



## The impact of elevated posttraumatic stress on the efficacy of brief alcohol interventions for heavy drinking college students

Christopher J. Monahan<sup>a</sup>, Meghan E. McDevitt-Murphy<sup>a,\*</sup>, Ashley A. Dennhardt<sup>a</sup>, Jessica R. Skidmore<sup>a</sup>, Matthew P. Martens<sup>b</sup>, James G. Murphy<sup>a</sup>

<sup>a</sup> Department of Psychology, The University of Memphis, 202 Psychology Building, Memphis, TN 38152, USA

<sup>b</sup> Department of Educational and Counseling Psychology, 16 Hill Hall, University of Missouri, Columbia, MO 65211, USA

### HIGHLIGHTS

- ▶ We examined the impact of posttraumatic stress on brief alcohol intervention outcome.
- ▶ Participants were 207 heavy-drinking college students.
- ▶ PTS symptoms were not associated with worse intervention response overall.
- ▶ Students with elevated posttraumatic stress responded better to MI-based interventions.

### ARTICLE INFO

#### Keywords:

Alcohol  
Brief intervention  
College students  
Mental health  
PTSD

### ABSTRACT

Brief alcohol interventions (BAIs) have been widely adopted for use with college students and are associated with significant reductions in drinking and problems. However, many students do not respond to these approaches and little is known about risk factors for poor response. The current study investigated one possible risk factor by examining the impact of posttraumatic stress (PTS) symptoms on BAI efficacy. This study presents pooled data from two randomized clinical trials that examined the efficacy of counselor-administered BAIs compared with computerized interventions. Participants were 207 college students (53.1% women, 68.1% White/Caucasian, 16.9% with elevated post-traumatic stress) who reported past-month heavy episodic drinking. Follow-up assessments were completed six months post-intervention. Analyses testing differences in frequency of past-month heavy episodic drinking revealed a significant post-traumatic stress by time interaction ( $F(1,165) = 8.27, p = .005$ ) such that individuals screening positive for PTS showed larger reductions in heavy episodic drinking at follow-up. A significant three-way interaction between time, PTS, and intervention condition ( $F(2,167) = 5.76, p = .004$ ) was found for alcohol related consequences. Specifically, among individuals screening positive for PTS, only those that received the counselor-administered BAI showed a significant reduction in consequences at follow-up. These results suggest that overall college students with PTS may respond well to BAIs and that counselor-delivered BAIs may be more efficacious than computer-delivered interventions for reducing alcohol problems for these high-risk students.

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## 1. Introduction

### 1.1. College student alcohol use

Young adults who attend college report higher levels of alcohol consumption than any other age or demographic group (Hingson, 2010; Johnston, O'Malley, Bachman, & Schulenberg, 2005) and some studies have suggested that rates of drinking among college students are rising (Hingson, Zha, & Weitzman, 2009; Johnston et al., 2005). Heavy episodic drinking (defined as 5/4 or more drinks in one occasion for a man/woman) is particularly prevalent among college

students, with 45% of students endorsing at least one episode in the past two weeks (Hingson et al., 2009), often leading to adverse health consequences or injuries, academic and legal difficulties, blackouts, and risky sexual behavior (Hingson, 2010; National Institute on Alcohol Abuse & Alcoholism (NIAAA), 2002; Wechsler et al., 2002).

### 1.2. Brief alcohol interventions

Brief alcohol interventions (BAI) have emerged as an intervention of choice for heavy-drinking college students. Typically BAIs include personalized feedback about an individual's drinking patterns, how his/her drinking compares to other students' drinking, blood alcohol levels, and alcohol related risks and consequences. BAIs are frequently delivered by a counselor in a motivational interviewing (MI) style (Dimeff,

\* Corresponding author. Tel.: +1 901 678 2891; fax: +1 901 678 2579.  
E-mail address: mmcdvttm@memphis.edu (M.E. McDevitt-Murphy).

Baer, Kivlahan, & Marlatt, 1999), and more recently, computer-delivered interventions have also been developed (Century Council, 2003; Walters, Vader, & Harris, 2007). Numerous studies have found that BAIs are associated with significant reductions in drinking and alcohol related problems relative to control conditions (Carey, Carey, Maisto, & Henson, 2006; Larimer & Cronce, 2007; Murphy, Dennhardt, Skidmore, Martens, & McDevitt-Murphy, 2010; Siegers & Carey, 2010; Walters, Vader, Harris, Field, & Jouriles, 2009).

Although BAIs are generally efficacious, college students vary greatly in their response to these interventions. Meta analyses examining differences between BAI and control conditions typically report small to moderate effect sizes (Carey, Henson, Carey, & Maisto, 2007a; Moreira, Smith, & Foxcroft, 2009), suggesting that many individuals do not respond to BAIs. Interventions that include MI and feedback may be slightly more effective than feedback only, including computerized feedback interventions (Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009; Murphy et al., 2010; Walters et al., 2009). To date, there has been little research examining factors that may mitigate the efficacy of BAIs, or factors that may be associated with better responses to certain types of brief interventions (e.g., computer-based, or motivational interviewing). One study found that students with depressive symptoms did not show significant drinking reductions following a feedback-only intervention (Geisner, Neighbors, Lee, & Larimer, 2007). Other research suggests that college students who are impulsive or have lower levels of self-regulation show poor response to BAI (Carey, Scott-Sheldon, Carey, & DeMartini, 2007b; Ewing, LaChance, Bryan, & Hutchison, 2009). In one study the efficacy of a BAI was evaluated in a sample of adult general practice patients with alcohol use disorders, with findings indicating that individuals with comorbid anxiety and/or depressive disorders did not respond as well as those without comorbid disorders and reported smaller reductions in drinking at follow up (Grothues et al., 2008).

