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Examining psychometric properties of distress tolerance and its moderation of mindfulness-based relapse prevention effects on alcohol and other drug use outcomes

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HIGHLIGHTS

- We examined whether distress tolerance moderated treatment effects on AOD outcomes.
- Clients with lower distress tolerance receiving MBRP vs. TAU had fewer AOD use days.
- A plateau effect suggests that effects were not maintained at the 4-month follow-up.
- Distress tolerance is a characteristic to consider in matching clients to aftercare.
- MBRP may be particularly helpful for individuals with lower distress tolerance.

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ABSTRACT

Distress tolerance refers to the degree to which an individual is able to withstand negative psychological and/or physical states. Empirical literature has indicated that lower distress tolerance is associated with a number of negative alcohol and other drug (AOD) use outcomes and psychopathology. Mindfulness meditation focuses on enhancing affect regulation, and may be particularly beneficial for individuals with lower distress tolerance. This secondary analysis evaluated the basic psychometric properties of the Distress Tolerance Scale (DTS) in a clinical sample of individuals with AOD-use disorders and tested whether distress tolerance for negative psychological states moderated treatment effects on AOD outcomes in an initial efficacy trial of mindfulness-based relapse prevention (MBRP). It was hypothesized that participants with lower distress tolerance would report fewer AOD use days over the 4-month follow-up if they received MBRP versus treatment as usual (TAU). Participants ($N = 168$) in the parent RCT were recruited from a private, nonprofit agency providing inpatient and outpatient care for individuals with AOD-use disorders. Assessments of 60-day frequency of AOD use, as measured by the Timeline Followback, were conducted at baseline, immediately postintervention, and 2 months and 4 months following the intervention. Distress tolerance, as measured by the DTS, was assessed at baseline. Results indicated a one-factor solution, which is consistent with how the DTS has been implemented in other studies. As predicted, DTS was positively associated with all mindfulness subscales, suggesting its convergent validity in this clinical sample. Findings showed the hypothesized time × treatment × distress tolerance interaction, and thereby indicated that participants with lower distress tolerance who received MBRP treatment experienced a greater curvilinear decrease in AOD use days over time than those with lower distress tolerance who received TAU. However, the observed plateau effect suggests that these effects were not maintained at the 4-month follow-up. Findings suggest that distress tolerance is a clinically relevant client characteristic to consider in matching participants to aftercare treatment and that MBRP may be particularly helpful for individuals with lower distress tolerance.

1. Introduction

Alcohol and other drug (AOD) use disorders have been considered "chronic relapsing conditions" (Connors, Maisto, & Donovan, 1996; Dixon, McNary, & Lehman, 1998). One review estimated that 40% to 60% of patients treated for AOD dependence return to active AOD use within one year following termination of treatment (McLellan,

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Lewis, O'Brien, & Kleber, 2000). Given these high relapse rates, understanding predictors of relapse is a priority.

In Marlatt's (1978) study of common relapse predictors, negative affect emerged as the most common precipitant of a lapse, or initial use of AOD after a period of abstinence. Studies continue to show a strong link between negative affect and relapse (e.g., Hodgins, el Guebaly, & Armstrong, 1995; Litman, Stapleton, Oppenheim, Peleg, & Jackson, 1983; Shiffman, Paty, Gnys, Kassel, & Hickcox, 1996). In fact, Baker, Piper, McCarthy, Majeskie, and Fiore (2004) suggested that escape or avoidance of negative affect is the chief motive for use and subsequent dependence because AOD use offers negative reinforcement by providing relief from negative affective states. Thus, the ability to tolerate psychological and physical distress may be essential for achieving and maintaining abstinence from AOD.

1.1. The role of distress tolerance in relapse

Distress tolerance refers to the degree to which an individual is able to withstand negative psychological and/or physical states. Empirical literature has indicated that lower distress tolerance is associated with a number of negative AOD use outcomes and psychopathology, including history of smoking cessation (Brown, Lejuez, Kahler, & Strong, 2002), smoking lapse and relapse (Brandon et al., 2003; Brandon, Vidrine, & Litvin, 2007; Brown et al., 2009), days till relapse for pathological gambling (Daughters, Lejuez, Kahler, Strong, & Brown, 2005; Daughters et al., 2005), and abstinence attempts from AOD (Daughters, Lejuez, Kahler, Strong, & Brown, 2005). Across these various addictive behaviors, the role of distress tolerance has been very similar. Specifically, greater distress tolerance predicts longer periods of abstinence and lower risks of lapse and relapse. Taken together, these findings indicate that being able to tolerate psychological and physical distress may be a crucial skill for achieving and maintaining abstinence from AOD.

