



# Alcohol expectancies and distress tolerance: Potential mechanisms in the relationship between posttraumatic stress and alcohol use

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## ARTICLE INFO

### Keywords:

PTSD  
Alcohol use  
Alcohol expectancies  
Distress tolerance  
College students

## ABSTRACT

Individual reactions following trauma exposure vary, with up to one-third of survivors developing posttraumatic stress disorder (PTSD; Kessler, Chiu, Demler, & Walters, 2005). Individuals exposed to trauma have high rates of co-occurring psychiatric disorders, with alcohol abuse among the most common comorbid conditions (Kessler et al., 2005). One factor that may influence this relationship is alcohol expectancies (Hruska & Delahanty, 2012), where individuals who believe that using alcohol will help reduce negative affect (i.e., positive alcohol expectancies) may be more likely to use and misuse alcohol. Low distress tolerance has also been implicated as a vulnerability for the development PTSD and alcohol use disorders, particularly as it relates to a desire to reduce negative affect. In the current study, the relationship between posttraumatic stress and alcohol use was proposed to be influenced by positive PTSD alcohol expectancies, whereas distress tolerance was hypothesized to be a moderator. Results demonstrated that positive PTSD alcohol expectancies partially mediated the relationship between posttraumatic stress and alcohol use. Post-hoc analyses found a conditional indirect effect for symptoms of negative alterations in cognitions and mood when distress tolerance was high. These results underscore the importance of advancing knowledge on how individual differences impact posttrauma processes.

## 1. Introduction

### 1.1. Co-occurrence of PTSD and alcohol use

Individual reactions following trauma exposure vary, with up to one-third of survivors developing posttraumatic stress disorder (PTSD; Bonanno & Diminich, 2013; Breslau, 2009; Kessler et al., 2005). PTSD is a well-documented mental health disorder characterized by intrusive memories, avoidance of trauma reminders, negative alterations in mood and cognitions, and hyperarousal (American Psychiatric Association [APA], 2013). Individuals with exposure to trauma have high rates of co-occurring psychiatric disorders, with prevalence of alcohol use disorder as high as 28% for women and 52% for men (Jacobsen, Southwick, & Kosten, 2001; Stewart, Conrod, Pihl, & Dongier, 1999). The risk for problematic drinking may be heightened in college students, as this population is more likely to drink as means to cope with negative affect than other age cohorts (Ham & Hope, 2003; Read, Griffin, Wardell, & Ouimette, 2014).

### 1.2. Alcohol expectancies

One factor that may influence the relationship between PTSD and

alcohol use is alcohol expectancies (Hruska & Delahanty, 2012; Pedersen, Myers, Browne, & Norman, 2014). According to expectancy theory, individuals who believe that using alcohol will help reduce negative affect (i.e., positive alcohol expectancies) may be more likely to use and misuse alcohol (Jones, Corbin, & Fromme, 2001). For individuals with trauma exposure, the expected tension reducing and social lubricating properties of alcohol may play a role for use as a mean to cope with negative thoughts and emotions (Lehavot, Stappenbeck, Luterek, Kaysen, & Simpson, 2013; Tuliao, Jaffe, & McChargue, 2016).

Alcohol expectancies are particularly relevant for college students, as research demonstrates associations among positive alcohol expectancies and increased alcohol consumption in this population (see Scott-Sheldon, Terry, Carey, Garey, & Carey, 2012, for review). However, much of the research fails to take into account the significant influence of psychopathology on drinking behaviors. A recent study by Tuliao et al. (2016) examined alcohol expectancies in a sample of college students with a history of childhood trauma. Whereas results did not demonstrate a significant finding for tension reducing expectancies, the authors did find that alcohol was associated with easing social impairments related to symptoms of PTSD. However, this study, as with a significant proportion of the current literature, is limited by the use of

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a broad alcohol expectancies measure, rather than one specific to symptoms of posttraumatic stress. Thus, results can only be inferred as to the nature of their trauma specificity.

### 1.3. The role of distress tolerance

Distress tolerance, defined as an individual's perceived and/or actual ability to withstand emotionally aversive states, represents an additional mechanism for exploration in the relationship between posttraumatic stress and alcohol use (Simons & Gaher, 2005). Low distress tolerance has been implicated as a vulnerability factor for the development of several mental health disorders, including PTSD and alcohol use disorders (Holliday, Pedersen, & Leventhal, 2016; Marshall-Berenz, Vujanovic, & MacPherson, 2011; Vujanovic, Bonn-Miller, Potter, Marshall, & Zvolensky, 2011). Specifically, more severe symptoms of PTSD have been inversely linked to distress tolerance, as well as poorer treatment outcomes and increased alcohol use (Buckner, Keough, & Schmidt, 2007; Holliday et al., 2016; Wolitzky-Taylor et al., 2015). Theoretical models provide support for distress tolerance as a shared etiological factor in the association between mental health disorders and substance use, such that low levels of distress tolerance are associated with a poor ability to cope with negative affect as well as motivation for alcohol as a means of avoidance (Leventhal & Zvolensky, 2015). Further, as individual differences in distress tolerance appear to be stable across the lifespan, this construct may represent a characteristic way of responding to negative affect and negative events that includes maladaptive coping methods (i.e., alcohol use).

