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Short Communication

Anxiety sensitivity in relation to quit day dropout among adult daily smokers recruited to participate in a self-guided cessation attempt

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HIGHLIGHTS

- Anxiety sensitivity is associated with increased odds of tobacco cessation dropout.
- Anxiety sensitivity may be involved with challenges in the initiation of quitting.
- High anxiety sensitivity smokers may benefit from initial Motivational Interviewing.

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ABSTRACT

Anxiety sensitivity (AS; fear of anxiety and internal sensations) has been implicated in a variety of aspects of smoking, including difficulties achieving and maintaining abstinence during tobacco cessation. However, research has yet to evaluate whether AS impacts premature termination of initiating a quit attempt. Therefore, the aim of the present investigation was to explore the extent to which AS was associated with tobacco cessation dropout, as indexed by attendance on the scheduled quit day visit. Participants included 84 adult daily cigarette smokers (61.7% male; $M_{age} = 34.6$ years, $SD = 13.9$), who were recruited to participate in a self-guided quit attempt (an attempt to quit smoking without professional or pharmacological aid). Results indicated that after controlling for the effects of participant sex, race, current (past month) psychological disorder, cigarettes smoked per day, number of years as a regular smoker, and pre-quit levels of motivation to quit, AS significantly predicted increased odds of study dropout prior to attending the scheduled quit day. These findings suggest that AS may be a mechanism involved with challenges in the initiation of quitting.

1. Introduction

In order to more fully understand why certain smokers may fail to engage in treatment and/or undergo a quit attempt, research has begun to examine the concept of "premature termination," which reflects to those individuals who drop out of study participation prior to entering treatment or initiating a quit attempt (Namenek Brouwer & Pomerleau, 2000). These investigations indicate that characteristics such as being male, younger age, less education, less readiness to quit, history of psychotropic medication usage, and concerns regarding weight gain are associated with increased risk for dropout (Ahluwalia et al., 2002; Copeland, Marin, Geiselman, Rash, & Kendzor, 2006; Curtin, Brown, & Sales, 2000; Pawlina, Rondina, Espinosa, & Botelho, 2016). A related body of work suggests that ethnic minorities, particularly African-American individuals, evidence higher rates of treatment dropout (Diaz, Woods, & Rosenheck, 2005; Lesser et al., 2011). Yet, there presently is little attention focused on exploring what cognitive-affective processes may influence the

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decision to prematurely terminate cessation attempts. To our knowledge, only one study examined distress intolerance (perceived and/or actual behavioral inability to withstand exposure to aversive experiential states; Simons & Gaher, 2005), documenting that higher intolerance for distress was associated with greater likelihood of dropout from smoking cessation treatment (MacPherson, Stipelman, Duplinsky, Brown, & Lejuez, 2008).

Anxiety sensitivity (AS), defined as the fear of anxiety and internal sensations (McNally, 2002; Reiss & McNally, 1985), is a cognitive factor that be useful in understanding cessation dropout. Research suggests that AS is related to motivation to quit smoking (Zvolensky et al., 2004), greater perceived barriers to quitting smoking (Zvolensky, Vujanovic, et al., 2007), and greater odds of early smoking lapse (Brown, Kahler, Zvolensky, Lejuez, & Ramsey, 2001) and relapse (Assayag, Bernstein, Zvolensky, Steeves, & Stewart, 2012; Zvolensky, Bernstein, et al., 2007; Zvolensky, Bonn-Miller, Bernstein, & Marshall, 2006; Zvolensky, Stewart, Vujanovic, Gavric, & Steeves, 2009). Other work has documented that AS may be related to negative expectancies about anticipated short-term psychological and physiological consequences of abstaining from smoking (Abrams, Zvolensky, Dorman, Gonzalez, & Mayer, 2011; Farris, Langdon, DiBello, & Zvolensky, 2015). Drawing from AS-smoking models (Leventhal & Zvolensky, 2015; Zvolensky & Bernstein, 2005), smokers higher in AS, compared to lower, may be more apt to excessively worry about the stress of quitting and the expected aversive internal experiences associated with smoking deprivation (e.g., nicotine withdrawal, negative emotional states). Thus, higher AS smokers may be more prone to terminate a smoking quit attempt even before they formally initiate it (Lejuez et al., 2008).

The aim of the present investigation was to examine the extent to which AS was related to quit day dropout. We hypothesized that participants characterized by higher baseline levels of AS, relative to lower, would be significantly more likely to drop out of the study prior to engaging in a self-guided quit attempt (i.e., an attempt to quit smoking without professional or pharmacological aid).

