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The Impact of Elevated Posttraumatic Stress on the Efficacy of Brief Alcohol Interventions for Heavy Drinking College Students

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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

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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.

Keywords

Alcohol; Brief intervention; college students; mental health; PTSD

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 et al., 2002) and some studies have suggested that rates of drinking among college students are rising (Hingson et al., 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 and Alcoholism, 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 et al., 1999), and more recently, computer-delivered interventions have also been developed (Century Council, 2003; Walters et al., 2007). Numerous studies have found that BAIs are associated with significant reductions in drinking and alcohol related problems relative to control conditions (Carey et al., 2006; Larimer and Currence, 2007; Murphy et al., 2010; Siegers & Carey, 2010; Walters et al., 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 et al., 2007a; Moreira et al., 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 et al., 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 et al., 2007). Other research suggests that college students who are impulsive or have lower levels of self-regulation show poor response to BAI (Carey et al., 2007b; Ewing et al., 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 et al., 2001; Geisner et al., 2004; Read, Ouimette, White, Colder, & Farrow, 2011) and both conditions are associated with increased alcohol consumption (Edwards et al., 2006; Driessen et al. 2001; 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 et al., 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 (Brown et al., 1999; Bradizza et al., 2006), perhaps due to the fact that alcohol misuse among persons with PTSD often serves as a maladaptive coping strategy (Kaysen et al., 2007; Kushner et al., 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 and colleagues (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 through a “virtual college campus and bar” that includes information on alcohol and related risks (Alcohol 101; Century Council, 2003). The second study ($N = 133$) compared three conditions: a BMI, a computerized web-based intervention called Electronic Check Up to Go (e-CHUG; Walters et al., 2007) that provides students with personalized normative feedback about their drinking, and an assessment-only control condition. Across both studies, the brief motivational intervention consisted of a decisional balance exercise followed by personalized feedback delivered within a motivational interviewing style. The personalized feedback included normative data about college student drinking and comparisons to the student's reported drinking pattern, an estimate of the student's peak blood alcohol content (BAC) in the past month, a list of alcohol-related negative consequences that the student reported experiencing, the student's weekly time allocation, and average caloric consumption from alcohol. If the student was interested, the session concluded with goal-setting. For the first study, participants were recruited through the on-campus health center and all students other than second semester seniors were potentially eligible to participate. Potential participants were approached in the waiting room of the health center by research staff and provided information about the research study. For the second study, participants were recruited through a university-wide course that is required for all first year students. Across both projects, all students completed a screening survey and were eligible to participate in the clinical trial if they were at least 18 years of age and endorsed at least one heavy drinking episode ($\geq 5/4$ drinks on one occasion for man/woman) in the previous month. Participants completed a battery of baseline measures prior to randomization to intervention condition and a follow-up assessment battery at six months post-intervention¹. Six month follow-up rates were 85% ($n = 176$) for the combined studies with no significant demographic or baseline drinking differences between completers and non-completers.

2.3. Measures

2.3.1. Alcohol use—The Daily Drinking Questionnaire (DDQ; Collins et al, 1985) is a well-established measure for estimating alcohol consumption. Participants report the number of standard drinks consumed for each day during a typical week in the past month. This measure has been widely used to assess alcohol consumption in college student samples (Marlatt et al., 1998; Murphy et al., 2004) and has demonstrated good internal consistency and associations with prospective self-reports of drinking (Kivlahan et al., 1990). Separately, participants were asked to indicate the number of times they engaged in a heavy drinking episode (defined as $\geq 5/4$ or more drinks in one occasion for a man/woman) during the past month.

2.3.2. Alcohol related negative consequences—The Young Adult Alcohol Consequences Questionnaire (YAACQ; Read et al., 2006) is a 48-item self-report measure that assesses alcohol-related consequences among college students across eight domains:

¹Participants also completed a one-month follow-up (see Murphy et al., 2010) and a one-year follow-up. We elected to focus on the 6-month rather than the one-month outcomes in order to evaluate the potential longer term moderating impact of PTSD. The 12-month sample size was inadequate to evaluate moderation (due to increased participant attrition and the resulting small number of participants with elevated PTSD symptoms).

social and interpersonal, impaired control, self-perception, self-care, risk behaviors, academic/occupational, physical dependence, and black out drinking. Respondents report the presence or absence of each consequence over the past six months. The YAACQ has exhibited strong test-retest reliability and internal consistency in college samples (Read et al., 2007). In the present study the internal consistency for the total YAACQ score was .95.

