functional). However, no one had considered what it means for partners to be accepting of their spouse's chronic pain condition. Recently, we interviewed partners and identified five themes that are thought to reflect the features of partner acceptance (Gullickson & LaChapelle, under review). We then used those themes to develop a new questionnaire assessing partner acceptance of chronic pain. We have solicited feedback from expert in the field as well as partners from the community (you!) in an attempt to make the questionnaire as understandable and relevant as possible. In the near future, we intend to scientifically validate the new questionnaire on a large sample of partners from across North America. Once the questionnaire has been validated, it can be used to explore the benefits of acceptance for partners and patients as individuals and as a couple.

If you would like to receive a copy of the results of this study or if you are interested in being notified about future chronic pain-related research projects that may be of interest to you, please provide an email or mailing address below:

Email: _____

Please check all that apply:

- I am interested in receiving a copy of the study results
- I am interested in being notified about future research related to chronic pain being conducted by members of this research team

If you are interested, the contact information for some helpful chronic pain resources for patients and partners can be found below:

Arthritis Society of Canada

<http://www.arthritis.ca>
 Phone: 1-800-321-1433
 E-mail: info@arthritis.ca

Canadian Pain Coalition

<http://www.canadianpaincoalition.ca>
 Phone: 1-906-404-9545
 E-mail: office@canadianpaincoalition.ca

Canadian Pain Society

<http://www.canadianpainsociety.ca>
 Phone: 1-416-642-6379
 E-mail: office@canadianpainsociety.ca

If participating in this study has caused you to feel distressed and you need assistance, we encourage you to contact your family physician to discuss these concerns. If in the future you require immediate mental health services, please contact the **Chimo Helpline** at 1-800-667-5005.

Appendix M: PAS-CP Version 3 (Post-Pilot Study)

Partner Acceptance Scale for Chronic Pain (PAS-CP)

Directions: Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully and then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers. Remember, this questionnaire is about you and your experiences as a partner.

1	2	3	4	5	6	7
Never True	Almost Never True	Rarely True	Sometimes True	Often True	Almost Always True	Always True

Understanding the Nature of Chronic Pain – realizing that that patient's pain cannot be controlled or eliminated

1. I acknowledge my partner's chronic pain will never go away completely.
2. I can live with the fact that my partner will probably have pain for the rest of his/her life.
3. I understand my partner's pain is not going to improve in any lasting way.
4. I encourage my partner to live life rather than searching for a cure for his/her pain.
5. I encourage my partner to concentrate on finding a cure for his/her chronic pain.*
6. Other things in life are more important than my partner having control over his/her pain.
7. I would sacrifice things that are important to me for my partner to have control over his/her chronic pain.*
8. Keeping my partner's chronic pain under control is my first priority.*
9. I urge my partner to avoid doing things that might increase his/her pain.*

Believing in the Patient's Pain Experience – trust that the patient's pain is as severe and persistent as reported

10. I trust my partner when he/she says he/she is in pain.
11. I believe my partner's chronic pain is as severe as he/she says.
12. I think my partner exaggerates his/her chronic pain.*
13. I question whether my partner experiences chronic pain as often as he/she claims.*

Living with Negative Feelings - willingness to experience negative thoughts and feelings about chronic pain, without dwelling on them or trying to change or avoid them

14. I can move past negative feelings about my partner's chronic pain without dwelling on them.

15. I am willing to let my negative feelings about my partner's chronic pain be there without changing them.
16. I am okay with the way my life is going even though my partner has chronic pain.
17. I avoid thinking about my partner's chronic pain and how it affects me.*
18. I find myself dwelling on my partner's chronic pain.*
19. I feel like I can never be happy because of my partner's chronic pain.*
20. It seems impossible to overcome the challenges posed by my partner's chronic pain.*

Relationship Willingness - willingness to stay in the relationship with the patient even though they have chronic pain

21. I feel like my partner's chronic pain is a normal part of my life.
22. I have learned to live with my partner's chronic pain.
23. My partner's chronic pain makes me question my commitment to the relationship.*
24. I cannot imagine continuing to be in a relationship with someone who has chronic pain.*
25. I am considering leaving my relationship because of my partner's chronic pain.*
26. I cannot imagine continuing to live with the consequences of my partner's chronic pain.*
27. The impact of my partner's chronic pain on my life is too much to handle.*

Engagement in Valued Activities – pursuit of valued activities as a couple and an individual

