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Treatment attrition: Associations with negative affect smoking motives and barriers to quitting among treatment-seeking smokers

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HIGHLIGHTS

- Motivation to smoke to reduce negative affect was associated with treatment initiation.
- Motivation to smoke to reduce negative affect was associated with perceived barriers to cessation.
- Potential utility in addressing motives to smoke for negative affect reduction during early stages of quitting

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ABSTRACT

Introduction: Pre-treatment attrition and perceived barriers for quitting are clinically important processes involved in early phases of quitting smoking. However, less is known about the constructs that may contribute to these processes such as negative affect reduction smoking motives.
Method: The current study sought to evaluate the relation between negative affect reduction smoking motives and pre-treatment attrition and perceived barriers for quitting in a sample of 425 treatment-seeking smokers (48.5% female; M_{age} = 37.69 years; SD = 13.61) enrolled in a smoking cessation study examining the efficacy of a transdiagnostic panic-smoking cessation treatment relative to a standard smoking cessation treatment.
Results: Results indicated that greater negative affect reduction smoking motives was associated with an increased likelihood of treatment initiation (odds ratio = 1.49, CI: 1.09, 2.04). Additionally, negative affect reduction smoking motives was associated with greater perceived barriers for cessation among pre-treatment drop-outs and treatment initiators.
Conclusions: This initial investigation provides evidence for the possible clinical utility in addressing negative affect reduction smoking motives during early stages of quitting. Additionally, such findings could potentially inform the development of personalized, early stages of quitting interventions for smoking cessation.

1. Introduction

Treating tobacco dependence is a dynamic, chronic process (The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives, 2000). In fact, smoking cessation involves specific phases, including Motivation (the period prior to a smoker being ready to make a quit attempt), Precessation (the several week period prior to a quit attempt after a smoker has committed to making a quit attempt), Cessation (the two week period following and including a quit attempt), and Maintenance (beyond the two week post-quit period that focuses on the maintenance of abstinence; Baker et al., 2011). Smokers may vary in their engagement and success/challenges in different phases, yet each phase offers clinically-important opportunities for intervention (Baker et al., 2011). Although the majority of empirical work has sought to explicate smoking cessation outcomes and maintenance processes (Ockene et al., 2000), less attention has addressed 'early problems' in quitting (MacPherson, Stipelman, Duplinsky, Brown, & Lejuez, 2008). Two 'early quit problems' in need of further study include pre-treatment attrition (or drop out prior to attending a treatment session) and perceived barriers for quitting (e.g., individual differences in perceptions of smoking cessation stressors that interfere with one's ability to engage in quit behavior; Macnee & Talsma, 1995a). Indeed, both pre-treatment attrition and perceived barriers to quitting relate to early problems in quitting (Ahluwalia et al., 2002; Macnee &

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Talsma, 1995b), yet each taps into unique aspects of these problems that may not be captured by the other. Specifically, pre-treatment attrition reflects treatment drop out (MacPherson et al., 2008) and perceived barriers for quitting reflects the cognitive appraisal of potential barriers for quitting (Macnee & Talsma, 1995a). Both constitute important 'early quit problems' that may negatively impact cessation and promote smoking maintenance (Ahluwalia et al., 2002; Macnee & Talsma, 1995b).

In terms of pre-treatment attrition, available work suggests that eligible treatment participants who fail to initiate treatment after a baseline appointment tend to be less educated, younger, and may have other health-related problems or vulnerability characteristics (e.g., high body mass index) relative to their treatment-initiating counterparts (Ahluwalia et al., 2002; Copeland, Martin, Geiselman, Rash, & Kendzor, 2006). Smokers who drop out prior to initiating treatment also report greater anxiety sensitivity, lower distress tolerance (MacPherson et al., 2008), and less motivation to quit than smokers who initiate treatment (Ahluwalia et al., 2002). These data collectively suggest that there are a variety of sociodemographic factors and individual difference characteristics related to pre-treatment attrition. Yet, beyond this work, little is known about predictors of pre-treatment attrition. This neglect is unfortunate considering robust empirical evidence for a strong dose-response relationship between smoking cessation treatment attendance and smoking abstinence and reduction (Baker et al., 2006; Fiore et al., 2000).

Another set of factors that may impact treatment engagement is perceived barriers for smoking cessation. Past work indicates perceived barriers for cessation are related to several emotion regulatory processes that may negatively impact cessation treatment, including greater negative reinforcement smoking outcome expectancies (Foster, Zvolensky, Garey, Ditre, & Schmidt, 2014; Johnson, Farris, Schmidt, & Zvolensky, 2012; Peasley-Miklus, McLeish, Schmidt, & Zvolensky, 2012), anxiety sensitivity (Gonzalez, Zvolensky, Vujanovic, Leyro, & Marshall, 2008), and distress intolerance (Kraemer, McLeish, Jeffries, Avallone, & Luberto, 2013). Theoretically, because smoking may alleviate negative affect states (Kassel, Stroud, & Paronis, 2003), individuals with greater perceived barriers or stressors about quitting may be more apt to regulate their stress by smoking, which in turn, may be related to vulnerability for smoking persistence and dependence (West, Hajek, & Belcher, 1989). Thus, perceived barriers for quitting may play a central role in theoretical models of smoking maintenance and relapse.