2.3.3. Trauma history and PTSD symptoms—The Trauma History Screen (THS; Carlson, 2001) is a measure used to assess traumatic experiences by querying about lifetime exposure to 14 events: motor vehicle accidents, accidents at home or work, natural disasters, child physical and sexual assault, adult physical and sexual assault, being attacked, combat exposure, death of close other, seeing someone get injured or killed, abandonment, sudden move/loss of possessions, or any other event that caused feelings helplessness or horror. The THS further assesses criterion A for PTSD as specified in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR; APA, 2000) by asking the participant to identify the “worst” event and respond to four dichotomously (Yes/No) rated questions: two that inquire about actual or threatened physical harm (“*When this happened, did anyone get hurt or killed?*” and “*When this happened were you afraid that you or someone else might get hurt or killed?*”) and if the person's response involved intense fear, helplessness, or horror (“*When this happened did you feel very afraid, helpless, or horrified?*”). The THS has demonstrated adequate reliability and convergent validity in a range of samples including college students (Carlson et al., 2011).

The Primary Care-PTSD Screen (PC-PTSD; Prins et al., 2003) is a 4-item screening questionnaire assessing symptoms of posttraumatic stress disorder (PTSD). Items are rated dichotomously (Yes/No) and endorsement of at least 3 items results in a positive screen, suggesting significant PTS symptoms. The scale assesses the four symptom dimensions of PTSD: reexperiencing, numbing, avoidance, hyperarousal. The measure is widely used and well validated across a range of settings (Bliese et al., 2008; Ouimette et al., 2008). Prins and colleagues (2003) found the PC-PTSD demonstrated sound psychometric properties with sensitivity of .78 and specificity of .87 using a cutoff score of 3. For the purposes of this project, an individual was classified as PTS-positive (having an elevated level of post-traumatic stress symptoms) if he/she endorsed having experienced a traumatic event meeting criterion A in DSM and had a positive screen on the PC-PTSD.

2.4. Analytic Plan

Data for the present analyses were pooled from two randomized clinical trials in order to examine the impact of post-traumatic stress on 6-month outcomes. Specifically, the MI conditions from study 1 ($n = 38$) and study 2 ($n = 46$) were combined, as were the two computerized conditions: Alcohol 101 from study 1 ($n = 35$) and e-CHUG from study 2 ($n = 45$). There was also an assessment only condition in study 2 ($n = 42$) that was included in the present analysis. Although combining the data from two studies has some drawbacks, it was necessary given the small number of individuals classified as PTS-positive in the two samples. Thus, there were three levels to the treatment condition variable: MI ($n = 84$), computer intervention ($n = 80$), assessment only ($n = 42$). The MI intervention conditions from study 1 and study 2 were identical, utilizing the same BAI protocol and counselors (see

Murphy et al., 2010 for details on counselor training and intervention fidelity). Although the computerized interventions (Alcohol 101 and e-CHUG) were distinct, mean pre-post effect sizes (.12 and .17 respectively) across the three drinking outcomes measured in the current study were similar. Therefore we combined participants who completed Alcohol 101 or e-CHUG for these analyses in order to have an adequate number of individuals with post-traumatic stress in a “computerized intervention” cell.

Prior to conducting the analyses we evaluated the distributional properties of all continuous variables. Although participants were screened for participation on the basis of heavy drinking, the variables of interest are count data (drinks per week and past month heavy drinking episodes, and alcohol-related negative consequences), thus we investigated the possibility of zero-inflation. Not surprisingly, the frequency of zero-count was minimal for the baseline variables (2.4%, 7.2%, and 1.9% respectively), and slightly higher (15.9%, 23.9%, and 9.7%) for the post-intervention six month outcomes. Outliers greater than 3.29 *SDs* above the mean (Tabachnick and Fidell, 2005) were assigned a new value that was one unit higher than the highest non-outlier value. A total of four variables were found to be skewed or kurtotic and were subjected to square root transformations: baseline and six month values for the drinks per week variables and the past month heavy drinking episodes variables. All variables demonstrated acceptable distributional properties following transformation (all skew and kurtosis values ≤ 1) so we elected to use repeated measures analyses of variance (ANOVA) to examine differences in outcomes between participants with and without elevated post-traumatic stress on levels of drinks per week, heavy episodic drinking, and alcohol related negative consequences. Because the present analyses combined the treatment conditions from two studies (in order to increase the number of individuals with PTSD in each cell) we were not interested in examining independent treatment effects (see Murphy et al., 2010 for 1-month outcomes from these individual trials). We were primarily interested in the possibility of moderation and evaluated this by computing post-traumatic stress status by treatment condition (MI vs. computer intervention vs. assessment only) by time interactions. Gender was included as a covariate based on evidence suggesting college women may show greater response to BAIs (Carey et al., 2007a; Murphy et al., 2004). Similarly, race was included as a covariate based on previous research suggesting that trauma cognitions among African-American students are more strongly associated with the adverse consequences of drinking compared to European American students (Williams, Jayawickreme, Sposato, & Foa, 2012). In addition, African-American students reported less drinking and differential response to the interventions conditions (at the one month follow-up) in this sample (see Murphy et al., 2010)².

