



## An evaluation of pain-related anxiety among daily cigarette smokers in terms of negative and positive reinforcement smoking outcome expectancies

Adam Gonzalez<sup>a</sup>, Julianna Hogan<sup>a</sup>, Alison C. McLeish<sup>b</sup>, Michael J. Zvolensky<sup>a,\*</sup>

<sup>a</sup> University of Vermont, United States

<sup>b</sup> University of Cincinnati, United States

### ARTICLE INFO

#### Keywords:

Cigarette smoking  
Outcome expectancies  
Pain anxiety  
Anxiety sensitivity

### ABSTRACT

The present investigation sought to evaluate the unique explanatory relevance of pain-related anxiety in relation to negative and positive reinforcement smoking outcome expectancies among 135 (40.7% female;  $M_{\text{age}} = 26.11$ ,  $SD = 11.23$ ) adult daily cigarette smokers. As predicted, pain-related anxiety was significantly related to greater expectancies that smoking will decrease negative affect, and lesser expectancies that smoking will result in positive outcomes. The observed effects were evident above and beyond the variance accounted for by gender, current level of non-specific bodily pain, daily cigarette use, relations with non-criterion outcome expectancies, and shared variance with anxiety sensitivity. Results suggest that there may be segments of the smoking population who are at relatively greater risk for certain expectancies for tobacco smoking by virtue of individual differences in pain-related anxiety.

© 2010 Elsevier Ltd. All rights reserved.

Cigarette smoking is the leading cause of preventable death and disease worldwide (Centers for Disease Control and Prevention [CDC], 2008). Recent work highlights significant relations between smoking and pain-related problems (Ekholm, Gronbaek, Peuckmann, & Sjogren, 2009; Freedman, Saulino, Overton, Holding, & Kornbluth, 2008; Zvolensky et al., 2009). For example, among treatment-seeking adult chronic pain patients, greater smoking rate is associated with clinically-significant levels of affective distress (Fishbain et al., 2007; Hooton et al., 2009; McGeary, Mayer, Gatchel, & Anagnostis, 2004; John, Meyer, Rumpf, & Hapke, 2009). Some scholars have suggested that individuals in acute pain or with ongoing pain problems (e.g., chronic pain) may be especially motivated to smoke, in part, because they expect smoking will help them cope with pain and other forms of aversive emotional experiences (e.g., depression and anxiety; Ditre & Brandon, 2008; Jamison, Stetson, & Parris, 1991).

Research has not yet explored relations between pain-related constructs and cognitive-based smoking processes. One clinically and theoretically important cognitive construct is *pain-related anxiety*. Pain-related anxiety refers to prolonged cognitive, overt behavioral, and physiological responses to pain or pain-related events. McCracken and colleagues have developed the Pain Anxiety Symptoms Scale (PASS) to assess pain-related anxiety (McCracken, Zayfert, & Gross, 1992). Individuals with chronic pain disorders demonstrate greater pain-related anxiety relative to comparison groups, over predict the intensity of pain, cope maladaptively with pain sensations,

and evidence greater somatic reactivity in anticipation of physical activity (McCracken, Gross, Sorg, & Edmands, 1993).

Although there is empirical evidence of an interconnection between smoking, pain, and affective distress more generally, there is an absence of work exploring the relevance of pain-related anxiety and smoking outcome expectancies. Smoking outcome expectancies reflect the *anticipated consequences of smoking* (Brandon, 1994; Brandon, Juliano, & Copeland, 1999; Cohen, McCarthy, Brown, & Myers, 2002; Cox & Klinger, 1988; Niaura, Goldstein, & Abrams, 1991). Smoking outcome expectancies include beliefs about negative reinforcement (e.g., “Smoking helps me calm down when I feel nervous”), positive reinforcement (e.g., “I enjoy the taste and sensations while smoking”), negative consequences (e.g., “The more I smoke, the more I risk my health”), and appetite control (e.g., “Smoking helps me control my weight”; Brandon & Baker, 1991). Individuals who smoke at higher rates endorse more positive expectancies about the effects of smoking (Ahijevych & Wewers, 1993; Copeland, Brandon, & Quinn, 1995; Downey & Kilbey, 1995), and expectancies for negative reinforcement and negative consequences have predicted lack of cessation success (Wetter et al., 1994). Other work has found that negative reinforcement expectancies, in particular, are related to a greater risk for experiencing more intense negative emotional experiences and difficulties regulating such emotional states (Johnson et al., 2008; Zvolensky, Gonzalez, Bonn-Miller, Bernstein, & Goodwin, 2008).