Given the important role of distress tolerance, measurement issues of this construct have received increasing attention in the literature (McHugh et al., 2011; Zvolensky, Leyro, Vujanovic, & Bernstein, 2010). Research on AOD relapse has primarily featured behavioral tasks to assess distress tolerance. Among the available self-report measures, only the Distress Tolerance Scale (DTS; Simons & Gaher, 2005) was developed specifically to examine the relationship between distress tolerance and AOD use. The DTS comprises a single, second-order general distress tolerance factor with four first-order indicators (ability to tolerate emotional distress, subjective appraisal of distress, regulation efforts to alleviate distress, attention being absorbed by negative emotions; Simons & Gaher, 2005). Although this measure has evinced good reliability and predictive validity, it has been used with primarily nonclinical samples, such as college students and non-treatment-seeking community members (e.g., Buckner, Keough, & Schmidt, 2007; Howell, Leyro, Hogan, Buckner, & Zvolensky, 2010; Zvolensky et al., 2009). Therefore, research is warranted to examine the reliability, validity and clinical utility of the DTS in a clinical sample of individuals with AOD-use disorders.

1.2. Distress tolerance and MBRP

Marlatt and colleagues (Bowen, Chawla, & Marlatt, 2010) developed and evaluated mindfulness-based relapse prevention (MBRP), a manual-guided, group-based, outpatient intervention for problematic AOD use. This program is based on the theoretical and empirical support for the effectiveness of mindfulness meditation in the treatment of chronic pain (MBSR; Kabat-Zinn, 1990) and depression (MBCT; Segal, Teasdale, & Williams, 2002). MBRP has integrated traditional cognitive-behavioral relapse prevention techniques (Marlatt & Gordon, 1985) with mindfulness meditation to help individuals: 1) to develop awareness and acceptance of thoughts, feelings, and sensations, particularly those involving urges to use AOD, and 2) to utilize these skills as a coping strategy in the face of high-risk situations, such as interpersonal conflicts that elicit negative affect (Witkiewitz, Marlatt, & Walker, 2005).

An initial randomized controlled trial of MBRP supported the efficacy and feasibility of the treatment (Bowen et al., 2009). MBRP was compared to treatment as usual (TAU), a program largely based on 12-step principles and process-oriented groups. Results indicated that, relative to TAU participants, MBRP participants significantly decreased AOD use and craving, and increased their acceptance and ability to act with awareness during the four months following treatment (Bowen et al., 2009).

The practice of mindfulness meditation is a helpful tool in promoting awareness and acceptance of psychological and physiological reactions to negative affect and AOD withdrawal. One of the primary tenets of mindfulness meditation is that the adoption of a curious and accepting stance in the face of unpleasant and distressing experiences changes the meaning of these experiences, thereby increasing distress tolerance (Bishop et al., 2004). Indeed, mindfulness-based interventions are designed to address acceptance and affect tolerance among people with AOD-use disorders, which may make them particularly beneficial for individuals with low distress tolerance.

A few studies to date have tested this hypothesis. For example, Brown et al. (2008) examined a distress tolerance treatment (i.e., combined exposure, meditation and acceptance and commitment therapy) for smokers with an early lapse history. Findings indicated that this treatment enabled participants, who were previously unable to quit smoking for more than 72 h, to achieve a median of 24 days of continuous abstinence and 40.5 days of noncontinuous abstinence. Additionally, studies testing the efficacy of dialectical behavior therapy (DBT)—a treatment that incorporates mindfulness activities to increase distress tolerance—in treating AOD-use disorders have collectively shown that DBT reduces emotional intensity, substance-use cravings as well as AOD use (Axelrod, Perepletchikova, Holtzman, & Sinha, 2011; Linehan et al., 1999; Rizvi, Dimeff, Skutch, Carroll, & Linehan, 2011). Taken together, these studies indicate that a mindfulness-based approach may be particularly beneficial for those with low distress tolerance. However, studies to date have focused on smokers or individuals with co-occurring borderline personality disorders. The generalizability of these findings in a more general population with AOD-use disorders has not been examined.

1.3. Current study aim and hypotheses

To build on the research literature to date, this study evaluated the basic psychometric properties of the DTS in a clinical sample of people with AOD-use disorders. Regarding concurrent validity, mindfulness theory suggests that being able to observe and approach psychological distress with acceptance is associated with affect tolerance (Bishop et al., 2004). It was therefore hypothesized that greater mindfulness would be associated with greater distress tolerance (Dimeff & Linehan, 2008). To understand the potential clinical utility of the DTS within a clinical population, we also tested whether distress tolerance at baseline moderated treatment effects on AOD outcomes over the 4-month follow-up in the context of an initial efficacy trial of MBRP. Specifically, we hypothesized that MBRP participants with lower baseline distress tolerance would report greater reductions in AOD use days during the follow-up period than TAU participants with lower baseline distress tolerance.

2. Method

2.1. Participants

Participants ($n = 168$) in the parent study (Bowen et al., 2009) were recruited from a private, nonprofit agency providing inpatient and outpatient care for individuals with AOD-use disorders. Approximately 57% of the outpatient and 2% of inpatient clients in this setting seek