28. I make an effort to find things I can do with my partner even though he/she has pain.
29. I encourage my partner to do things with me even though he/she has chronic pain.
30. I avoid trying to do activities with my partner because he/she has chronic pain.*
31. I do things I value even though my partner has chronic pain.
32. I do what is important to me even when my partner is in pain.
33. I am not able to do things I value as a result of my partner's chronic pain.*
34. I lead a full life even though my partner has chronic pain.
35. My partner's pain has to change for me to get on with my life.*
36. My partner's chronic pain stands in the way of me doing what's important to me.*
37. My partner's chronic pain keeps me from working toward my goals.*
38. My partner's chronic pain prevents me from living a fulfilling life.*

Appendix N: Study 2 Advertisement

** The following information will be provided to potential participants when advertising the study. The information will be formatted as appropriate for distribution via email list-serves, newsletter/newspaper/radio advertisements, or posters.*

ARE YOU (OR SOMEONE YOU KNOW) IN A RELATIONSHIP WITH A PERSON WHO HAS CHRONIC PAIN?

Researchers from the University of New Brunswick are looking for **partners of individuals with chronic pain** to complete a **confidential online survey** that takes approximately 15 minutes to complete. Partners' experiences are often overlooked, so the purpose of the survey is to validate a new questionnaire that will help us learn more about partners' adjustment to their spouse's chronic pain and partners' well-being. **All partners who complete the survey will be given the chance to enter a draw for a \$25 Amazon.ca gift card (1 in 12 odds).**

Partners are eligible to participate if they are currently in a **co-habiting romantic relationship of at least 1 year with a patient who experiences chronic pain** (e.g., arthritis, back pain, neuropathic pain syndromes, migraines, muscle pain syndromes). They must also be at least 21 years old, fluent in English, reside in North America, and have Internet access. Partners who themselves have chronic pain are not eligible to participate.

Visit this secure link to learn more and start the survey:

<https://survey.psyv.unb.ca/Partners.aspx>

If you have additional questions, please don't hesitate to contact PhD student Kirsten Gullickson at **kgullick@unb.ca**. This project is on file with the Research Ethics Boards at the University of New Brunswick (#2018-065), the University of Regina (#2018-254), and Horizon Health Network (#2018-2637).

Appendix O: Study 2 Information and Consent Form



Information for Participants

**Text in italics differed based on whether the participant was recruited from the community or MTurk.*

Introduction

Chronic pain not only affects patients, but also their romantic partners. Partners are often required to make significant lifestyle adjustments as a result of their spouse's chronic pain condition. Although research has focused on patients' adjustment to chronic pain, we are just now learning what it means for partners to come to terms with their spouse's chronic pain. The purpose of this study is to develop a new questionnaire that assesses partners' adjustment to chronic pain.

Who is eligible to participate?

In order to be eligible for the study, you must:

- Be in a current, co-habiting romantic relationship of at least 1 year with a patient who experiences chronic pain (e.g., arthritis, spinal pain, neuropathic pain syndromes, migraines, muscle pain syndromes)
- Be at least 21 years of age
- Be fluent in English
- Live in North America
- Have access to the Internet

*You are not eligible to participate if you have a chronic pain condition yourself.

What Will Participating Involve?

This is an online survey. After providing informed consent, you will provide background information about yourself (e.g., age, gender, race, education) and your romantic partner's chronic pain condition (e.g., diagnosis, date of diagnosis). Next you will be asked to complete a series of questionnaires that assess a variety of individual and relationship outcomes. Questions that assess the quality of data you provide will be displayed throughout the survey. Typically, the survey takes about 15 minutes to complete.

Two weeks after you complete the survey, you will be given the option to complete a short follow-up survey. The follow-up survey is expected to take less than 10 minutes to complete and will help us evaluate the quality of the questionnaire in greater detail. More information about the follow-up study will be provided at the end of the survey.

What Risks and Benefits are Associated with Participating?

There are minimal risks involved in this study. Specifically, it is possible that responding to these questionnaires, which require you to draw on your personal experiences, can be emotional for some people. Please note, however, that you are not obligated to respond to every question if you are uncomfortable in any way (i.e., you can choose to respond or

not respond to each question). The only cost to you will be the time you take to participate.

By participating in the study, you are helping us create a reliable and valid questionnaire that can be used to assess partners' adjustment to their spouse's chronic pain. Learning more about how partners come to terms with their spouse's chronic pain will help us develop more effective interventions for patients and partners in a chronic pain context.

Community: In appreciation for your time, you will be given the opportunity to enter your name into a draw for a \$25 gift card (1 in 12 odds). Your name can be entered into an additional draw if you complete the follow-up study in two weeks time.