Based upon previous research examining pain-smoking associations, we posited that daily smokers with higher levels of pain-related anxiety may expect that smoking will be particularly helpful in reducing pain and negative affect in general (negative reinforcement expectancies). Specifically, daily smokers who report higher levels of

\* Corresponding author. The University of Vermont, Department of Psychology, 2 Colchester Avenue, John Dewey Hall, Burlington, VT 05405-0134, United States. Tel.: +1 802 656 8994; fax: +1 802 656 8783.

E-mail address: Michael.Zvolensky@uvm.edu (M.J. Zvolensky).

pain-related anxiety, relative to those low in pain-related anxiety, are theoretically more apt to expect smoking to help alleviate aversive anxiety states, and by extension, be motivated to smoke for affect-regulation purposes. In the absence of other more adaptive (non-smoking) affect-regulation skills, these daily smokers who are high in pain-related anxiety may tend to rely on smoking to manage negative mood states. Thus, individual differences in pain-related anxiety should demonstrate a systematic relation to negative reinforcement outcome expectancies, presumably an association explained by a larger learning history between smoking and perceived negative mood regulation (Fishbain et al., 2007; Zvolensky et al., 2009). At the same time, we theorized that pain-related anxiety would demonstrate an *opposite* type of relation to positive reinforcement expectancies, and thereby, demonstrate explanatory specificity. Pain-related anxiety should theoretically be *negatively* related to positive reinforcement expectancies about smoking because this type of expectancy is not related to emotional vulnerability processes such as pain-related anxiety. That is, there should not be a similar negative reinforcement learning process governing the association between pain-related anxiety and positive outcome expectancies. This specificity regarding pain-related anxiety and certain outcome expectancies is broadly consistent with integrative models of smoking and outcome expectancies (Kirsch, 1985) and self-regulation theory more generally (Carver & Scheier, 1998).

Together, the present investigation sought to evaluate the explanatory relevance of pain-related anxiety in relation to smoking outcome expectancies among daily smokers. It was hypothesized that pain-related anxiety would be significantly and positively related to negative reinforcement smoking outcome expectancies, and significantly and negatively related to positive reinforcement expectancies. Given previous work regarding cognitive-affect related individual difference factors and smoking outcome expectancies (Leyro, Zvolensky, Vujanovic, & Bernstein, 2008), we did not expect to observe significant relations between pain-related anxiety and negative consequences and appetite/weight control outcome expectancies. For all hypotheses, it was expected that these effects would be evident above and beyond the variance accounted for by gender, current level of non-specific bodily pain, daily cigarette use, and relations with non-criterion outcome expectancies (i.e., negative consequences and appetite/weight control). In an effort to provide a comprehensive initial test of the pain-related anxiety hypotheses, we also evaluated shared variance with anxiety sensitivity. Anxiety sensitivity reflects the fear of anxiety-related sensations (McNally, 2002) and past work indicates that this cognitive construct is related to pain-related anxiety (Asmundson, Norton, & Veloso, 1999) as well as affect-relevant smoking outcome expectancies (i.e., negative reinforcement; Leyro et al., 2008). Thus, for pain-related anxiety to be a unique predictor of smoking outcome expectancies, it would need to be evident in the context of anxiety sensitivity.

## 1. Method

Participants included 135 (40.7% female;  $M_{\text{age}} = 26.11$ ,  $SD = 11.23$ ) adult daily cigarette smokers recruited from the Burlington, Vermont community for participation in a larger experimental laboratory study on emotion regulation via placement of study flyers throughout various community settings, as well as posting of printed advertisements in local newspapers. The racial distribution of the sample generally reflected that of the Vermont population (State of Vermont Department of Health, 2009): 93.3% of the sample identified as Caucasian, 2.2% as African American, 1.5% as Hispanic, .7% as biracial, and 1.5% as "other." On average, participants reported smoking fourteen cigarettes per day ( $M = 14.38$ ,  $SD = 15.75$ ; observed range = 1–120) in the last week. Participants were administered the Structured Clinical Interview for DSM-IV Axis I Disorders – Non-Patient Edition (SCID-NP; First, Spitzer, Gibbon, & Williams, 1994) by trained interviewers, to assess for current

