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Alcohol use, military sexual trauma, expectancies, and coping skills in women veterans presenting to primary care

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Abstract

Background—Little is known regarding alcohol use and its correlates in women veterans. An understanding of these variables is of utility to providers in primary care at Veterans Affairs (VA) hospitals, who are among the first to identify and intervene for problem drinking.

Objective—The objective of this study was to describe and explore the associations between posttraumatic stress disorder symptoms, experience of military sexual trauma (MST), expectancies for alcohol use, and coping skills in predicting drinking behavior.

Design—Each month all women veterans attending appointments in primary care were mailed a letter alerting them to the study. Women then received a call asking them to participate, and many were directly recruited at their primary care appointment. Participants then completed a survey of current alcohol use and related variables in a private room.

Participants—Participants were 93 women veterans seeking care at VA.

Main measures—Measures included the Alcohol Use Disorders Identification Test, a modified version of the VA MST screen, the Davidson Trauma Scale; the Coping Inventory for Stressful Situations, and the Brief Comprehensive Effects of Alcohol Questionnaire.

Key results—Positive expectancies and evaluations emerged as significant correlates of AUDIT scores, while PTSD symptoms were not related to AUDIT scores. A hierarchical regression revealed a significant positive interaction between avoidance coping and positive evaluations. Depression, positive evaluations and avoidance coping were significant independent predictors of AUDIT scores in the final model, but MST was not.

Conclusions—Findings highlight the importance of considering of the function of alcohol use when delivering clinical interventions and the need for further research on the association between MST and drinking in women veterans.

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Contributors Both authors were substantively involved in all aspects of the project including study design, conduct, data analysis, interpretation and manuscript preparation.

Conflict of interest No conflicts of interest, financial or otherwise exist.

Keywords

Women veterans; Alcohol; Coping; Expectancies; Military sexual trauma

1. Introduction

United States veterans, as compared to civilians, have high rates of substance use and mental health problems (Hankin et al., 1999; Kaplan, Hugueta, McFarland, & Newsom, 2007). Therefore, the Department of Veterans Affairs (VA) has adopted a model of mental health integration into primary care services out of recognition that many mental health conditions can be treated in primary care settings. Such integration promotes improved detection of mental health problems and improved health care outcomes overall (Zeiss & Karlin, 2008). Within VA, primary care represents one of the first points of screening for alcohol abuse and dependence, and brief screens such as the Alcohol Use Disorders Identification Test (AUDIT) are commonly used (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). Following from positive screens on the AUDIT, primary care providers may choose to make alcohol use a focus of their own treatment or refer veterans on for more intensive treatment (e.g., to a VA Substance Abuse Treatment Program).

These referrals may not be effective, however, as the alcohol use detected by the AUDIT is often accompanied by a co-occurring mental health disorder or other maintaining factor. Furthermore, women veterans are less likely than men to seek substance abuse services, including intensive outpatient programs (Davis, Bush, Kivlahan, Dobie, & Bradley, 2003; Ross, Fortney, Lancaster, & Booth, 1998; Stecker, Han, Curran, & Booth, 2007). From the social-cognitive perspective of alcohol consumption, expectancies for alcohol use interact with coping style and emotional distress to predict alcohol use (Cooper, Russell, & George, 1988), thus an understanding of these factors in relationship to the experience of military sexual trauma (MST) and post-traumatic stress disorder (PTSD) may facilitate early intervention and/or treatment engagement with women veterans.

Alcohol use has been linked to symptoms of PTSD, alcohol expectancies, and coping skills. Regarding PTSD, higher levels of PTSD symptoms have frequently been linked to increased alcohol misuse in a variety of populations (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kulka et al., 1990), including women veterans (Banerjee, Pogach, Smelson, & Sambamoorthi, 2009; Nunnink et al., 2010). Military sexual trauma (MST), which may or may not result in PTSD, is also prevalent in women veterans and is associated with substance use and mental health problems (Hankin et al., 1999; Kimerling, Gima, Smith, Street, & Frayne, 2007). Alcohol expectancies are defined as an individual's beliefs regarding the effects of drinking (Fromme, Stroot, & Kaplan, 1993; Leigh & Stacy, 1993), and they give insight into the functionality of alcohol use. Expectancies can be either positive (e.g., "drinking allows me to relax around others") or negative (e.g., "when I drink, I often say things that I regret later"). Alcohol expectancies have been found to reliably discriminate heavy from light drinkers (Southwick, Steele, Marlatt, & Lindell, 1981), problem from non-problem drinkers (Brown, Goldman, & Christiansen, 1985), and to longitudinally predict transition from non-problem to problem drinking status among adolescents (Christiansen, Smith, Roehling, & Goldman, 1989). Finally, coping skills have been hypothesized as a contributor to drinking behavior, as reliance on drinking as a coping strategy may be associated with avoidant coping (Moos, Brennan, Fondacaro, & Moos, 1990). In college students, avoidant coping was related to alcohol use through the mediation of positive expectancies (Hasking, Lyvers, & Carpio, 2011).