MTurk: You will receive \$1.00 USD in compensation for completing the study. As per the MTurk Participant Agreement (<https://www.mturk.com/participation-agreement>), we have the right to reject participants responses and thus refrain from providing compensation for good cause (i.e., if data suggest a participant does not meet eligibility criteria, did not pay attention, or if we have reason to believe the data provided is not authentic). Workers who take part in the follow-up will be paid an additional \$1.00 US. You are not required to take part in the follow-up survey in order to be compensated for the initial survey.

Is This Confidential and Who Will Know What I Say?

Your survey responses are confidential.

Community: You will be asked to provide a unique user ID (i.e., your first, middle, and last initials followed by your four digit year of birth), but this will only be used to link your responses should you choose to participate in the follow-up study. If you enter your email address into the draw at the end of the survey it will not be connected to your survey responses.

MTurk: You will be asked to provide your MTurk Worker ID so you can be compensated appropriately and your responses can be linked should you choose to participate in the follow-up study.

Any information provided that might reveal your identity will be excluded from discussions, study reports, and presentations. All data will be stored on a password-protected computer in a locked office at the University of New Brunswick and held for a maximum of 7 years, at which time it will be destroyed.

Is My Participation Voluntary?

Taking part in this study is entirely voluntary. You may withdraw from the study at any time after starting.

Will I Have Access to Study Results? [Community]

A summary of study results will be available once all data have been collected and analyzed. This will likely take longer than 1 year. At the end of the survey, you will be given an option to receive a copy of the findings.

Ethical Approval

This project is on file with the Research Ethics Boards at the University of New Brunswick (#2018-065), the University of Regina (#2018-254), and Horizon Health Network (#2018-2637). If you have any questions or concerns about your rights or treatment as a research participant, you may contact the Chair of the Psychology Research Ethics Committee, Dr. Biljana Stevanovski at (506) 458-7693 or the Chair of the UNB Research Ethics Board, Dr. Steven Turner at (506) 453-5189.

What If I Have More Questions?

Please feel free to contact the researchers listed below to ask any questions you may have about this study.

Kirsten Gullickson
E-mail: kgullick@unb.ca
Phone: (306) 501-4571

Dr. Diane LaChapelle
E-mail: diane.lachapelle@unb.ca
Phone: (506) 458-7744

Please respond to the following questions: [MTurk]

I confirm that I meet the eligibility criteria for this study: I am currently in a co-habiting romantic relationship of at least a year with a person who experiences chronic pain; I am at least 21 years of age; I am fluent in English; I live in North America, and I do not have a chronic pain condition myself.

I do not meet the above stated eligibility criteria, so I am unable to participate in the survey.

I have read and understood this information and consent to participate in the study being conducted by Kirsten Gullickson and her supervisor Dr. Diane LaChapelle of the Department of Psychology, University of New Brunswick.

I do not consent and wish to exit the survey.

Appendix P: Study 2 Questionnaires

Demographic Questionnaire

Lets begin with some information about you. Please fill in the blanks or check (✓) the appropriate box. There are no right or wrong answers. Please try to be as accurate as possible and remember this information is confidential. Please do not put your name anywhere on this questionnaire.

Please enter your unique user ID (first, middle, and last initials followed by your four-digit year of birth): _____ (e.g., KMG1988) [Community only]

Please enter your MTurk Worker ID: _____
[MTurk only]

What is your age? _____

What is your gender?

- Male
 Female
 Transgender male
 Transgender female
 Other (please specify) _____

What is your province/state and country of residence (e.g., Ontario, Canada)?

Which of the following best describes your current relationship status?

- Single
 Dating
 Married
 Common law/domestic partnership
 Widowed
 Separated
 Divorced
 Other (please specify) _____

Approximate length of the relationship: _____ years

Have you been living with your current romantic partner for at least 1 year?

- Yes
 No

What is your race?

- White
 Black
 Indigenous
 Hispanic/Latin American
 Asian
 Middle Eastern
 East Indian
 Other (please specify) _____

What is the highest level of education you have achieved?

- 8th grade or less Some high school Completed high school
 Some university/college Undergraduate degree/diploma Graduate degree

Which of the following best describes your current employment status?

- Employed full-time Employed part-time Unemployed (disability)
 Home-maker Retired Unemployed (other reason)
 Student
- Other (please specify) _____

Have you been diagnosed with a chronic pain condition?

- Yes No

Are you currently diagnosed with a serious acute medical condition (e.g., cancer)?

- Yes No

If yes, please specify: _____

What is 2+3?