2. Method and materials

2.1. Participants

Participants included 84 adult daily cigarette smokers (61.7% male; $M_{age} = 34.6$ years, $SD = 13.9$) who were recruited to participate in a self-guided quit attempt. Regarding ethnic background, 82.1% of participants identified as Caucasian, 9.5% identified as African-American, 4.8% identified as "more than one race," 1.2% identified as Asian, 1.2% identified as American Indian, and 1.2% identified as "other." Prior to initiating a quit attempt, participants reported smoking an average of 16.2 cigarettes ($SD = 10.3$) per day and endorsed low levels of nicotine dependence ($M = 3.6$, $SD = 1.9$). Participants reported initiating smoking daily at a mean age of 17.7 years ($SD = 4.1$) and smoking regularly for an average of 14.9 years ($SD = 13.1$). Participants reported an average of 3.2 ($SD = 2.5$) 'serious' lifetime quit attempts. Approximately 40.7% of the sample met criteria for current (past month) psychological disorder.

Study inclusion criteria included: (1) being between 18 and 65 years of age; (2) being a regular daily smoker (minimum of 8 cigarettes per day) for at least one year; (3) motivation to quit smoking of at least 5 on a 0–10 point scale; and (4) not having decreased the number of daily cigarettes smoked by more than half in the past six months. Exclusion criteria included: (1) limited mental competency and the inability to give informed consent; (2) pregnancy; (3) current use of nicotine replacement therapy and/or smoking cessation counseling; (4) current or past history of psychotic-spectrum symptoms or disorders; (5) current substance dependence; (6) suicidality; and, (7) any current use of psychotropic medication, taken PRN.

2.2. Measures

2.2.1. Anxiety Sensitivity Index — III (ASI-III)

The ASI-III is an 18-item self-report measure which assesses sensitivity to, and discomfort with, physical sensations (Taylor et al., 2007). Participants are instructed to rate the degree to which they believe the 18 statements apply to them (e.g., "It scares me when my heart beats rapidly") on a Likert-type scale from 0 ("very little") to 4 ("very much"). Recent research has noted that when utilizing a continuous measurement of AS, it is optimally derived from the combined scores on the physical and cognitive subscales, while omitting the items related to the social subscale (Bernstein et al., 2010). Thus, the present investigation utilized a composite score derived from these two subscales ($\alpha = .93$).

2.2.2. Fagerstrom Test for Nicotine Dependence (FTND)

The FTND is a six-item scale designed to assess gradations in tobacco dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). Although the FTND has demonstrated questionable psychometric properties, including poor internal consistency (Burling & Burling, 2003; Sledjeski et al., 2007; Steinberg et al., 2005), it remains one of the most commonly used measures of nicotine dependence ($\alpha = .56$).

2.2.3. Motivation to Quit Smoking (MTQ)

The MTQ measure is based on the stages of change research conducted by Prochaska and colleagues (Rundmo, Smedslund, & Gotestam, 1997) to determine a participant's pre-cessation motivation to quit smoking.

2.2.4. Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Non-patient Version (SCID-I/NP)

Diagnostic exclusions and incidence of current (past month) psychological disorders were assessed via the SCID-I/NP (First, Spitzer, Gibbon, & Williams, 1995). Interviews were audio-taped and the reliability of a random selection of 10% of interviews was checked for accuracy. No disagreements were observed between the SCID interviewer and outside rater regarding diagnoses.

2.2.5. Smoking History Questionnaire (SHQ)

The SHQ is a self-report measure used to collect descriptive information regarding smoking history and pattern (Brown, Lejuez, Kahler, & Strong, 2002).

2.3. Procedure

Participants were recruited to take part in a larger study examining barriers to successful smoking cessation (Langdon, Farris, Øverup, & Zvolensky, 2015). Individuals who responded to advertisements for a research study on "quitting smoking" were screened by telephone to determine initial eligibility. Potentially eligible participants ($n = 193$) were then scheduled for an in-person appointment to determine final eligibility and collect baseline data. Upon arrival at the laboratory, participants provided informed consent and were administered the SCIDI-I/NP by a trained graduate student ($n = 122$). Participants biochemically verified their smoking status by expired carbon monoxide analysis of breath samples and completed a packet of self-report questionnaires. All participants, regardless of eligibility, were compensated $20 for participating in the baseline session. Eligible participants were then invited to complete a self-guided quit attempt, and were scheduled for a quit day to take place approximately 14 days following the baseline session ($n = 84$). On quit day, participants were scheduled to come back to the laboratory to verify abstinence and to complete self-report measures. Participants were compensated an additional $10 for completing the quit day assessment. Study recruitment occurred at two sites – University of Vermont, Burlington, VT, USA ($n = 69$) and University of Houston, Houston, TX, USA ($n = 15$) – at which identical procedures