Given the VA's recent integration of mental health into primary care settings, and the growing number of women veterans seeking care at the VA, we examined the relationships among alcohol use, PTSD symptoms, self-reported diagnosis of depression, coping strategies, and alcohol expectancies in a sample of women veterans. We also investigated the relationship between these variables and the experience of MST. We then explored whether differences are present in coping skills, alcohol expectancies and PTSD symptoms between drinkers and non-drinkers. Finally, we sought to identify which of these constructs were predictive of current alcohol use.

2. Method

2.1. Recruitment

Procedures were approved by the local VA Institutional Review Board. Women veterans attending appointments at a medium size New England VA hospital between January 2010 and May 2012 were invited to participate in the study. While the study was advertised broadly throughout the hospital, the primary method of recruitment was through primary care visits, as that provided access to the largest and most diverse sample of women veterans enrolled in the facility. Each month all women veterans attending appointments in primary care were mailed a letter alerting them to the study. Women then received a call asking them to participate, and many were directly recruited at their primary care appointment. Approximately 420 women were approached: 22% agreed to participate, 20% declined and 42% never answered or returned calls. We did not collect data on women who declined to participate, precluding any demographic comparisons between those who consented to participate and those who did not.

The study involved approximately 10 min of informed consent. Any woman veteran who was capable of giving informed consent, was non-psychotic, and not under the influence of substances was eligible to participate. Capacity to consent was determined by directly asking the veteran whether she understood the consent form and what the survey entailed. The consent form was read aloud to each participant. No participants in the study were openly intoxicated or experiencing psychotic symptoms. Due to the sensitive nature of the data collected, the voluntary nature of the research was emphasized to all participants, and information security procedures were explained clearly. Results of study measures were not documented in the electronic medical record. No incentive was offered for participation.

3. Measures

3.1. Demographics

Participants provided demographic information such as their age, gender, medical service use and military service history. The sample was stratified according to women who indicated they had consumed alcohol within the last month and those who had abstained from alcohol use in the last month. Usage of other substances such as tobacco and illicit drugs were also collected.

3.2. Risky-drinking behaviors

The AUDIT was completed to assess for problem drinking behavior (Saunders et al., 1993). The AUDIT is a 10-item screening questionnaire with 3 questions on the amount and frequency of drinking, 3 questions on alcohol dependence, and 4 on problems caused by alcohol. A score of 8 on the AUDIT is typically interpreted as indicative of a problem with alcohol, and the measure has a reported median reliability coefficient of .83, and adequate construct and criterion related validity (Reinert & Allen, 2007). In this sample, Cronbach's alpha was 0.85.

A modified version of the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) was used to assess typical, peak and heavy drinking over the past 30 days. Heavy drinking days was defined as the consumption of 4 or more drinks for women. Participants reported the hours spent drinking during a typical and peak drinking episode in the past 30 days, along with their weight in order to estimate typical and peak blood alcohol content (pBAC).

3.3. Experience of military sexual trauma (MST)

Because of the high rate of MST in the women veteran population, participants responded to questions regarding their experiences of harassment and assault in the military. Questions were taken from the VA MST screen, and adapted to include behavioral descriptors corresponding to those used in the National Women's Study (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Women answered two questions about experiences of assault and harassment separately. A positive answer on either question was considered to meet the criteria for having experienced MST.

3.4. Posttraumatic stress symptoms

The Davidson Trauma Scale (DTS; Davidson et al., 1997) assessed current PTSD symptoms. The DTS is a 17 item self-report scale in which respondents report on the frequency and severity of symptoms during the past week using a 4 point scale. As the measure is valid only when accompanied by the experience of a traumatic event, scores from this measure are only presented for the subset of the sample who recorded events that met basic criteria for Diagnostic and Statistical Manual of Mental Disorders-IV-T (American Psychological Association, 2000) criterion A1 for PTSD (N = 47). The DTS was chosen for this study because it is one of the few PTSD screening measures that assess symptom frequency and severity separately, and it has also been validated in veteran populations (McDonald, Beckham, Morey, & Calhoun, 2009) and with survivors of sexual assault (Zlotnick, Davidson, Shea, & Pearlstein, 1996). Reported psychometric statistics are adequate (internal consistency alpha = .99; test-retest reliability = .86) (Davidson et al., 1997). A recent study comparing the DTS with the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995) and the PTSD checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) found adequate convergent validity (R = .68; R = .74; Adkins, Weathers, McDevitt-Murphy, & Daniels, 2008). In this sample, Cronbach alphas were .89 (total symptom frequency) and .93 (total symptom severity).

