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An Evaluation of Pain-related Anxiety Among Daily Cigarette Smokers in terms of Negative and Positive Reinforcement Smoking Outcome Expectancies

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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; $Mage = 26.11$, $SD = 11.23$) 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.

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, McMillan, Gonzalez, & Asmundson, in press). For example, among treatment-seeking adult chronic pain patients, greater smoking rate is associated with clinically-significant levels of

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Contributors

Adam Gonzalez and Michael Zvolensky developed the objectives for the current study, conducted statistical analyses, and led the overall development of the manuscript. Julianna Hogan and Alison McLeish aided equally in the production of the final manuscript. All authors contributed to and have approved the final manuscript.

Conflict of Interest

All other authors declare that they have no conflicts of interest.

affective distress (Fishbain, Lewis, Cole, Cutler, Rosomoff, & Rosomoff, 2007; Hooton, Townshend, Bruce, Schmidt, Kerkvliet, Patten, & Warner, in press; 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, 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 et al., 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, Smith 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 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., in press). 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.

Method

Participants included 135 (40.7% female; $M_{age} = 26.11$, $SD = 11.23$) 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, 1995) 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, .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.

Measures

The *Structured Clinical Interview for DSM-IV Axis I Disorders- Non-Patient Edition (SCID-NP)*. The SCID-NP (First, Spitzer, Gibbon, & Williams, 1995) 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 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 symptoms related to pain (e.g., "I become sweaty when in pain."). The validity of the total and four subscale scores is supported by significant positive correlations with measures of general anxiety, pain, and disability (McCracken et al., 1992). The PASS-total score was utilized in the current investigation as a general measure of pain-related anxiety and evidenced excellent levels of internal consistency in the current sample (Cronbach $\alpha = .93$).

The *Smoking Consequences Questionnaire (SCQ)* (Brandon & Baker, 1991) is a 50-item self-report measure that assesses smoking expectancies on a ten-point Likert-type scale, (0 =

completely unlikely to 9 = *completely likely*). The measure and its constituent factors have excellent psychometric properties (Buckley et al., 2005; Brandon & Baker, 1991; Downey & Kilbey, 1995). The SCQ includes the following subscales: positive reinforcement (e.g., “I enjoy the taste sensations while smoking”), negative reinforcement/negative affect reduction (e.g., “Smoking helps me calm down when I feel nervous”), 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”). Coefficient alpha’s for the subscales based on data from current study ranged from .92 to .93, indicating excellent internal consistency.

Procedure

The present data were a subset of a larger project that involved a laboratory component examining panic responding to a 10% carbon dioxide enriched air challenge (see Kutz, Marshall, Bernstein, & Zvolensky, in press, for study details). The present data were collected at the baseline session for the larger study. The present data have not been published previously, and therefore, represent a novel heretofore unexamined aspect of the larger data set. The procedure for the study was as follows: (a) interested participants who contacted the research team about the study were given a detailed description of the investigation via telephone and scheduled for an initial laboratory visit; (b) upon arrival, participants completed a written informed consent, which explained study protocol involving completion of a laboratory procedure and a battery of questionnaires. At this same session, participants were administered the SCID-NP (First et al., 1995) by trained interviewers to assess for current Axis I psychopathology and suicidal or homicidal ideation; (c) at the completion of the baseline portion of the study, participants were debriefed and compensated \$20 for their time and effort.

Data Analytic Strategy

Means, standard deviations, and zero-order (or bi-variate, as applicable) correlations were computed for the study variables. The main analyses included a series of hierarchical multiple regression analyses. Criterion variables in the hierarchical regression analyses included SCQ-negative reinforcement and SCQ-positive reinforcement. Gender, current level of bodily pain, and average number of cigarettes smoked per day were entered as a block at step 1. These covariates were chosen on an *a priori* basis on theoretical grounds as factors that could affect relations between the studied predictor and criterion variables. At step 2, the non-criterion smoking outcome expectancies were entered. At step 3, the main effects of ASI-total score and PASS-total score were simultaneously entered.