Mental health concerns such as posttraumatic stress disorder (PTSD) and depression are significant issues among college students (ACHA, 2009; Furr, Westefeld, McConnell, & Jenkins, 2001; Geisner, Larimer, & Neighbors, 2004; Read, Ouimette, White, Colder, & Farrow, 2011) and both conditions are associated with increased alcohol consumption (Driessen et al., 2001; Edwards, Dunham, Ries, & Barnett, 2006; Kilpatrick et al., 2000; Weitzman, 2004). PTSD in particular has been linked with more severe substance use patterns compared to other forms of psychopathology in college students (McDevitt-Murphy, Murphy, Monahan, Flood, & Weathers, 2010). A recent survey of 997 young adults entering college found the presence of PTSD symptoms at matriculation conferred substantial risk for substance-related negative consequences (Read et al., 2012). Individuals with co-occurring PTSD and alcohol misuse are also more likely to drop out of college before graduating (Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa, 2003) and report less income and higher unemployment when compared to individuals with only a diagnosis of PTSD or alcohol misuse (Drapkin et al., 2011). Data from adult alcohol-abusing samples suggest that individuals with PTSD show worse outcomes in substance abuse treatment than those without PTSD (Bradizza, Stasiewicz, & Paas, 2006; Brown, Stout, & Mueller, 1999), perhaps due to the fact that alcohol misuse among persons with PTSD often serves as a maladaptive coping strategy (Kaysen et al., 2007; Kushner, Thuras, Abrams, Brekke, & Stritar, 2001). Thus for heavy-drinking college students with PTSD or PTSD-related distress, drinking may be reinforced by both social and coping motives, and because brief interventions do not typically address coping motivated drinking, they may be less effective with for these students.

### 1.3. Impact of PTSD on brief interventions

No studies to date have examined the impact of PTSD on the efficacy of BAIs for college students. However, as mentioned previously, one study investigated the efficacy of a feedback-based brief alcohol

intervention in a sample of depressed students (Geisner et al., 2007). Depression, like PTSD, is characterized by considerable negative affect and is also associated with higher levels of alcohol misuse (Weitzman, 2004). Geisner et al. (2007) found that although a mailed feedback intervention did not result in significant drinking reductions, the intervention helped to correct students' estimates of drinking norms, and in turn, a reduction in estimated drinking norms was associated with a reduction in alcohol use and problems at follow up. Although this study suggested that the feedback-based intervention was not sufficient to reduce drinking among depressed students, it did shed light on the fact that social factors may play a role in depressed students' drinking and underscores the point that other factors likely contribute to alcohol use in this population. This raises the possibility that some form of BAI could be effective with college students who have co-occurring psychiatric disorders, but suggests that a more intensive intervention (compared to feedback-only) may be warranted.

The purpose of the present study was to explore the extent to which post-traumatic stress symptoms moderated the efficacy of brief interventions for reducing alcohol consumption and alcohol related negative consequences. This study extends the literature on brief alcohol interventions for college students by evaluating PTSD-related distress as a factor contributing to poor response to brief alcohol interventions. Previous research found that a sample of depressed college students did not reduce their drinking in response to a mailed, feedback-based brief intervention (Geisner et al., 2007); however, it is unclear how these individuals might respond to counselor-delivered brief interventions. It is possible that a counselor-delivered intervention could direct more attention to negative affect, thus tailoring the nature of the intervention to make it more relevant to students experiencing psychological distress. We hypothesized that students with elevated post-traumatic stress symptoms would show smaller reductions in drinking and alcohol problems at the 6-month follow-up relative to other students. In addition, we hypothesized that among those with elevated post-traumatic stress, students receiving a counselor-delivered brief intervention would show a larger reduction in drinking and alcohol problems at 6 months, compared to those who did not receive a counselor-delivered intervention.

## 2. Materials and methods

### 2.1. Participants

Participants were 207 heavy drinking college students from a large metropolitan university in the southern United States. Women comprised a slight majority of the sample (53.1%;  $n = 110$ ) and the age ranged from 18 to 26 ( $M = 19.50$ ;  $SD = 1.99$ ). The sample was ethnically and racially diverse: 68.1% described themselves as White or Caucasian, 27.5% as Black or African American, 3.4% as Hispanic or Latino, 1.4% as Asian, and 1.9% as American Indian or Alaska Native (participants were allowed to choose multiple ethnic descriptors). Participants were eligible to participate if they endorsed at least one past-month heavy drinking episode (HDEs; 5/4 or more drinks in one occasion for a man/woman). All study procedures were approved by the university's institutional review board and all participants gave informed consent prior to participating in the study.

### 2.2. Procedure

Data for this investigation were collected in the context of two randomized clinical trials examining the efficacy of clinician administered brief alcohol interventions compared with computerized interventions for heavy drinking among college students (see Murphy et al., 2010 for full details of each trial). Specifically, the first study ( $N = 74$ ) compared a 50-minute clinician-delivered brief motivational intervention (BMI) to an interactive CD-ROM program that takes participants

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