



Pain-related anxiety and anxiety sensitivity across anxiety and depressive disorders[☆]

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ABSTRACT

Fear–anxiety–avoidance models posit pain-related anxiety and anxiety sensitivity as important contributing variables in the development and maintenance of chronic musculoskeletal pain [Asmundson, G. J. G., Vlaeyen, J. W. S., & Crombez, G. (Eds.). (2004). *Understanding and treating fear of pain*. New York: Oxford University Press]. Emerging evidence also suggests that pain-related anxiety may be a diathesis for many other emotional disorders [Asmundson, G. J. G., & Carleton, R. N. (2005). Fear of pain is elevated in adults with co-occurring trauma-related stress and social anxiety symptoms. *Cognitive Behaviour Therapy*, 34, 248–255; Asmundson, G. J. G., & Carleton, R. N. (2008). Fear of pain. In: M. M. Antony & M. B. Stein (Eds.), *Handbook of anxiety and the anxiety disorders* (pp. 551–561). New York: Oxford University Press] and appears to share several elements in common with other fears (e.g., anxiety sensitivity, illness/injury sensitivity, fear of negative evaluation) as described by Reiss [Reiss, S. (1991). Expectancy model of fear, anxiety, and panic. *Clinical Psychology Review*, 11, 141–153] and Taylor [Taylor, S. (1993). The structure of fundamental fears. *Journal of Behavior Therapy and Experimental Psychiatry*, 24, 289–299]. The purpose of the present investigation was to assess self-reported levels of pain-related anxiety [*Pain Anxiety Symptoms Scale-Short Form*; PASS-20; McCracken, L. M., & Dhingra, L. (2002). A short version of the Pain Anxiety Symptoms Scale (PASS-20): preliminary development and validity. *Pain Research and Management*, 7, 45–50] across several anxiety and depressive disorders and to compare those levels to non-clinical and chronic pain samples. Participants consisted of a clinical sample ($n = 418$; 63% women) with principal diagnoses of a depressive disorder (DD; $n = 22$), panic disorder (PD; $n = 114$), social anxiety disorder (SAD; $n = 136$), obsessive-compulsive disorder (OCD; $n = 86$), generalized anxiety disorder (GAD; $n = 46$), or specific phobia ($n = 14$). Secondary group comparisons were made with a community sample as well as with published data from a treatment-seeking chronic pain sample [McCracken, L. M., & Dhingra, L. (2002). A short version of the Pain Anxiety Symptoms Scale (PASS-20): preliminary development and validity. *Pain Research and Management*, 7, 45–50]. Results suggest that pain-related anxiety is generally comparable across anxiety and depressive disorders; however, pain-related anxiety was typically higher ($p < .01$) in individuals with anxiety and depressive disorders relative to a community sample, but comparable to or lower than a chronic pain sample. Results imply that pain-related anxiety may indeed be a construct independent of other fundamental fears, warranting subsequent hierarchical investigations and consideration for inclusion in treatments of anxiety disorders. Additional implications and directions for future research are discussed.

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Pain-related anxiety is a ubiquitous human experience, occurring along a continuum ranging from low to high (Asmundson, Collimore, Bernstein, Zvolensky, & Hadjistavropoulos, 2007; Asmundson, Hadjistavropoulos, Bernstein, & Zvolensky, 2009). Current fear–anxiety–avoidance models of chronic pain emphasize pain-related anxiety as a key diathesis for the development and maintenance of chronic musculoskeletal pain (Asmundson, Norton, & Vlaeyen, 2004; Asmundson & Taylor, 2006; Vlaeyen &

Linton, 2000). In short, nociceptive stimulation provokes the attribution of meaning to the sensation. For most people, nociceptive sensations are perceived as unpleasant but not catastrophic (e.g., leading to permanent disability), and they engage in appropriate behavioral restriction followed by graduated increases in activity as the sensation becomes less acute. In contrast, a significant minority of individuals interpret pain-related sensations as threatening and catastrophic; such catastrophizing is thought to result from dispositional and situational factors. Pain catastrophizing exacerbates pain-related anxiety and behavioral avoidance/compulsions and thereby promotes and maintains activity limitations, disability, and the nociceptive sensation itself (Asmundson & Wright, 2004).

The fear–anxiety–avoidance models of chronic pain (Asmundson, Norton, et al., 2004; Asmundson & Taylor, 2006; Vlaeyen & Linton, 2000) follow patterns similar to anxiety disorder models. Specifically, anxiety disorders either follow from, or are exacerbated by, one or more unpleasant experiences associated with catastrophic cognitions, significant distress, and behavioral avoidance/compulsions (Barlow, 2002). For persons with an anxiety disorder, behavioral avoidance/compulsions precludes occasions to confront and disconfirm their fearful cognitions, leaving them in a self-perpetuating cycle of anxiety (Barlow, 2000). Similarities between these patterns of disorder development suggest that similar mechanisms or processes may be involved in the development and maintenance of both chronic pain and anxiety disorders (Asmundson, Vlaeyen, & Crombez, 2004). Moreover, researchers have found evidence of elevated levels of pain-related anxiety in samples without chronic pain (Asmundson & Carleton, 2005) as well as an inverse relationship implied between pain tolerance and panic disorder (Schmidt, Richey, & Fitzpatrick, 2006).