3. Results

At the baseline assessment the sample had an overall mean of 16.06 (*SD* = 13.44) standard drinks per week in the past month and a mean of 5.44 (*SD* = 4.93) past month heavy drinking episodes. In addition, participants reported a mean of 12.64 (*SD* = 8.54) alcohol-

²All repeated measures ANOVA tests were also run with the two computerized conditions (Alcohol 101 and e-CHUG) separated, which created four total treatment conditions. Results were functionally identical for all drinking variables. Thus, for the purposes of this study we collapsed the computerized conditions into one treatment group in order to make cell size more comparable to the other conditions.

related negative consequences. A majority of the sample, 87.0% ($n = 180$), reported experiencing a potentially traumatic event. The most commonly reported events were “sudden death of close family or friend” (61.8%), “a really bad car, boat, train or plane accident” (38.7), and “hit or kicked hard enough to injure – as an adult” (28.8%). Just over half of the sample ($n = 104$) reported experiencing a traumatic event that was accompanied by an associated emotional reaction and 46.4% ($n = 39$) of those participants reported reexperiencing on the PC-PTSD, 56.0% ($n = 47$) reported avoidance, 29.8% ($n = 25$) reported hyperarousal, and 35.7% ($n = 30$) reported emotional numbing. Among participants experiencing a traumatic event accompanied by an emotional response, 16.9% ($n = 35$) obtained a score of 3 or greater on the PC-PTSD scale and thus screened positive for PTS. There were 13 PTS-positive participants in the MI conditions, 12 in the computer conditions, and 10 in the assessment only condition. Chi square analyses did not show a statistically significant difference in the proportion of individuals with PTS across the three conditions.

Table 1 presents descriptive information for the baseline drinking variables and rates of endorsement for each trauma event separately for PTS-positive and PTS-negative participants. There were no significant group differences between PTS-positive and PTS-negative participants for any of the drinking outcome variables (typical week drinking, heavy drinking episodes, or negative consequences) as measured at baseline. There were no baseline treatment group differences on any drinking variable.

3.1. Alcohol consumption

The repeated measures ANOVAs that examined change in drinks per week and heavy drinking episodes showed no main effects for time, post-traumatic stress status, gender, or race. However, the ANOVA testing differences in frequency of past month heavy drinking episodes revealed a statistically significant interaction between time and post-traumatic stress status ($F(1,165) = 8.27, p = .005, \eta^2 = .048$). Follow-up contrasts indicated that PTS-positive participants showed a statistically significant reduction in past month heavy drinking episodes at 6-month follow-up ($t(33) = 3.25, p = .003; d = .79$). There was not a statistically significant change in heavy drinking episodes from baseline to 6-month follow-up for the PTS-negative group ($t(138) = 1.11, p = .271; d = .13$). Means and standard deviations for each drinking outcome at both time points are presented in Table 2.

3.2. Alcohol-related negative consequences

Repeated measures ANOVA analyses revealed an overall main effect for time on alcohol related negative consequences such that participants reported fewer consequences at the 6-month follow-up. There was also a significant three-way interaction between time, PTS status, and intervention condition ($F(2,167) = 5.76, p = .004, \eta^2 = .065$; Figure 1). Follow-up contrasts indicated that PTS-positive participants who received an MI showed a significant reduction in negative consequences at 6-month follow-up ($t(12) = 3.76, p = .003; d = -1.11$) whereas participants in the computer intervention condition ($t(11) = .14, p = .888; d = -.15$) or the assessment only condition ($t(9) = -1.17, p = .273; d = .42$) did not demonstrate a significant change. There was not a statistically significant change in negative consequences for PTS-negative participants who received the MI intervention ($t(57) = 1.60,$

$p = .115$; $d = .19$). There were no other significant contrasts between individuals with and without elevated PTS. Neither the computerized interventions nor the assessment condition resulted in a significant change in negative consequences for either group (see Figure 1).