- 2
 3
 4
 5
 6

Now lets get some information about your romantic partner and his/her chronic pain. Please fill in the blanks or check (✓) the appropriate box. There are no right or wrong answers. Please try to be as accurate as possible and remember this information is confidential. Do not put your romantic partner's name anywhere on this questionnaire.

Please describe your partner's chronic pain condition. For instance, what is the name of their condition? _____ [MTurk only]

What is your romantic partner's age? _____

What is your romantic partner's gender?

- Male Female Transgender male Transgender female
 Other (please specify)_____

What is your romantic partner's race?

- White

- Black
- Indigenous
- Hispanic/Latin American
- Asian
- Middle Eastern
- East Indian
- Other (please specify) _____

What type of chronic pain condition does your romantic partner have?

- Arthritis/joint pain (e.g., rheumatoid arthritis, osteoarthritis)
- Back pain (e.g., neck pain, upper or lower back pain)
- Neuropathic pain syndromes (e.g., post-surgical pain, diabetic neuropathy)
- Headaches (e.g., migraines)
- Muscle pain syndromes (e.g., fibromyalgia)
- Abdominal/visceral pain (e.g., angina)
- Physical trauma (e.g., broken bones)
- Other (please specify) _____

How many years ago did your romantic partner begin experiencing chronic pain?

When was your romantic partner diagnosed with chronic pain?

- Before your relationship began
- After your relationship began

Other than chronic pain, is your romantic partner currently diagnosed with a serious acute medical condition (e.g., cancer)?

- Yes
- No

If yes, please specify: _____

How did you hear about this study?

- Newsletter
- Email to a listserve
- Chronic pain website/blog
- Chronic pain clinic
- Poster in my community
- Newspaper/radio
- Kijiji
- From a friend
- Online crowdsourcing platform (e.g., MTURK)
- Other (please specify)

Name the vegetable pictured below: _____ [MTurk only]



(Moss & Litman, 2018)

PAS-CP (Version 3)

Directions: Below you will find a list of statements about your thoughts and feelings toward your partner's chronic pain condition. Read each item carefully and then rate the truth of the statement as it applies to you. Use the rating scale below to make your choices. For instance, if you believe a statement is 'Always True,' you would circle 7. Please do your best to respond to every item. There are no right or wrong answers. Remember, this questionnaire is about you and your experiences as a partner.

	1	2	3	4	5	6	7						
	Never True	Almost Never True	Rarely True	Sometimes True	Often True	Almost Always True	Always True						
1	I urge my partner to avoid doing things that might increase his/her pain.						1	2	3	4	5	6	7
2	I encourage my partner to concentrate on finding a cure for his/her chronic pain.						1	2	3	4	5	6	7
3	I understand my partner's pain is not going to improve in any lasting way.						1	2	3	4	5	6	7
4	I question whether my partner experiences chronic pain as often as he/she claims.						1	2	3	4	5	6	7
5	I lead a full life even though my partner has chronic pain.						1	2	3	4	5	6	7
6	My partner's chronic pain makes me question my commitment to the relationship.						1	2	3	4	5	6	7
7	Other things in life are more important than my partner having control over his/her pain.						1	2	3	4	5	6	7
	I am going to select "often true" because I am paying attention.						1	2	3	4	5	6	7
8	It seems impossible to overcome the challenges posed by my partner's chronic pain						1	2	3	4	5	6	7
9	I am okay with the way my life is going even though my partner has chronic pain.						1	2	3	4	5	6	7
10	My partner's chronic pain prevents me from living a fulfilling life.						1	2	3	4	5	6	7
11	I do things I value even though my partner has chronic pain.						1	2	3	4	5	6	7
12	I can live with the fact that my partner will probably have pain for the rest of his/her life.						1	2	3	4	5	6	7
13	I am considering leaving my relationship because of my partner's chronic pain.						1	2	3	4	5	6	7
14	I am unable to do things I value as a result of my partner's chronic pain.						1	2	3	4	5	6	7
15	I avoid thinking about my partner's chronic pain and how it affects me.						1	2	3	4	5	6	7