Results

Means, standard deviations, and zero-order correlations of all variables are reported in Table 1. The PASS-total score was positively and significantly associated with negative reinforcement, appetite/weight control, and negative consequences smoking outcome expectancies (range of observed r ’s = .26 to .31, see Table 1). The ASI-total score was positively and significantly related to all of the smoking outcome expectancies (range of observed r ’s = .18 to .25). Females, on average, scored higher in regard to the PASS-total score and the SCQ-appetite/weight control and negative consequences subscales than males (range of observed r ’s = .23 to .44). Reported bodily pain was positively and significantly related to the ASI-total score ($r = .21, p < .05$) and PASS-total score ($r = .36, p < .01$), but was not significantly related to any of the smoking outcome expectancies. The PASS-total score and ASI-total score were positively and significantly related to each other ($r = .47, p < .01$), sharing 22% of variance.

Please see Table 2 for a summary of hierarchical regression analyses. Regarding the SCQ-negative reinforcement subscale, variables at step 1 together did not account for a significant portion of variance ($\Delta R^2 = .02$; $p = .58$). At step 2, the non-criterion smoking outcome expectancies accounted for a significant portion of additional variance ($\Delta R^2 = .48$; $p < .001$), with positive reinforcement expectancies as the only significant contributor ($\beta = .62$, $p < .001$). The PASS-total score and ASI-total score simultaneously entered as step 3, accounted for an additional 3% of variance ($p = .02$), with only the PASS-total score making a significant contribution ($\beta = .19$, $p = .02$).

With regard to the SCQ-positive reinforcement subscale, variables entered in step 1 did not account for a significant portion of variance ($\Delta R^2 = .03$; $p = .27$). At step 2, the non-criterion smoking outcome expectancies accounted for a significant portion of additional variance ($\Delta R^2 = .54$; $p < .001$). Here, all outcome expectancies made significant contributions (range of observed β 's = .14 to .53; see Table 2). At step 3, the simultaneous addition of the PASS-total score and ASI-total score did not account for a significant portion of additional variance ($\Delta R^2 = .02$; $p = .07$); however, the PASS-total score was negatively and significantly related to positive reinforcement expectancies ($\beta = -.17$, $p = .02$).^{1,2}

Discussion

An emerging body of work highlights significant relations between cigarette smoking and the experience of pain and its disorders (Ekholm et al., 2009; Freedman et al., 2008). Despite these observed relations, there is a lack of understanding of the interplay between pain-related anxiety and cognitive-based smoking factors. To fill this gap in the extant literature, the present investigation therefore sought to evaluate the explanatory relevance of pain-related anxiety in relation to certain smoking outcome expectancies among daily cigarette smokers.

Consistent with prediction, pain-related anxiety was significantly and positively related to negative reinforcement smoking expectancies above and beyond the variance accounted for by gender, current level of non-specific bodily pain, daily cigarette use, relations with non-criterion smoking outcome expectancies, and shared variance with anxiety sensitivity. Thus, pain-related anxiety maintains unique explanatory value in regard to negative reinforcement outcome expectancies. This finding is consistent with a relatively large corpus of work documenting that, for some individuals, cigarettes may be perceived to serve as a coping mechanism to reduce negative emotional experiences (e.g., Johnson et al., 2008; Zvolensky, Gonzalez et al., 2008). In fact, numerous scholars have suggested that negative reinforcement processes (e.g., avoidance, escape, or both) of pain may be a potent reinforcer and mechanism in the maintenance of smoking (Fishbain et al., 2007; Zvolensky et al., in press). Also as expected, pain-related anxiety was significantly and *negatively* related to positive reinforcement expectancies after accounting for theoretically-relevant covariates and shared variance with anxiety sensitivity. This finding indicates that low relative to high pain-related anxiety daily smokers may be more likely to expect that smoking will be an appetative process. Overall, the pain-related anxiety and negative and positive reinforcement effects may presumably be related to an operant-based smoking learning history that is qualified by individual differences in this cognitive construct (pain-related anxiety). In this same context, it is important to note that pain-related anxiety was not associated with number of cigarettes consumed per day. These results suggest that pain-