The prevalence of current chronic pain in the general population is estimated at 15% (Hadjistavropoulos & Craig, 2005; Sareen, Cox, Clara, & Asmundson, 2005); however, it tends to be substantially higher in samples with anxiety (i.e., 19–35%) or depressive disorders (i.e., 20–60%; Polatin, Kinney, Gatchel, Lillo, & Mayer, 1993; Sareen et al., 2005). Investigations to date have focused on the relationship between chronic pain and depression (Carroll, Cassidy, & Cote, 2004; Currie & Wang, 2004), as well as chronic pain and post-traumatic stress (Asmundson & Taylor, 2006; Sharp & Harvey, 2001; Sherman, Turk, & Okifuji, 2000). The shared vulnerability model (Asmundson, Coons, Taylor, & Katz, 2002; Asmundson & Taylor, 2006) suggests that chronic pain and post-traumatic stress disorder (PTSD) may result from specific fear-related constructs (e.g., anxiety sensitivity, pain-related anxiety) that function as overlapping vulnerabilities. Heightened anxiety sensitivity (AS) – the tendency to catastrophically misinterpret anxiety sensations (Greenberg & Burns, 2003; Taylor, 1999) – has also been found in persons suffering from post-traumatic stress, social anxiety, panic disorder (Taylor, Koch, & McNally, 1992), depressive disorders (Grant, Beck, & Davila, 2007; Rector, Szacun-Shimizu, & Leybman, 2007), and some, but not all, people suffering from chronic pain (Asmundson, Abrams, & Collimore, 2008).

Pain-related anxiety and AS have both been suggested as important contributing variables for the development of chronic pain and anxiety disorders (Asmundson, Abrams, et al., 2008; Asmundson & Carleton, 2008). AS has been well researched across the anxiety and depressive disorders (Taylor, 1999; Taylor et al., 2007), whereas pain-related anxiety has not. Indeed, some researchers have suggested pain-related anxiety may be a manifestation of AS (Asmundson, Norton, & Veloso, 1999; Greenberg & Burns, 2003); however, the evidence remains inconclusive (Carleton & Asmundson, 2009). If pain-related anxiety is indeed a manifestation of AS, or if the constructs are interdependent,

existing therapies for reducing AS (e.g., interoceptive exposure) may have treatment utility for chronic pain (Watt, Stewart, Lefaivre, & Uman, 2006; Woods & Asmundson, 2008). If pain-related anxiety is consistently elevated in people with anxiety and mood disorders relative to those without, it may further explain some of the comorbidity. Moreover, if pain-related anxiety is differentially elevated, it may afford additional insight into the construct specificity as an important contributing variable.

Manifestation of pain-related anxiety across the anxiety disorders may parallel that observed for AS. Similar to AS, pain-related anxiety may be highest in panic disorder, PTSD, and social anxiety disorder, more generally elevated across the other anxiety disorders, and consistently higher relative to non-clinical samples (Taylor et al., 1992). Indeed, epidemiological studies demonstrated particular elevations in chronic pain for patients with panic disorder, PTSD, and social anxiety disorder (Kessler et al., 2005; Kessler, Chiu, Demler, Merikangas, & Walters, 2005; McWilliams, Cox, & Enns, 2003; McWilliams, Goodwin, & Cox, 2004). There is also preliminary cross-sectional research that suggests pain-related anxiety in concert with pre-existing anxiety pathology may increase risk for the development of chronic pain (Asmundson & Carleton, 2005); however, to date, this supposition remains untested (Asmundson, Abrams, et al., 2008). Moreover, there have been no studies comparing levels of self-reported pain-related anxiety across the anxiety disorders.

The current investigation had two purposes: (1) to explore whether levels of pain-related anxiety differ across anxiety and depressive disorders in a manner consistent with patterns observed for AS; and (2) to compare levels of pain-related anxiety reported by persons with anxiety and depressive disorders to levels reported by a community sample without chronic pain and a sample with chronic pain. Pain-related anxiety was expected to differ across the disorders. Considering the theorized relationship between pain-related anxiety and AS (Asmundson, Norton, & Veloso, 1999; Greenberg & Burns, 2003), the highest levels of pain-related anxiety were expected from participants with panic disorder or PTSD (Taylor et al., 1992). Lastly, individuals with any anxiety or mood disorder were expected to report significantly higher pain-related anxiety relative to a community sample without chronic pain.

1. Method

1.1. Participants

Participants were drawn from clinical and community samples. All participants completed self-report questionnaire batteries. The clinical sample was from the Anxiety Treatment and Research Centre at St. Joseph's Healthcare in Hamilton, Ontario. The clinical participants ($N = 418$; 154 men [$M_{\text{age}} = 34.43$; $SD = 11.22$] and 263 women [$M_{\text{age}} = 34.81$; $SD = 11.53$]) presented for assessment and treatment of various anxiety and depressive disorders (see Table 1). The majority had completed at least some post-secondary education (68%) or high school (16%), and most described themselves as Caucasian (93%) and either single (44%), married (35%), or cohabitating (12%). Diagnostic criteria were based on the *Diagnostic and statistical manual of mental disorders* (4th ed., text revision; DSM-IV-TR; American Psychiatric Association, 2000) and the diagnoses were made using the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1996). The principal diagnosis was the disorder that was reported to be most disabling at the time of the assessment. Accordingly, the clinical diagnostic categories included panic disorder with or without agoraphobia (PD; $n = 114$), social anxiety disorder (SAD; $n = 136$), obsessive-compulsive disorder (OCD; $n = 86$), generalized anxiety disorder (GAD; $n = 46$), specific phobia ($n = 14$), and depressive

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