	I will choose two as my answer if I agree that water is wet.	1	2	3	4	5	6	7
16	I cannot imagine continuing to be in a relationship with someone who has chronic pain.	1	2	3	4	5	6	7
17	I avoid trying to do activities with my partner because he/she has chronic pain.	1	2	3	4	5	6	7
18	I feel like my partner's chronic pain is a normal part of my life.	1	2	3	4	5	6	7
19	The impact of my partner's chronic pain on my life is too much to handle.	1	2	3	4	5	6	7
20	I encourage my partner to live life rather than searching for a cure for his/her pain.	1	2	3	4	5	6	7
21	I would sacrifice things that are important to me for my partner to have control over his/her pain.	1	2	3	4	5	6	7
22	I find myself dwelling on my partner's chronic pain.	1	2	3	4	5	6	7
23	I cannot imagine continuing to live with the consequences of my partner's chronic pain.	1	2	3	4	5	6	7
24	I acknowledge my partner's chronic pain will never go away completely.	1	2	3	4	5	6	7
25	I encourage my partner to do things with me even though he/she has chronic pain.	1	2	3	4	5	6	7
26	My partner's chronic pain stands in the way of me doing what is important to me.	1	2	3	4	5	6	7
27	I trust my partner when he/she says he/she is in pain.	1	2	3	4	5	6	7
28	I do what is important to me even when my partner is in pain.	1	2	3	4	5	6	7
29	I am willing to let my negative feelings about my partner's pain be there without changing them.	1	2	3	4	5	6	7
30	I can move past my negative feelings about my partner's chronic pain without dwelling on them.	1	2	3	4	5	6	7
31	Keeping my partner's chronic pain under control is my first priority.	1	2	3	4	5	6	7
32	I have learned to live with my partner's chronic pain.	1	2	3	4	5	6	7
33	My partner's chronic pain keeps me from working toward my goals.	1	2	3	4	5	6	7
34	I make an effort to find things I can do with my partner even though he/she has pain.	1	2	3	4	5	6	7
35	I feel like I can never be happy because of my partner's chronic pain.	1	2	3	4	5	6	7
36	I think my partner exaggerates his/her chronic pain.	1	2	3	4	5	6	7
	I am going to leave this question blank if I am paying attention.	1	2	3	4	5	6	7
37	My partner's pain has to change for me to get on with my life.	1	2	3	4	5	6	7

38 I believe my partner's chronic pain is as severe as 1 2 3 4 5 6 7
he/she says.

DASS-21

DASS₂₁

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
	I think people who pay attention to this question choose option three	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3

18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

Which of the following is a food?

- couch
- pizza
- shoe
- rock
- truck

Acceptance and Action Questionnaire – II

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

1	2	3	4	5	6	7
Never True	Very Seldom True	Seldom True	Sometimes True	Frequently True	Almost Always True	Always True

1. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2. I'm afraid of my feelings.	1	2	3	4	5	6	7
I was born on planet earth.	1	2	3	4	5	6	7
3. I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5. Emotions cause problems in my life.	1	2	3	4	5	6	7
6. It seems like most people are handling their lives better than I am	1	2	3	4	5	6	7
7. Worries get in the way of my success.	1	2	3	4	5	6	7

Please write at least two sentences describing your experience taking this survey:
[MTurk only]

Appendix Q: Study 2 Debriefing Form

**Text in italics differed based on whether the participant was recruited from the community or MTurk.*

Community: You have now completed the survey! If you are interested in entering the draw for a \$25 gift card, would like to receive a copy of the study results, or are interested in participating in future research conducted by members of this research team, please provide an email below. Please note that your email address will not be connected to your survey responses.

Email: _____

Please check all that apply:

- I would like to enter the draw for a \$25 gift card (1 in 12 odds)*
- I am interested in receiving a copy of the study results*
- I am interested in being notified about future research related to chronic pain being conducted by members of this research team*

*You also have the opportunity to participate in a **very** brief follow-up study (approximately 10 minutes) in two weeks time, which will allow you to be entered into an additional draw for a \$25 gift card (1 in 25 odds). If you check the box below, you will receive an email reminder two weeks from now.*

- I am interested in participating in the follow-up study*

*MTurk: Thank you for your participation! Your survey completion code is: **12345**. Enter this code into the HIT page of your MTurk Worker account to prove you completed this survey and receive compensation.*

You will receive \$1.00 US in compensation as soon as soon as the researchers check the quality of your responses. As per the MTurk Participant Agreement (<https://www.mturk.com/participation-agreement>), we have the right to reject participants responses and thus refrain from providing compensation for good cause (i.e., if data suggest a participant does not meet eligibility criteria, did not pay attention, or if we have reason to believe the data provided is not authentic).

In two weeks, you will be sent an invitation to participate in an optional, brief follow-up study. If you choose to participate, you will be asked to repeat one of the questionnaires you completed today. We expect the follow-up study to take no longer than 10 minutes. You will be paid another \$1.00 US for the follow-up survey.

