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The role of anxiety sensitivity in the relation between anxious arousal and cannabis and alcohol use problems among low-income inner city racial/ethnic minorities

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ABSTRACT

The current study explored anxiety sensitivity as a factor accounting for the association between anxious arousal and problems related to use of cannabis and alcohol among a health disparity sample (low income minorities). Specifically, participants were 130 low-income racial/ethnic minorities who reported daily cannabis use (M_{age} = 37.7 SD = 10.0; 28.5% female). There were significant indirect associations of anxious arousal via anxiety sensitivity in relation to: cannabis use problems, cannabis withdrawal symptoms, use of cannabis to cope, as well as hazardous drinking, alcohol use problems, and alcohol consumption. These data indicate anxiety sensitivity is a possible mechanism underlying the relation between anxious arousal and substance use problems among low-income racial/ethnic minorities. Future work could evaluate the efficacy of cannabis and alcohol use treatments incorporating anxiety sensitivity reduction techniques to facilitate amelioration of anxiety and substance use and offset mental health inequalities for this population.

Despite the changing population of the United States (U.S.), with projections that racial/ethnic minorities will become the majority by 2050 (Ortman & Guarneri, 2009), there are striking health and mental disparities facing racial/ethnic minorities (Jackson, Knight, & Rafferty, 2010; Safran et al., 2009). For example, racial/ethnic minority individuals have been identified as a sub-group of the population with the greatest unmet need for psychological treatment (Wang et al., 2005). Further, when accessing treatment, racial/ethnic minorities are more likely to receive lower quality care (Wells, Klap, Koike, & Sherbourne, 2001) and to prematurely discontinue treatment (Wierzbicki & Pekarik, 1993). Within racial/ethnic minority groups, those of lower socio-economic status (SES) face even greater health disparities relative to same-group individuals of higher SES (Dubay & Lebrun, 2012).

Of the problems facing minorities, anxiety and substance use disorders are highly prevalent and comorbid (Smith et al., 2006), although relatively little work has examined how anxiety relates to substance use among minorities. Broadly, anxiety and its disorders are strongly associated with a range of substance use disorders (Cougle, Hakes, Macatee, Chavarria, & Zvolensky, 2015). Further, anxiety adversely affects substance use treatment. As an example, a comorbid anxiety disorder is associated with greater risk for relapse for substance use (e.g., Kushner et al., 2005). Past work also suggests that among those with comorbid anxiety and certain substance use problems (e.g., alcohol, cannabis), anxious arousal tends to predate the substance use in a majority of cases (Bernstein, Zvolensky, Sachs-Ericsson, Schmidt, & Bonn-Miller, 2006; Cox, Norton, Swinson, & Endler, 1990; Wolitzky-Taylor, Bobova, Zinbarg, Mineka, & Craske, 2012; Zvolensky, Lewinsohn et al., 2008). This pattern of findings is consistent with models suggesting that substance use functions as a maladaptive coping strategy to manage aversive internal states, such as anxious arousal (Buckner, Heimberg, Ecker, & Vinci, 2013; Gregg, Haddock, Emsley, & Barrowclough, 2014). Among minorities, there are additional stressors such as discrimination and financial strain, which contribute both to anxiety (e.g., Cano et al., 2016; Dijkstra-Kersten, Biesheuvel-Leliefeld, van der Wouden, Penninx, & van Marwijk, 2015; Levine et al., 2014) and the use of substances as a coping strategy (Gerrard et al., 2012). Importantly, minorities who use

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substances as a coping strategy demonstrate significantly worse longer-term outcomes (Gerrard et al., 2012). As such, it is critical to examine associations of anxiety and substance use among at-risk minorities.

For minorities and low income individuals, substance use problems are highly prominent (Grant et al., 2015; Hasin et al., 2015). For example, minority cannabis users are more likely than Whites to meet criteria for a cannabis use disorder (Buckner, Shah, Dean, & Zvolensky, 2016; Wu, Brady, Mannelli, & Killeen, 2014). Further, within the U.S., cannabis use (and rates of cannabis use disorder) among African Americans and Latinos has increased over the past ten years (Hasin et al., 2015). This trend is expected to continue in light of growing income inequality relative to Whites, which is hypothesized as one factor impacting increased rates of use among minorities (Kochhar & Fry, 2014; Taylor, Kochhar, Fry, Velasco, & Motel, 2011). Regarding alcohol use, although many studies have not found racial/ethnic differences for minorities in terms of point-prevalence rates compared to Whites (e.g., Grant et al., 2015), long term prevalence and course of alcohol use problems may be intensified among minorities (Grant et al., 2012). Moreover, minorities experience increased barriers to alcohol treatment (Chartier & Caetano, 2011), including greater stigma surrounding alcohol problems relative to Whites (Smith, Dawson, Goldstein, & Grant, 2010). For these and other reasons (e.g., discrimination, financial instability), it has been suggested that some minority groups (particularly African Americans) may experience more alcohol-related problems (Zapolski, Pedersen, McCarthy, & Smith, 2014). These compounding factors highlight the importance of substance use problems among minorities, particularly those of low income.