4. Discussion

The goal of the current investigation was to build on extant research regarding response to brief alcohol interventions among college students (Carey et al., 2007b; Ewing et al., 2009; Geisner et al., 2007). We hypothesized that elevated post-traumatic stress would be associated with smaller reductions in drinking and drinking-related consequences following intervention. Interestingly, participants with elevated levels of post-traumatic stress reported a *larger* reduction in heavy episodic drinking than participants without elevation in post-traumatic stress. The within-subject effect size was medium for individuals with elevated post-traumatic stress and small for those without elevation. These results were surprising given that previous research with adult substance use treatment samples suggests that PTSD is associated with poor treatment response (Ouimette et al., 1998; Ouimette et al., 1999; Read et al., 2004), and a study with college student drinkers showed poor response to a BAI among depressed students (Geisner et al., 2007). The present findings are encouraging in that they suggest that college students who experience PTSD-related distress may respond to BAIs at least as well as students without PTSD. It is possible that these students' elevated distress level makes them more amenable to the possibility of making a significant lifestyle change. This may be due in part to the fact that college students with psychiatric symptoms report greater levels of alcohol-related problems than students without elevated levels of psychiatric symptoms, even after controlling for drinking levels (Dennhardt & Murphy, 2011). One component of the personalized feedback used in this study was focused on the students' self-reported alcohol-related consequences. This specific focus on consequences may have enhanced the personal salience of the intervention for students with elevated post-traumatic stress.

PTS-positive participants showed a significant reduction in alcohol related negative consequences only when they received the counselor-administered MI. Although there was not a significant change for PTS-positive participants in the computerized intervention or the assessment-only condition there was a non-significant trend for the PTS-positive group who received no intervention to report more drinking-related negative consequences at follow-up. Surprisingly, PTS-negative participants did not report reduced negative consequences in any of the treatment conditions. Although these moderation findings must be interpreted cautiously due to the small sample size, they are intriguing and they suggest that individuals with trauma-related distress may be a subgroup of college drinkers who respond more favorably to counselor-delivered brief intervention than to computerized interventions, possibly due to the tailored nature of the interpersonal interaction. Although our clinician-administered protocol did not specifically target trauma-related issues, the counselor may be able to help the participant understand the role that PTSD-related negative affect plays in their drinking. For example, clinicians in our study had the flexibility to discuss relevant influences on drinking motives in the session, whereas the computerized interventions were restricted to a predetermined set of output. Additionally, the basic counseling skills of empathy, reflective listening, and validation characteristic of motivational interviewing

approaches may help defuse negative affect that arises during the intervention so that the student can more fully absorb the feedback and information presented in the intervention (Miller and Rollnick, 2002). Interestingly, a recent study found that college student heavy drinkers with depression showed greater reductions in heavy drinking when they completed a standard counselor-administered BAI that was combined with a session focused on increasing engagement in constructive academic and other alternatives to drinking, compared to a standard BAI plus a relaxation control session (Murphy et al., 2012). Thus, college drinkers with psychiatric symptoms may respond better to more intensive BAI approaches.

4.1 Methodological Considerations

This study had several limitations. First, data were collected from undergraduate students attending a large urban university in the southern United States and may not generalize to other populations. Moreover, although we used popular and standardized computer and counselor-administered brief alcohol interventions, these findings will need to be tested with other BAI approaches. Additionally, the sample size was small, particularly when we investigated post-traumatic stress as a moderator of treatment condition. In order to improve power to detect differences, we combined samples from two brief intervention trials and created pooled treatment conditions. The MI conditions were identical; however, the computerized interventions were different. Most notably one of the computer interventions included personalized drinking feedback (E-chug) and the other (Alcohol 101) did not. A final limitation is that we did not use a diagnostic measure of PTSD, but instead included a widely-used brief screening measure that has been shown to be accurate at identifying individuals with and without PTSD across a range of populations (Bliese et al., 2008; Ouimette et al., 2008; Prins et al., 2003). Future studies that include a structured interview measure of PTSD could better assess the presence and severity of PTSD symptoms.