Continue onto the next page to learn more about what we are trying to learn from this survey and for helpful chronic pain resources.

Thank you for your participation in this study. By completing this survey you are helping us validate a new measure of partner acceptance of chronic pain.

Previous research has shown that patients with chronic pain who are more accepting tend to have better outcomes in a number of areas (e.g., physical, emotional, functional). However, no one had considered what it means for partners to be accepting of their spouse's chronic pain condition. Recently, we interviewed partners and identified five partner acceptance themes (Gullickson & LaChapelle, under review). We then used those themes to develop a new questionnaire assessing partner acceptance of chronic pain. We have solicited feedback from experts in the field as well as partners from the community in an attempt to make the questionnaire as understandable and relevant as possible. Now, with your help, we can determine whether the questionnaire is a good (i.e., statistically reliable and valid) way to measure partner acceptance. Through this research we also hope to demonstrate the benefits of chronic pain acceptance for partners. For example, we expect to find that partners who are more accepting of their spouse's chronic pain report better physical and mental health, as well as greater relationship satisfaction.

If you are interested, the contact information for some helpful chronic pain resources for patients and partners can be found below:

Arthritis Society of Canada

<http://www.arthritis.ca>
Phone: 1-800-321-1433
E-mail: info@arthritis.ca

Canadian Pain Coalition

<http://www.canadianpaincoalition.ca>
Phone: 1-906-404-9545
E-mail: office@canadianpaincoalition.ca

Canadian Pain Society

<http://www.canadianpainsociety.ca>
Phone: 1-416-642-6379
E-mail: office@canadianpainsociety.ca

If participating in this study has caused you to feel distressed and you need assistance, we encourage you to contact your family physician to discuss these concerns. If in the future you require immediate mental health services, please contact your local crisis line. A list of available services across Canada and the United States can be found at <http://www.yourlifecounts.org/need-help/crisis-lines>.

Appendix R: Study 2 Follow-up Invitation

**Text in italics differed based on whether the participant was recruited from the community or MTurk.*

Community:

Hello,

*It has been two weeks since you participated in the Partner Acceptance of Chronic Pain Study! You are receiving this email because you indicated your interest in completing the brief follow-up questionnaire. If you choose to participate, all you have to do is enter your unique identifier (i.e., your first, middle, and last initials followed by your year of birth) then repeat **one** of the questionnaires you filled out last time. Completing this survey will take no longer than 10 minutes. As a thank-you for time, you will be given the opportunity to enter your name into a second draw for a \$25 gift card (1 in 25 odds).*

Please click on the link below to reach the survey:

<https://survey.psyc.unb.ca/PartnersFollowUp.aspx>

*Thank you so much for contributing to this important research! If you have any questions, please do not hesitate to contact me at **kgullick@unb.ca** or (306)501-4571.*

Sincerely,

*Kirsten Gullickson
PhD Student in Clinical Psychology
University of New Brunswick*

Mturk:

It has been two weeks since you first participated in this survey. The follow-up survey is now available (Title: A Follow-Up Survey – Does your partner experience chronic pain?). Earn another \$1 USD for completing it as soon as possible. It should take less than 10 minutes. Email kirstengullickson@hotmail.com if you have any trouble accessing the follow-up survey.

Appendix S: Study 2 Follow-up Information and Consent Form



Information for Participants

**Text in italics differed based on whether the participant was recruited from the community or MTurk.*

Welcome back! We appreciate you taking the time to participate in this brief follow-up survey. Please note, you are only eligible to participate if you already took this survey approximately two weeks ago.

Community: This time, you will be asked to enter the unique identifier you provided approximately two weeks ago when you first participated (i.e., your first, middle, and last initials followed by your year of birth) then repeat the partner acceptance of chronic pain questionnaire. This will allow us to determine if partners' level of acceptance changes over time. Once again, the only cost to you will be the time you take to participate, which will be approximately 10 minutes. In appreciation for your time, you will be given the opportunity to enter your name into a draw for a \$25 gift card (1 in 25 odds).

MTurk: This time, you will be asked to enter your MTurk worker ID and then repeat one of the questionnaires. This will allow us to determine if partners' level of acceptance changes over time. Once again, the only cost to you will be the time you take to participate, which will be approximately 10 minutes. You will receive \$1 USD in compensation for completing the study. As per the MTurk Participant Agreement (<https://www.mturk.com/participation-agreement>), we have the right to reject participants responses and thus refrain from providing compensation for good cause (i.e., if data suggest a participant does not meet eligibility criteria, did not pay attention, or if we have reason to believe the data provided is not authentic).