¹Hierarchical regression analyses conducted for negative consequences and appetite/weight control did not yield significant relations with the PASS-total score. These supplementary analyses can be obtained by contacting Dr. Zvolensky.

²It is noteworthy that the results presented here are still evident (statistically significant) after controlling for presence of current Axis I diagnoses.

related anxiety may be associated with smoking behavior by virtue of particular cognitive processes (e.g., negative reinforcement expectancies about smoking), rather than maintaining a direct type of relation with cigarettes consumed per day. That is, pain-related anxiety is associated with a particular type of cognitive set of beliefs in terms of smoking. By further clarifying the nature of the smoking-related cognitive processes with pain-related anxiety, it may be possible to refine our therapeutic approaches for certain high-risk populations (e.g., smokers with chronic pain).

Although not the primary focus of the present investigation, at least three other observations warrant comment. First, it is noteworthy that there were significant interrelations between current non-specific bodily pain and pain-related anxiety and anxiety sensitivity. Specifically, despite relatively low levels of current non-specific bodily pain reported among this daily smoking sample, this pain index was significantly and positively related to pain-related anxiety and anxiety sensitivity. These associations are consistent with other non-smoking work documenting that individuals experiencing pain tend to report elevated levels of anxiety regarding the experience and anticipation of pain (Roelofs et al., 2004) and fear regarding anxiety sensations (Stewart & Asmundson, 2006). Future work could benefit by extending such smoking-based findings to smoking samples with medical illnesses (e.g., lung cancer). Second, as in past work (Brandon & Baker, 1991), the smoking outcome expectancy variables were significantly interrelated (see Table 1). Thus, despite their theoretical distinctions with one another, outcome expectancies for smoking are systematically related to one another. This issue is one of the key reasons why we adjusted (covaried) for (alternative) outcome expectancies in the regression models, and perhaps, one of the reasons for the relatively small observed effect sizes for the studied variables (i.e., shared variance with alternative outcome expectancies was modeled). Third, both pain-related anxiety and anxiety sensitivity were significantly, but not uniformly, related to the smoking outcome expectancies at the zero-order level (see Table 1). This pattern of findings demonstrates that individual differences in these two cognitive constructs appears to be related to a wide range of outcome expectancies for smoking at a zero-order level. However, when examined in a hierarchical fashion, it appears that some of these relations may be related to shared variance among the outcome expectancies themselves (see Table 2).

There are a number of limitations of this study that should be noted. First, the present study utilized a cross-sectional design. Although such a methodological strategy was useful for providing an initial test of a pain-related anxiety – smoking expectancy relation, it is necessarily limited because it cannot shed light on processes over time or isolate causal relations between variables. Second, self-report measures were utilized as the primary assessment methodology. The utilization of self-report methods does not fully protect against reporting errors and may be influenced by shared method variance. Thus, future studies could build upon the present work by utilizing alternative assessment instruments such as tasks from cognitive science that tap implicit and automatic types of smoking-based processes. Third, although community-based advertising methods were utilized, the present sample was nonetheless comprised of a relatively homogenous group of young adult smokers who volunteered to participate in the study for monetary reward. In fact, university students responded to the advertisements to a greater extent than other segments of the community and these persons were regular but not “heavy” smokers (i.e., moderate levels of cigarette use). Thus, the results may be related to a self-selection bias and the corresponding smoking history characteristics of the present sample. Finally, the sample reported experiencing relatively low levels of non-specific bodily pain, and therefore, extension to smoking populations with elevated levels of pain (e.g., chronic pain) or individuals who may experience intermittent pain from specific types of medical illnesses (e.g., HIV/AIDS, cancer) may be a useful next research step.

Together, the present investigation represents an important, albeit early, step in terms of better understanding the smoking-pain association. 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.

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Table 1

Descriptive Data and Zero-order Relations between Variables

Variables	1	2	3	4	5	6	7	8	9	M	SD	Range
1 Gender ¹	---	.02	-.05	.17	.24**	.05	.01	.44**	.23**	---	---	---
2 Bodily Pain ²		---	.11	.21*	.36**	.03	.11	.16	.02	2.61	.98	1-5
3 Cigarette Use ³			---	.11	.10	.02	.01	-.06	-.06	14.38	15.75	1-120
4 ASI- Total Score ⁴				---	.47**	.25**	.22	.18*	.23**	17.70	9.46	1-48
5 PASS-Total Score ⁵					---	.26**	.15	.31**	.27**	60.27	30.48	8-163
6 SCQ-Negative Reinforcement ⁶						---	.69**	.27**	.45**	5.13	1.89	1-8.92
7 SCQ-Positive Reinforcement							---	.35**	.51**	5.46	1.81	.73-8.93
8 SCQ-Appetite/Weight Control								---	.40**	3.46	2.42	.00-8.40
9 SCQ-Negative Consequences									---	5.59	1.61	.72-8.78

Note:

* $p < .05$,** $p < .01$,¹ gender coded as 1 = male and 2 = female;² average bodily pain reported (Short-Form General Health Survey; Stewart et al., 1988);³ average number of cigarettes smoked per day;⁴ Anxiety Sensitivity Index (ASI; Reiss et al., 1986);⁵ Pain Anxiety Symptoms Scale (PASS; McCracken et al., 1992);⁶ Smoking Consequences Questionnaire (SCQ; Brandon & Baker, 1991)

Table 2
Predictors of Negative and Positive Reinforcement Smoking Outcome Expectancies

	ΔR^2	t	β	sr^2	p
<i>Dependent Variable: SCQ-Negative Reinforcement¹</i>					
Step 1	.02				.58
Gender ²		.40	.04	.00	.69
Bodily Pain ³		.29	.03	.00	.77
Cigarettes/day ⁴		1.29	.12	.01	.20
Step 2	.48				<.001
SCQ-Positive Reinforcement		7.79	.62	.33	<.001
SCQ-Appetite/Weight Control		1.03	.08	.01	.31
SCQ-Negative Consequences		1.11	.09	.01	.27
Step 3	.03				.02
ASI-Total Score ⁵		.51	.04	.00	.61
PASS-Total Score ⁶		2.41	.19	.05	.02
<i>Dependent Variable: SCQ-Positive Reinforcement</i>					
Step 1	.03				.27
Gender		-.21	-.02	.00	.84
Bodily Pain		1.63	.14	.02	.12
Cigarettes/day		1.01	.09	.01	.31
Step 2	.54				<.001
SCQ-Appetite/Weight Control		1.96	.14	.03	.05
SCQ-Negative Consequences		3.55	.25	.09	.001
SCQ-Negative Reinforcement		7.79	.53	.33	<.001
Step 3	.02				.07
ASI-Total Score		1.10	.08	.01	.28
PASS-Total Score		-2.34	-.17	.04	.02

Note: β = standardized beta weights;

¹ Smoking Consequences Questionnaire (SCQ; Brandon & Baker, 1991);

- ² gender coded as 1 = male and 2 = female;
- ³ average bodily pain reported (Short-Form General Health Survey; Stewart et al., 1988);
- ⁴ average number of cigarettes smoked per day;
- ⁵ Anxiety Sensitivity Index (ASI; Reiss, et al., 1986);
- ⁶ Pain Anxiety Symptoms Scale (PASS; McCracken et al., 1992)