Given that pre-treatment attrition and perceived barriers for quitting are clinically important processes involved with 'early quit problems,' there is a need to expand work focused on identifying associated factors. Smoking motives offer theoretically promising, yet previously unexplored potential influences on both pre-treatment attrition and perceived barriers. Smoking motives refer to one's specific reasons for smoking (Ikard, Green, & Horn, 1969). Extensive research has been devoted to understanding and developing theoretical frameworks for smoking motives and their relation to smoking behavior (Ikard et al., 1969; Piper et al., 2004; Tate, Schmitz, & Stanton, 1991). Although there are distinct models of smoking motivation, one consistent observation is that motivation to smoke to reduce/manage negative affect is associated with poor smoking-related outcomes, such as higher rates of nicotine dependence and lower quit rates (Baker, Brandon, & Chassin, 2004; Copeland, Brandon, & Quinn, 1995; Farris, Zvolensky, Beckham, Vujanovic & Schmidt, 2014; Fidler & West, 2009; Kassel et al., 2003). It is also possible that negative affect reduction smoking motives are relevant to better understanding early problems with quitting. For instance, individuals who frequently smoke to reduce negative affect may be at increased risk for adverse early smoking challenges because they rely heavily on smoking to manage life stress and emotional distress (Farris, Zvolensky & Schmidt, 2015). In fact, smoking to reduce negative affect is related to, yet distinct from, emotional problems, ranging from anxiety to depressive symptoms (Brown, Kahler, Zvolensky, Lejuez, & Ramsey, 2001; Mahaffey et al., 2016). Thus, smokers who are more motivated to smoke for negative affect reduction reasons may be more apt to engage in treatment because the difficulties they faced when attempting to quit in the past may have provided insight that they need additional guidance and specialized treatment to address their unique challenges. Conversely, smokers less motivated to smoke for negative affect reduction reasons may be less apt to engage because they have not experienced the additional, affective regulation challenges to a similar degree as those who use smoking to cope with negative affect.

An understanding of how specific domains of smoking motives relate to treatment attrition and perceived barriers for quitting that may impede treatment engagement has the potential to inform universal and targeted treatment efforts. Yet, little empirical work has focused on elucidating the relations between motives and these behavioral (pre-treatment attrition) and cognitive (perceived barriers for quitting) smoking processes. Thus, the current study sought to evaluate the relation between negative affect reduction smoking motives and pre-treatment attrition and perceptions of barriers for quitting. We hypothesized that lower negative affect reduction smoking motives would predict a greater likelihood of pre-treatment attrition and greater negative affect reduction smoking motives would predict a greater likelihood of initiating treatment. Moreover, we hypothesized that greater negative affect reduction smoking motives would relate to greater perceived barriers for smoking cessation for both pre-treatment drop-outs and treatment initiators.

2. Methods

2.1. Participants

Participants were 579 treatment-seeking adult daily smokers who provided at least partial baseline self-report data for the current trial. Of those who provided baseline data, 425 (48.5% female; M_{age} = 37.69 years; SD = 13.61) were deemed eligible for the trial and comprise the current study sample. Exclusion criteria included current suicidality warranting immediate intervention and psychosis. The racial and ethnic distribution of this sample was as follows: 84.7% identified as White/Caucasian; 9.4% as Black/Non-Hispanic; 0.5% as Black/Hispanic; 2.6% as Hispanic; 1.2% as Asian; and 1.6% as 'Other.' More than one-fourth (26.6%) of participants completed high school or less, 33.6% completed some college, 10.1% earned a 2-year college degree, and 14.4% earned a 4-year degree. Regarding marital status, 35.5% were married or living with someone, 41.2% were never married, 16.9% were divorced, 4.0% were separated, and 2.4% were widowed. The average daily smoking rate of this sample was 16.5 (SD = 9.54) cigarettes per day, and participants reported daily smoking for an average of 19.3 years (SD = 13.42). Participants reported a moderate level of nicotine dependence (Fagerström Test for Nicotine Dependence: M = 5.13, SD = 2.21; Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991).

Of the sample, 42.2% met criteria for at least one current (past year) psychological disorder which included: social anxiety disorder (11.1%), major depressive disorder (4.0%), posttraumatic stress disorder (3.1%), generalized anxiety disorder (5.4%), specific phobia (4.9%), panic disorder with or without agoraphobia (0.5%), alcohol use disorder (4.2%), anxiety disorder not otherwise specified (0.9%), obsessive-compulsive disorder (1.4%), dysthymia (1.7%), cannabis use disorder (1.9%), bipolar disorder (0.4%), anorexia nervosa (0.2%), and depressive disorder not otherwise specified (0.5%).

2.2. Measures

2.2.1. Demographics questionnaire

Demographic information collected included gender, age, race, educational level, and marital status. These items were used to describe the sample, and gender was included as a covariate.