Your responses are confidential. All data will be stored on a password-protected computer in a locked office at the University of New Brunswick and held for a maximum of 7 years after we publish the findings, at which time it will be destroyed. Taking part in this study is entirely voluntary. Should you choose not to take part, or if you wish to withdraw from the study at any time after starting, you may do so. You have a right to refuse to respond to individual questions.

This project is on file with the University of New Brunswick Research Ethics Board (REB #2018-065). If you have any questions or concerns about your rights or treatment as a research participant, you may contact the Chair of the Psychology Research Ethics Committee, Dr. Biljana Stevanovski at (506) 458-7693 or the Chair of the UNB Research Ethics Board, Dr. Steven Turner at (506) 453-5189. If you have specific questions about the study, please feel free to contact the researchers listed below.

Kirsten Gullickson
E-mail: kgullick@unb.ca

Dr. Diane LaChapelle
E-mail: diane.lachapelle@unb.ca

Phone: (306) 501-4571

Phone: (506) 458-7744

Please respond to the following questions: [MTurk]

I confirm that I meet the eligibility criteria for this study: I am currently in a co-habiting romantic relationship of at least a year with a person who experiences chronic pain; I am at least 21 years of age; I am fluent in English; I live in North America, and I do not have a chronic pain condition myself.

I do not meet the above stated eligibility criteria, so I am unable to participate in the survey.

I have read and understood this information and consent to participate in the study being conducted by Kirsten Gullickson and her supervisor Dr. Diane LaChapelle of the Department of Psychology, University of New Brunswick.

I do not consent and wish to exit the survey.

Appendix T: Study 2 Follow-Up Debriefing Form

**Text in italics differed based on whether the participant was recruited from the community or MTurk.*

Thank you for your participation in this study! By completing this survey you are further helping us to validate a new measure of partner acceptance of chronic pain. The purpose of this brief follow-up study was to determine whether our new questionnaire measures partner acceptance of chronic pain consistently over time.

Community: If you are interested in entering the draw for a \$25 gift card (1 in 25 odds), please provide an email below. Please note that your email address will not be connected to your survey responses.

Email: _____

MTurk: Your survey completion code is: 12345. Enter this code into the HIT page of your MTurk Worker account to prove you completed this survey and receive compensation.

You will receive \$1.00 US in compensation as soon as soon as the researchers check the quality of your responses. As per the MTurk Participant Agreement (<https://www.mturk.com/participation-agreement>), we have the right to reject participants responses and thus refrain from providing compensation for good cause (i.e., if data suggest a participant does not meet eligibility criteria, did not pay attention, or if we have reason to believe the data provided is not authentic).

If participating in this study has caused you to feel distressed and you need assistance, we encourage you to contact your family physician to discuss these concerns. If in the future you require immediate mental health services, please contact your local crisis line. A list of available services across Canada and the United States can be found at <http://www.yourlifecounts.org/need-help/crisis-lines>.

Curriculum Vitae

Candidate's full name: Kirsten Mae Gullickson

Universities attended: Ph.D. Clinical Psychology
University of New Brunswick, Fredericton, NB
2013-2020

B.A. Psychology (Honours)
University of Regina, Regina, SK
2006-2011

Publications:

- Hadjistavropoulos, H. E., **Gullickson, K. M.**, Adrian-Taylor, S., Wilhelms, A., Sundstrom, C., & Nugent, M. M. (2020). Stakeholder perceptions of Internet-delivered cognitive behaviour therapy as a treatment option for alcohol misuse: Qualitative analysis. *JMIR Mental Health*, 7(3), e14698. doi: 10.2196/14698
- Hadjistavropoulos, H. D., Peynenburg, V., Mehta, S., Adlam, K., Nugent, M., **Gullickson, K. M.**, Titov, N., & Dear, B. (2020). Internet-delivered cognitive behaviour therapy (ICBT) for depression and anxiety among clients referred and funded by insurance companies: Benchmarking outcomes with publicly-funded ICBT. *JMIR Mental Health*, 7(2), e16005. doi: 10.2196/16005
- Gullickson, K. M.**, Hadjistavropoulos, H. D., Dear, B. F., & Titov, N. (2019). Negative effects associated with Internet-delivered cognitive behaviour therapy: An analysis of client emails. *Internet Interventions*, 18, 100278. doi: 10.1016/j.invent.2019.100278
- Hadjistavropoulos, H. D., **Gullickson, K. G.**, Schneider, L. H., Dear, B. F., & Titov, N. (2019). Development of the Internet-Delivered Cognitive Behaviour Therapy Undesirable Therapist Behaviours Scale (ICBT-UTBS). *Internet Interventions*, 18, 100255. doi: 10.1016/j.invent.2019/100255
- Owens, V. A. M., Hadjistavropoulos, H. D., Schneider, L. H., **Gullickson, K. M.**, Karin, E., Titov, N., & Dear, B. F. (2019). Transdiagnostic, Internet-delivered cognitive behavior therapy for depression and anxiety: Exploring impact on health anxiety. *Internet Interventions*, 15, 60-66. doi: 10.1016/j.invent.2019.01.001
- Gullickson, K. M.**, & LaChapelle, D. L. (2018). Identifying the features of partner acceptance of arthritis: A qualitative analysis. *Canadian Journal of Pain*, 2(1), 205-217. doi: 10.1080/24740527.2018.1485482