Axis I disorders, and study exclusionary criteria (please see description of exclusionary criteria below). Overall, 21.5% of participants met criteria for a current Axis I disorder (7.4% Major Depressive Disorder, 4.4% Generalized Anxiety Disorder, 3% Social Phobia, 1.5% Panic Disorder with Agoraphobia, 1.5% Specific Phobia, .7% Obsessive Compulsive Disorder, .7% Panic Disorder without Agoraphobia, .7% Agoraphobia without Panic Disorder, .7% Mania/Cyclothymia, and .7% Bipolar II). Reliability checks were conducted on a random sample of 20% of the interviews and no discrepancies were found.

Participants were eligible for this study if they were current cigarette smokers between 18 and 65 years of age. Exclusionary criteria for the larger study and by extension the current investigation included: (1) current use of psychotropic medication; (2) current suicidality or homicidality; (3) current or past chronic cardiopulmonary illness (e.g., chronic obstructive pulmonary disease; severe asthma), (4) current acute respiratory illness (e.g., bronchitis), (5) seizure disorder, cardiac dysfunction, or other serious medical illness (e.g., emphysema); (6) currently pregnant or trying to become pregnant; and (7) inability to give informed, written consent.

### 1.1. Measures

The *Structured Clinical Interview for DSM-IV Axis I Disorders – Non-Patient Edition (SCID-NP)*. The SCID-NP (First et al., 1994) is a well-established diagnostic interview for psychiatric problems. The interview was administered to assess for current Axis I psychopathology and in order to determine if participants had current or past psychotic-spectrum symptoms and suicidal or homicidal ideation in the context of the exclusionary criteria.

The *Smoking History Questionnaire (SHQ; Brown, Lejuez, Kahler, & Strong, 2002)* is a self-report questionnaire used to assess smoking history and pattern. The SHQ includes items pertaining to smoking rate and information regarding quit attempts, including problematic symptoms experienced during such attempts. The SHQ has been successfully used in previous studies as a measure of smoking history, pattern, and symptom-based problems during quitting (Zvolensky, Leen-Feldner, et al., 2004; Zvolensky, Lejuez, Kahler, & Brown, 2004).

The *Short-Form General Health Survey (GHS; Stewart, Hays, & Ware, 1988)* was used to assess current levels of bodily pain. The GHS is a questionnaire consisting of 20-items which asks respondents to indicate perceptions of their health status on a Likert-type scale. The current investigation only utilized question 2 on the GHS, "How much bodily pain have you had during the past four weeks (a. none, b. very mild, c. mild, d. moderate, e. severe)," to assess for participants' current degree of bodily pain. This item indexed a non-specific type of pain; that is, it is not oriented on a particular pain-related medical condition. The GHS has demonstrated adequate reliability and validity in previous work (Stewart et al., 1988).

The *Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986)* is a 16-item measure in which respondents indicate on a five-point Likert-type scale (0 = very little to 4 = very much) the degree to which they are concerned about possible negative consequences of anxiety symptoms. The ASI is a unique from, and demonstrates incremental validity to, trait anxiety (Rapee & Medoro, 1994) and trait-level negative affectivity/neuroticism (Zvolensky, Kotov, Antipova, & Schmidt, 2005). The ASI in the current study was found to have good internal consistency (Cronbach  $\alpha = .86$ ).

The *Pain Anxiety Symptoms Scale (PASS; McCracken et al., 1992)* is a 40-item self-report measure in which respondents indicate anxiety related to pain on a six-point Likert-type scale (0 = never to 5 = always). The PASS assesses (a) cognitive anxiety symptoms related to the experience of pain (e.g., "My thoughts are agitated and keyed up as pain approaches."), (b) escape and avoidance responses related to reducing pain (e.g., "I go immediately to bed when I feel severe pain."), (c) fearful appraisals of pain (e.g., "I think that if my pain gets too severe, it will never decrease."), and (d) physiological anxiety

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات