



# Anxiety sensitivity, fear, and avoidance behavior in headache pain

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## Abstract

Recent research has implicated anxiety sensitivity (AS), the fear of anxiety-related sensations, as a mitigating factor involved in fear and avoidance in patients with chronic back pain [Understanding and treating fear of pain (2004) 3]. Given reported similarities between individuals experiencing chronic pain and those experiencing recurrent headaches, it is theoretically plausible that AS plays a role in influencing fear of pain and avoidance behavior in people with recurrent headache. This has not been studied to date. In the current study we used structural equation modeling to examine the role of AS in fear and avoidance behavior of patients experiencing recurrent headaches. Treatment seeking patients with recurrent headaches completed measures of AS, headache pain severity, pain-related fear, and pain-related escape and avoidance behavior. Structural equation modeling supported the prediction of a direct significant loading of AS on fear of pain. Headache severity also had a direct loading on fear of pain. Results also revealed that AS and headache severity had indirect relationships to pain-related escape and avoidance via their direct loadings on fear of pain. Headache severity also had a small direct loading on escape and avoidance behavior. These results provide compelling evidence that AS may play an important role in pain-related fear and escape and avoidance behavior in patients with recurrent headaches.

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## 1. Introduction

Recurrent headaches are often characterized by elevated pain-related fear and avoidance of behaviors which the headache sufferer believes will instigate or perpetuate the headache pain (Asmundson et al., 1999b; Hursey and Jacks, 1992; Philips and Jahanshahi, 1986). Avoidance behavior, frequently reported in studies of individuals suffering from other forms of chronic pain such as chronic musculoskeletal pain (for a review, see Asmundson et al., 2004), is seen as part of a maladaptive process which serves to promote pain-related disability (Waddell et al., 1993).

We (Asmundson et al., 2004; Norton and Asmundson, 2003) and others (Sharp, 2001; Vlaeyen and Linton, 2000) have recently described an interplay between pain-related fear and anxiety, and anxiety sensitivity (AS). AS is defined

as the fear of anxiety symptoms arising from the belief that they hold harmful consequences (Reiss, 1991; Reiss and McNally, 1985), and appears to be related to neuroticism (Norton et al., under review; Sexton et al., 2003). Asmundson and Norton (1995) observed that chronic pain patients with high AS reported significantly greater pain-related cognitive anxiety, fear of pain, and escape/avoidance behavior than did chronic pain patients with either medium or low AS. This relationship between pain escape/avoidance behaviors and AS was further defined by Asmundson and Taylor (1996) who, using structural equation modeling, found a direct path from AS to fear of pain in patients experiencing chronic musculoskeletal pain. As well, they found that AS indirectly influenced escape/avoidance behavior through its loading on pain-related fear. The extent to which Asmundson and Taylor (1996) model generalizes to other chronic pain conditions, such as recurrent headaches, has not been established. Preliminary reports, however, suggest that high AS does contribute to functional limitations and avoidance behavior

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in patients with recurring headache (Asmundson et al., 1999b), so a similar model may apply.

Numerous studies have also examined the relationship between pain behaviors and neurotic-spectrum variables among people experiencing recurrent headaches. Tschannen et al. (1992), employing path analysis, found that depression directly influenced headache-related disability in a sample of patients experiencing recurrent headaches. Duckro et al. (1995) replicated and expanded upon the aforementioned study (Tschannen et al., 1992) with a sample of patients with post-traumatic headaches. Similarly, the results implicated depression as having a strong direct influence on perceived disability. Finally, Hursey and Jacks (1992) noted significant relationships between depression and fear of pain in a recurrent headache sample. However, none of these studies of headache sufferers examined the role of AS on fear of pain and pain-related behaviors. Given the empirical (Asmundson and Norton, 1995; Asmundson and Taylor, 1996) and theoretical (Asmundson et al., 1999a) role of AS in the pathogenesis of recurrent musculoskeletal pain conditions, the purpose of the current study was to replicate the structural model observed by Asmundson and Taylor (1996) with a sample of patients seeking treatment for recurrent headaches.

## 2. Methods

### 2.1. Participants

Two-hundred and 11 consecutive referrals to a hospital-based neurology practice were asked to participate. The neurology clinic, which has particular emphasis on the treatment of migraine, is a private practice clinic located in one of the three major hospitals in the Regina, Canada urban area. All patients were referred to the clinic by their family physician. One-hundred and seventy-one patients (81%) consented and returned the questionnaire packets. Participants completed the questionnaires at their own pace and returned questionnaire packets by mail. Extensive missing data required the exclusion of 15 cases from subsequent analyses. Participants ranged in age from 12 to 77 years ( $M=41.32$ ,  $SD=12.48$ ). The majority (88.8%) of the participants were female. Headache diagnoses, which were made using the Headache Classification Committee of the International Headache Society (1988) guidelines, were drawn from patient charts. However, due to transcription issues, only superordinate groupings (i.e. migraine, tension-type headache) were recorded. Migraine was the most frequent type of headache diagnosed (95.3%), with 8.1% reporting chronic migraine. Cluster headache (3.4%), and tension-type headache (1.3%) were also represented in the sample. Participants reported they had experienced headaches for an average of 17.70 years ( $SD=13.78$ ). The majority of the participants (74.7%) were currently taking prescription medications. Furthermore, 63.6% were

currently taking over-the-counter medications for their headaches. Together, 94.3% of the sample were taking either or both of over-the-counter or prescription medications. The lower than expected rates of prescription medication use may be related to past treatment referrals. Although no data are available, this may have been the first appropriate specialist referral for many participants. Following the neurologist appointment, approximately 95% of patients were prescribed medication to rescue from and prevent their headaches.

### 2.2. Measures

*Anxiety sensitivity index (ASI; Peterson and Reiss, 1992).* The ASI is a 16-item measure of the AS construct. It is widely believed that AS is not a unidimensional construct (Cox et al., 1996; Zinbarg et al., 1999), and most analyses suggest three subfactors. These include (a) fear of somatic symptoms/physical concerns, (b) fear of cognitive symptoms/mental incapacitation concerns, and (c) fear of publicly observable symptoms/social concerns. Given its strong empirical backing, the three-factor structure delineated by Zinbarg (1995) was employed in this study, with fear of somatic symptoms (ASI-SOM), fear of cognitive symptoms (ASI-COG), and fear of publicly observable symptoms (ASI-PUB) used as indicators of the AS construct.

*McGill pain questionnaire-short form (MPQ; Melzack, 1987).* The McGill pain questionnaire-short form is a 15-item checklist of pain-related adjectives on which participants are asked to 'describe your pain by checking the appropriate spaces'. The MPQ assesses pain along two dimensions—sensory and affective components of pain. For the purposes of this study, only the sensory scale was used and was an indicator of the pain severity construct.

*Pain anxiety symptom scale (PASS; McCracken et al., 1992, 1993).* The PASS is a well-validated 40-item measure of pain-related fear and anxiety. The measure consists of four subscales measuring: (a) cognitive anxiety symptoms (PASS-CA), (b) physiological anxiety symptoms (PASS-PA), (c) fearful appraisals of pain (PASS-FA), and (d) escape/avoidance behavior (PASS-EA). The PASS-CA, PASS-PA, and PASS-FA subscales were used as indicators of pain anxiety, while PASS-EA was used as an indicator of escape/avoidance.

*Headache questionnaire (HQ; Asmundson et al., 1999b).* The HQ consists of questions regarding distinct aspects of the patient's experience with headaches. Questions query the severity of typical headache (0=*no headache*–5=*extremely painful*; used as an indicator of pain severity), the disturbing/distressing nature of headaches (0=*not at all*–4=*extremely*; used as an indicator of pain severity), and the degree to which headaches restrict or change one's lifestyle (0=*no change*–4=*extreme change*; used as an indicator of escape/avoidance).

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