Jones, S. L., Hadjistavropoulos, H. D., & **Gullickson, K. M.** (2014). Understanding health anxiety following breast cancer diagnosis. *Psychology, Health, & Medicine, 19*(5), 525-535. doi: 10.1080/13548506.2013.845300

Conference Presentations:

Gullickson, K. M., Ulmer, B. K., Simmonds, M. K., & Dick, B. D. (2020, May). *Dialectical behaviour therapy skills training for chronic pain: A mixed-method analysis of group treatment satisfaction.* Poster accepted to the Canadian Pain Society Annual Scientific Meeting, Calgary, AB (Conference cancelled due to COVID-19).

Gullickson, K. M. & Hadjistavropoulos, H. (2019, May). *Negative effects associated with internet-delivered cognitive behaviour therapy: An analysis of client emails.* Poster presented at the Canadian Psychological Association Convention, Halifax, NS.

Hadjistavropoulos, H. D., Schneider, L. H., Bourgeault, A. L., Davidson, H., & **Gullickson, K. M.** (2019, February). *Could negative therapist behaviours be an implementation problem for therapist-assisted Internet-delivered cognitive behaviour therapy in routine practice?* Poster presented at the International Society for Research on Internet Interventions Conference, Auckland, New Zealand.

Hadjistavropoulos, H. D., Schneider, L. H., Mehta, S., Soucy, J., **Gullickson, K. M.,** Karin, E., Dear, B. F., & Titov, N. (2019, February). *Improving scalability of Internet-delivered cognitive behaviour therapy by considering patient preferences for weekly or optional therapist support: What's the evidence?* Poster presented at the International Society for Research on Internet Interventions Conference, Auckland, New Zealand.

Gullickson, K. M., & LaChapelle, D. L. (2017, June). *Partner perspectives: The impact of arthritis on individual and relationship functioning.* Poster presented at the 77th Annual Canadian Psychological Association Convention, Toronto, ON.

Gullickson, K. M., Crump, L., LaChapelle, D. L., Santos-Iglesias, P., Byers, E. S. (2017, May). *Is sex worth the pain? Willingness to engage in sexual activity among partnered women with fibromyalgia.* Poster presented at the Canadian Pain Society Annual Scientific Meeting, Halifax, NS.

Gullickson, K. M., & LaChapelle, D. L. (2015, April). *Learning to live with arthritis: Partners' definitions of acceptance.* Poster presented at the British Pain Society Annual Scientific Meeting, Glasgow, Scotland.

Gullickson, K. M., & LaChapelle, D. L. (2014, May). *Exploring the relationship between social support, chronic pain acceptance, and psychological outcomes in*

individuals with arthritis. Poster presented at the Canadian Pain Society Annual Scientific Meeting, Quebec City, QC.

Dirkse, D. A., **Gullickson, K. M.**, & Hadjistavropoulos, H. D. (2013, April). *Therapist-assisted internet cognitive behavioral therapy: An analysis of client communications*. Poster presented at the Anxiety Disorders and Depression Conference, La Jolla, CA.

Gullickson, K. M., Hadjistavropoulos, H. D., & Jones, S. L. (2012, June). *Understanding factors associated with health anxiety following breast cancer diagnosis (Part B)*. Poster presented at the 73rd Annual Canadian Psychological Association Convention, Halifax, NS.

Gullickson, K. M., Hadjistavropoulos, H. D., & Jones, S. L. (2011, May). *Understanding the implications of health anxiety following breast cancer diagnosis (Part A)*. Paper and poster presented at the Regina Qu'Appelle Health Region Research Showcase, Regina, SK.