Despite the body of work linking anxiety and substance use, little is known about factors underlying the association between these frequently comorbid factors (Crippa et al., 2009). Further, relatively little is known about how anxiety impacts substance use associations among understudied groups such as low-income minorities. Identifying mechanisms linking anxiety and substance use may inform interventions to target this common comorbidity (e.g., Worden, Davis, Genova, & Tolin, 2015). Greater attention to this domain of study is needed given evidence that current treatments for comorbid anxiety/substance use (e.g., sequentially treating anxiety then substance or vice versa) have resulted in no improvement or worse outcomes, relative to treatments focusing on only one problem (Randall, Thomas, & Thevos, 2001; Wolitzky-Taylor, Operskalski, Ries, Craske, & Roy-Byrne, 2011). Relatively little work has focused on integrated treatment of anxiety and substance use, with extant work demonstrating promise, albeit mixed findings for outcomes (for review, see McHugh, 2015). The current literature supports anxiety sensitivity, a cognitive factor that reflects the extent to which an individual experiences physiological arousal as potentially harmful or dangerous (Reiss & McNally, 1985), may be one factor underlying associations of anxiety and substance use. Anxiety sensitivity is a risk factor for anxiety and plays an important role in the maintenance of pathological anxiety (Naragon-Gainey, 2010; Olatunji & Wolitzky-Taylor, 2009; Schmidt, Zvolensky, & Maner, 2006). Anxiety sensitivity has consistently been related to substance use, broadly (Leventhal & Zvolensky, 2015; Pasche, 2012; Stewart, Samoluk, & MacDonald, 1999; Wolitzky-Taylor et al., in press). More specifically, anxiety sensitivity has been linked to cannabis use problems (Buckner et al., 2011), alcohol use problems (Chavarria et al., 2015), coping motives for use of cannabis (Bonn-Miller, Zvolensky, & Bernstein, 2007; Chowdhury, Kevorkian, Sheerin, Zvolensky, & Berenz, 2015) and alcohol (Chandley, Luebbe, Messman-Moore, & Ward, 2014) as well as symptoms of cannabis withdrawal (Bonn-Miller, Zvolensky, Marshall, & Bernstein, 2007). Yet, little is known regarding anxiety sensitivity and substance use problems among low-income minorities.

Theoretically, individuals with increased anxiety sensitivity may interpret anxious arousal as threatening, heightening anxiety states and contributing to a reinforcing cycle of increased arousal and threat-related interpretations. This feed-forward amplification of anxiety-related distress may be associated with substance use in an effort to cope with distress (e.g., Kushner, Sher, & Beitman, 1990). In fact, past work suggests anxiety sensitivity significantly mediated associations between social anxiety, panic, and generalized anxiety symptoms with alcohol use problems among adolescents (Wolitzky-Taylor et al., 2015). However, such models have yet to be extended to (1) adults, (2) other forms of substance use (e.g., cannabis), and (3) underserved, low-income minorities.

Together, the current study sought to examine anxiety sensitivity as a factor underlying associations of anxious arousal with cannabis and alcohol use problems in a sample of low-income inner city racial/ethnic minorities. Specifically, it was expected that anxious arousal would be positively associated with cannabis and alcohol use problems, including cannabis withdrawal symptoms and coping motives for cannabis use via anxiety sensitivity (see Fig. 1). These associations were expected to be evident after accounting for participant gender, educational attainment, employment status, and marital status, which have been linked to substance use problems (Galea, Nandi, & Vlahov, 2004; Nolen-Hoeksema, 2004; Scott et al., 2010).

1. Method

1.1. Participants

One-hundred thirty adults (28.5% female; $M = 37.7$ years, $SD = 10.0$) were recruited through newspaper and community flyer advertisements targeting individuals interested in participating in research related to their current cannabis use and their past quit experiences in Houston, Texas. Participant characteristics are presented in Table 1.

1.2. Measures

Structured Clinical Interview-Non-Patient Version for DSM-IV (SCID-IV-NP; First, Spitzer, Williams, & Gibbon, 1995). The SCID-IV-NP is a structured diagnostic interview that assesses DSM-IV-TR psychopathology. Assessments were conducted by trained and supervised post-baccalaureate research assistants or doctoral-level clinical psychology graduate students. Random reliability checks of 20% of cases were conducted to establish diagnostic agreement rates between interviewers. No cases of disagreement were observed.

Mood and Anxiety Symptom Questionnaire (MASQ; Clark & Watson, 1991). MASQ is a 90 item self-report measure of affective symptoms in accordance with the tripartite model (Clark & Watson, 1991). In the current study, the anxious arousal scale (MASQ-AA) was used, as it represents "pure" anxiety symptoms non-overlapping with depression (Watson et al., 1995). Participants indicate how much they have experienced each symptom (e.g., "felt dizzy") from 1 (*not at all*) to 5 (*extremely*) during the past week. In addition, this measure has been used among minority samples with good internal consistency (Oppenheimer, Technow, Hankin, Young, & Abela, 2012; Philipp, Washington, Raouf, & Norton, 2008; Watson & Hunter, 2015). In the current sample, internal consistency was excellent ($\alpha = 0.93$).

Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). The ASI-3 (Taylor et al., 2007) is an 18-item self-report measure of anxiety sensitivity. Items (e.g., "It scares me when my heart beats rapidly") are rated on a 5-point Likert-type scale from 0 (*very little*) to 4 (*very much*). The ASI-3 shows good convergent and discriminant validity