5. Conclusions

Despite these limitations, the results of this study suggest that brief alcohol interventions are efficacious for individuals who are experiencing PTSD-related distress. A large portion of college students do not respond to brief interventions for alcohol misuse, and identifying students who are at risk for poor response can lead to improved interventions and treatment matching. College personnel working with heavy drinkers are encouraged to screen for trauma-related symptoms, as the presence of PTSD may impact the type of intervention that is appropriate for these students. As has been shown in previous work examining the relationship between trauma cognitions and symptoms of alcohol misuse (Jayawickreme, Yasinski, Williams, & Foa, 2012), there are many factors such as gender and race that are important to consider when developing interventions targeting co-occurring PTSD and alcohol misuse. The results of the current study suggest that these students may show greater reductions in alcohol consequences when they receive a MI rather than a computerized intervention. Furthermore, future interventions may wish to incorporate more specific information regarding the relationships between trauma symptoms and alcohol misuse into the personalized feedback for relevant students in order to increase the personal salience of the intervention to the individual.

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Highlights

We examined the impact of symptoms of posttraumatic stress disorder on the outcome of a brief alcohol intervention.

Participants were 207 heavy-drinking college students

PTS symptoms were not associated with worse response to intervention, contrary to our hypothesis.

Students with high levels of PTS seemed to respond better to a motivational interviewing intervention than to a computerized intervention.

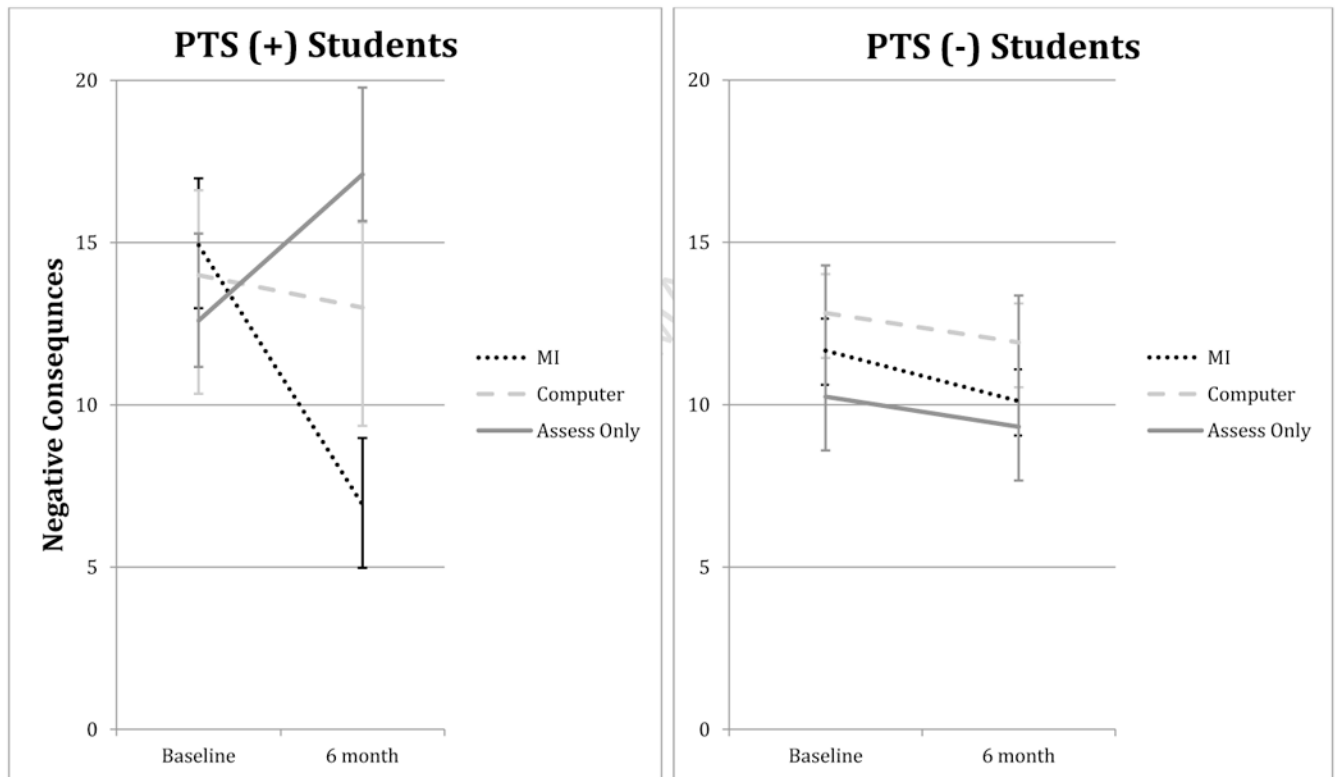


Figure 1.