### 1.4. The current study

The current study was designed to explore how trauma-related alcohol expectancies and distress tolerance relate to drinking in a sample of college students exposed to trauma. To date, there have been no peer-reviewed studies published which assess this via the current PTSD Alcohol Expectancies Questionnaire (P-AEQ; Norman, Inaba, Smith, & Brown, 2008). This is important considering research suggests trauma exposure in college students is high (approximately 60%), as well as evidence for elevated rates of problematic alcohol use and low treatment engagement compared to same-aged peers (Read et al., 2014; Wu, Pilowsky, Schlenger, & Hasin, 2007). In the current study, the relationship between symptoms of posttraumatic stress and alcohol use was proposed to be influenced by positive PTSD alcohol expectancies. Additionally, given the evidence suggesting low distress tolerance as a potentially transdiagnostic vulnerability for both posttraumatic stress and poor coping, this construct was included as a moderator, such that low levels of distress tolerance were hypothesized to be associated with greater alcohol use and greater alcohol expectancies for individuals with greater symptoms of PTS.

## 2. Methods

### 2.1. Procedure and participants

Participants in the current study included 318 undergraduate students enrolled in an introductory psychology course at a large Midwestern university. The only prerequisites for participation were that individuals be over the age of 18 and fluent in English. Following informed consent, responses were collected via an online questionnaire. Participants received course credit for their participation and all study procedures were approved by university's Institutional Review Board.

The mean age of study participants was 19.31 ( $SD = 1.36$ ) years old with the majority self-identifying as White (61.5%), followed by Black (17.9%), Asian or South Asian (6.8%), American Indian or Alaska Native (0.6%), and Native Hawaiian or Pacific Islander (0.6%). The sample also included 7.4% who identified as "Other" and 2.4% who preferred not to respond. The majority of the sample (56%) identified as

Male.

### 2.2. Measures

#### 2.2.1. Life events checklist for DSM-5

(LEC-5; Weathers, Blake, et al., 2013) The LEC is a self-report measure assessing exposure to 16 potentially distressing events. Respondents indicate varying levels of experience with events on a 6-item scale including: "Happened to me", "Witnessed", "Learned About", "Not Sure", and "Doesn't Apply". The LEC-5 does not yield a total score, rather, it identifies severity and type of exposure to a potentially traumatic event. For this study, only responses to "Happened to me" and "Witnessed" were summed to estimate history of exposure to a potentially traumatic event.

#### 2.2.2. PTSD checklist for DSM-5

(PCL-5; Weathers, Litz, et al., 2013) The PCL-5 is a 20-item measure of PTSD symptom severity over the past 30 days. PCL-5 items correspond with DSM-5 diagnostic criteria (APA, 2013). Participants rated the extent to which they were bothered by PTSD symptoms on a scale of 0 (*not at all*) to 4 (*extremely*). The PCL-5 has demonstrated good test-retest reliability, adequate validity, and high internal consistency (Blevins, Weathers, Davis, Witte, & Domino, 2015). A total PTSD symptom severity score was computed by summing items, demonstrating excellent internal consistency in this sample ( $\alpha = 0.95$ ).

#### 2.2.3. Distress tolerance scale

(DTS; Simons & Gaher, 2005) The DTS is self-report measure consisting of 15 items assessing the perceived ability to tolerate psychological distress. Items are measured on a 5-point Likert-type scale (1 = *strongly agree* to 5 = *strongly disagree*) and assess four domains: (a) ability to tolerate distress; (b) negative appraisals of being distressed; (c) ability to regulate distress; and (d) extent to which attention is focused on experiencing distress. A total score is calculated by summing responses (with appropriate reverse coding), with higher scores reflecting greater distress tolerance. The current study utilized total scores on the DTS, as is consistent with previous research (e.g., Holliday et al., 2016). The DTS has demonstrated strong psychometric properties (Simons & Gaher, 2005) and showed excellent internal consistency in this sample ( $\alpha = 0.93$ ).

#### 2.2.4. PTSD-alcohol expectancy questionnaire

(P-AEQ; Norman et al., 2008) The P-AEQ is a 27-item self-report questionnaire which assesses individuals' beliefs, both positive and negative, about the effect of alcohol use on PTSD symptoms. Participants respond to each item on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). The current study utilized only positive expectancies items (see Table 2). Despite development prior to the current four-factor model of PTSD, the P-AEQ includes items which address symptoms related to all symptom clusters, including negative alterations in cognition and mood. The positive alcohol expectancies items have demonstrated good concurrent validity with the Alcohol Expectancies Questionnaire- Revised (AEQ; Brown, Christiansen, & Goldman, 1987),  $r = 0.58$ ,  $p < 0.001$  (Norman et al., 2008). This measure demonstrated excellent internal consistency for this sample (positive expectancies  $\alpha = 0.96$ ).

**Alcohol use disorder identification test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001)** The AUDIT is a self-report questionnaire consisting of 10 items assessing consumption/frequency, dependence, and consequences of alcohol use over the past 12 months. Items are answered by indicating responses that are unique to each question, ranging from 0 to 4, with higher scores indicating more problematic alcohol use. The AUDIT has shown good internal consistency over a broad range of diverse samples and settings, with a median reliability coefficient of 0.83 (Reinert & Allen, 2007). Based on previous research (e.g., McDevitt-Murphy, Luciano, Tripp, & Eddinger,

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