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The role of negative affect in risk for early lapse among low distress tolerance smokers

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ABSTRACT

Individual differences in the ability to tolerate negative affect due to psychological and/or physical discomfort (e.g., distress tolerance) are emerging as an important predictor of smoking cessation outcomes. The purpose of this study was to build on existing evidence by exploring the relationship between levels of distress tolerance (DT) and negative affect on quit date in relation to risk for early lapse. Eighty-one smokers (48% female; *M* age=42.6 years) who completed laboratory-based, behavioral distress tolerance tasks prior to an unaided quit attempt were categorized into low, average, and high persistence on the tasks. Low persistence smokers were significantly more likely to lapse on the assigned quit day. Among smokers able to achieve abstinence on quit day, low persistence smokers demonstrated higher levels of negative affect and urges compared to high persistence smokers. Further, negative affect-related risk for early lapse was strongest among those with low persistence. These findings suggest that smokers low in distress tolerance may be particularly vulnerable to very early lapse to smoking and that increases in negative affect may contribute to the risk for early lapse in this high-risk group of smokers.

1. Introduction

1.1. The role of negative affect in smoking lapse

Recent attention has been given to the role of negative affect (i.e., negatively perceived affect states) in predicting early lapse to smoking both in terms of depressive mood and withdrawal-related symptomatology. In addition to their association with cigarette smoking, dysphoria and depressive symptoms have consistently been shown to predict smoking cessation failure (Blondal et al., 1999; Burgess et al., 2002; Kinnunen, Doherty, Militello, & Garvey, 1996; Ludman et al., 2000). For example, Niaura et al. (2001) demonstrated a relationship between symptoms of depression and survival (time to 1st cigarette) in three distinct smoking cessation samples. Despite differing cessation methods (two combined pharmacological–behavioral trials and one self-help trial) and differing measures of depression (Profile of Mood States, Hamilton Rating Scale—Depression, and a one-item measure of anhedonia), current symptoms of depression were consistently associated with earlier time to first lapse.

Recent evidence also supports the primary role of negative affect factors in nicotine withdrawal as strong determinants of early smoking lapse (Kenford et al., 2002; Piasecki et al., 2000). For example, using ecological momentary assessment approaches to track moment-to-moment changes in smokers' experiences throughout the early course of quit attempts, Shiffman et al. (2004, 2007) found that rapid increases in negative affect often immediately preceded lapse to smoking. The influence of negative affect

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on smoking lapse may begin soon after attempts at cessation, as levels of negative affect assessed on quit date have been found to be predictive of smoking lapse (Lerman et al., 2002; McCarthy, Piasecki, Fiore, & Baker, 2006; Westmaas & Langsam, 2005). In addition, individuals who have a history of repeated early lapses have been found to experience large increases in negative affect when deprived of nicotine compared to smokers with histories of sustained quit attempts (Brown, Lejuez, Kahler, & Strong, 2002). Therefore, further study of the relationship of negative affect (including both depressive and withdrawal-related symptoms) and early smoking lapse is important and likely to inform future development of smoking cessation treatments.

1.2. Distress tolerance and early lapse

Baker, Piper, McCarthy, Majeskie, and Fiore (2004) propose that the desire to escape or avoid negative affect during withdrawal is a primary motivator for resumption of addictive drug use . Consistent with this negative reinforcement model of addiction, Brown, Lejuez, Kahler, Strong, and Zvolensky (2005) have argued that examining individual differences in how a smoker responds to negative affect may increase our understanding of the risks for early lapse following a smoking cessation attempt. We have used the term "distress tolerance" to describe the behavioral tendency to pursue a goal despite encountering affective discomfort, which may be in response to perceived physical and/or psychological distress, such as remaining abstinent from smoking in the face of uncomfortable withdrawal symptoms (Brown et al., 2005). For example, whereas many smokers quit smoking successfully despite high levels of discomfort, a low threshold for tolerating such distress would be associated with difficulty quitting smoking (Brown et al., 2005). Distress tolerance has also been conceptualized in terms of emotional vulnerability and found to be related to such constructs as neuroticism, negative affectivity, anxiety sensitivity and emotional dysregulation (Zvolensky & Otto, 2007). Others have referred to the behavioral aspect of distress tolerance as "task persistence" (Brandon et al., 2003; Quinn, Brandon, & Copeland, 1996). Across a number of experimental studies (Brandon et al., 2003; Brown et al., 2002; Hajek, Belcher, & Stapleton, 1987), smokers' inability to persist with a physically and/or psychologically distressing task has been associated with a history of early smoking lapse.

In initial prospective examinations, Brandon et al. (2003) demonstrated that smokers with higher levels of persistence on a frustrating behavioral task involving mirror tracing were more likely to sustain longer periods of abstinence. In a more recent study, Brown, Lejuez et al. (in press) conducted a prospective examination of distress tolerance and early smoking lapse in 81 self-quitters. We found that low distress tolerance smokers, as characterized by low duration in breath holding and carbon dioxide-enriched air challenge tasks, lapsed significantly earlier than high distress tolerance smokers. The results of this study support the predictive validity of distress tolerance and suggest processes that may operate independently from other factors that convey risk for early lapse such as nicotine dependence. Thus understanding processes related to distress tolerance may inform our understanding of early lapse following a smoking cessation attempt.

1.3. The present study

Theoretical models of distress tolerance suggest that early smoking lapsers may be characterized by the tendency to experience heightened levels of negative affect during nicotine withdrawal and by their difficulty in tolerating the discomfort associated with the negative affect (Brown et al., 2005). The present study is intended to examine affective mechanisms by which low distress tolerance was a significant predictor of early smoking lapse in our prospective study (Brown, Lejuez et al., in press). Specific questions to be examined include whether low distress tolerance smokers experience increases in negative affect, urges, and nicotine withdrawal upon quitting and whether these changes may render them vulnerable to early lapse compared to high distress tolerance smokers. In this study, levels of distress tolerance were determined based on the extent to which participants were able to persist on each laboratory-based, behavioral challenge task. Thus the term "persistence" will be used as an indicator of distress tolerance. Specifically, we hypothesized that, compared to high persistence smokers, low persistence smokers would demonstrate: 1) higher odds of lapsing on quit date, 2) greater increases in negative affect and depressive symptoms on quit date, 3) higher levels of urges to smoke and nicotine withdrawal on quit date, and 4) greater negative affect-related risk for early lapse.

2. Methods

2.1. Participants

Participants were 81 adult smokers recruited through newspaper advertisements targeted at smokers planning to quit smoking without assistance (i.e., no pharmacotherapy or psychosocial treatment). The sample included 42 males and 39 females, all aged between 19 and 65 years (M=42.6; SD=12.20). 88.5% of participants were Caucasian, 3.8% were African-American, 2.6% Hispanic and 5.1% indicated belonging to an "other" racial/ethnic group.

2.2. Procedure

Interested and eligible participants were instructed to select the day they would attempt to quit smoking (quit day) and were scheduled for the baseline assessment session. The baseline assessment was required to occur at least 3 days, but no more than 14 days, prior to the participant's selected quit day. This study was approved by the Institutional Review Board of Butler Hospital in Providence, RI. For a complete and detailed description of the study's procedures see (Brown, Lejuez et al., in press).