Change over time in alcohol-related negative consequences following brief alcohol interventions.

Notes: PTS (+) denotes the elevated post-traumatic stress group and PTS (-) denotes the group without post-traumatic stress elevation. Sample sizes for PTSD (+) groups were: MI, $n = 13$, computer, $n = 12$, and assessment only, $n = 10$. Sample sizes for PTSD (-) groups were: MI, $n = 58$, computer, $n = 53$, and assessment only, $n = 29$.

Table 1

Sample characteristics of alcohol consumption, problems, and trauma exposure by post-traumatic stress screening status.

Variables	PTS (+)	PTS (-)	<i>t</i> -statistic (<i>df</i>)	χ^2
Drinks per week, <i>M</i> (<i>SD</i>)	15.63 (12.89)	16.23 (13.59)	<i>t</i> (204) = .24	
Heavy drinking episodes, <i>M</i> (<i>SD</i>)	6.81 (5.74)	5.54 (4.73)	<i>t</i> (204) = -1.40	
Alcohol-related negative consequences, <i>M</i> (<i>SD</i>)	13.75 (7.89)	12.36 (8.68)	<i>t</i> (204) = -.88	
<i>Trauma type</i> (%)				
Really bad motor vehicle accident	38.89	38.24		.00
Really bad accident at work or home	16.67	18.82		.09
Natural disaster (hurricane, flood, etc)	30.56	25.88		.46
Physical assault as a child	36.11	21.30		3.58 [†]
Physical assault as an adult	36.11	26.79		1.28
Sexual assault as a child	13.89	8.24		1.13
Sexual assault as an adult	22.22	6.47		8.80**
Attack with a gun, knife, or weapon	25.0	17.75		1.01
Military service related trauma	2.78	1.77		.16
Sudden death of close other	88.89	56.47		13.27**
Witnessing violence or severe injury	36.11	23.67		2.40
Sudden move or loss of home and possessions	55.56	44.97		1.34
Sudden abandonment by close other	38.89	24.12		3.31 [†]

Notes: PTS (+) denotes the elevated post-traumatic stress group and PTS (-) denotes the group without post-traumatic stress elevation.

[†]
p < .10

*
p < .05

**
p < .01

Table 2

Comparison of pre-post means (SD) and effect sizes on drinking outcomes for individuals with and without post-traumatic stress.

Variable	PTS (+)		PTS (-)		<i>t</i> -statistic (df)	<i>d</i>	<i>t</i> -statistic (df)	<i>d</i>
	Baseline	Follow-up	Baseline	Follow-up				
Drinks per week	15.82 (13.03)	12.00 (16.03)	15.33 (12.58)	13.48 (13.80)	<i>t</i> (34) = 1.98	.26	<i>t</i> (139) = 2.02*	.14
Heavy episodic drinking	7.68 (5.58)	3.59 (4.77)	5.26 (4.67)	4.65 (5.09)	<i>t</i> (33) = 3.25**	.79	<i>t</i> (138) = 1.11	.13
Negative consequences	13.94 (7.92)	12.09 (11.08)	11.69 (7.87)	10.51 (8.80)	<i>t</i> (34) = .95	.19	<i>t</i> (139) = 1.91	.14

* $p < .05$

** $p < .01$

Notes: PTS (+) denotes the elevated post-traumatic stress group and PTS (-) denotes the group without post-traumatic stress elevation. Sample sizes for the elevated post-traumatic stress group were: Typical Week Drinking, $n = 35$, Heavy episodic drinking, $n = 34$, Negative Consequences, $n = 35$. Sample sizes for the group without elevated post-traumatic stress were: Typical Week Drinking, $n = 140$, Heavy Episodic Drinking, $n = 139$, Negative Consequences, $n = 140$. d = effect size estimate on drinking outcome