3.5. Expectancies

The Brief Comprehensive Effects of Alcohol Questionnaire (BCEOA; Ham, Stewart, Norton, & Hope, 2005) was used to assess beliefs and expectancies about alcohol consumption. The BCEOA is a 15 item measure that has been shown to be a reliable and valid measure of alcohol expectancies (Fromme et al., 1993; Ham et al., 2005). The BCEOA measures positive (e.g., "It would be easier to talk to people") and negative (e.g., "I would be clumsy") alcohol outcome expectancies and valuations of these expectancies (i.e., the degree to which the individual believes that the effect is "good" or "bad"). Veterans reported their level of agreement with each expectancy statement using a 4-point scale (1 = *Disagree* to 4 = *Agree*), as well as their valuations of these expectancy outcomes using a 5-point scale (1 = *Bad* to 5 = *Good*). We computed average scores for positive and negative outcome expectancies and valuations for each veteran. In the current sample, the Cronbach's alphas were .66 (positive expectancies), .67 (negative expectancies), .84 (positive valuations) and .80 (negative valuations).

3.6. Coping style

The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990a, 1990b) is a 48 item factor-derived measure that was designed to assess three dimensions of self-reported coping strategies to stressful circumstances. Respondents reported on the degree to which they use each strategy in an upsetting, difficult or stressful situation. Three main kinds of coping styles are measured including: Task Oriented Coping (e.g., problem-solving strategies), Emotion Oriented Coping (e.g., emotional responses, fantasizing, and self-pre-occupation), and Avoidance Coping (e.g., social diversion or distracting oneself). Avoidance Coping is broken into two components: Distraction and Social Diversion. Higher scores on emotion-focused coping tend to be associated with more psychological problems, while higher scores on task-focused coping do not. The CISS has good to excellent psychometric properties including a stable factor structure, good to adequate test-retest reliability and excellent internal consistency (Endler & Parker, 1990a). Cronbach alphas for this sample were .93 (task focused coping), .89 (emotion focused coping), and .76 (avoidance coping).

3.7. Analysis plan

The distributional properties of these data were examined after data cleaning. Descriptive statistics for this sample were obtained to summarize alcohol use and expectancies. First, we compared the distributions of demographic, alcohol use, and PTSD symptoms between abstainers and those who reported using alcohol in the last month using the *t*-tests and chi-squares for continuous and categorical outcomes, respectively. Second, in order to assess the relationships between variables, we conducted a second series of bivariate correlations of study variables within drinkers and abstainer groups. For all tests, an alpha level of 0.05 was used to establish statistical significance. Given the exploratory nature of the study, we did not make an adjustment for multiplicity for the comparisons undertaken in the comparison of abstainers and drinkers. Third, we conducted a hierarchical regression models using AUDIT scores as the dependent variable in order to determine which construct was most associated with alcohol use. Poisson regression models were used due to the high number of “0”s in the AUDIT scores (Coxe, West, & Aiken, 2009). Given the small sample size, we decided to focus on the relationship between MST and alcohol use and did not add additional variables to the model (e.g., DTS scales) due to the possibility of over-dispersion (Babyak, 2004). Data analysis was conducted using Stata 10.1.

4. Results

4.1. Comparison of abstainers and drinkers

Demographic details of the sample and descriptive statistics for substance use, coping style, expectancies, MST, and PTSD symptoms are presented in Table 1. A series of *t*-tests and chi-square tests were conducted to examine whether there were differences between drinkers and abstainers in demographics, substance use, coping, expectancies, and PTSD symptoms. As can be seen in Table 1, differences emerged between the two groups on abstainers reporting a diagnosis of depression and more drinkers reporting having experienced military sexual trauma, military sexual harassment, and being a veteran of the recent Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) conflicts. Every one of the 9 participants who reported heavy episodic alcohol use in the past 30 days had reported experiencing MST. Means, standard deviations and *t*-test statistics for study variables are presented in Table 2.

4.2. Univariate correlations between alcohol use, expectancies, and PTSD symptoms

A series of correlation analyses were conducted to examine correlates of alcohol use, alcohol-related expectancies, and trauma-related symptoms. Given the high correlations

between the measures of alcohol use ($ps < .0001$), we used the AUDIT. Likewise, the DTSS severity and frequency variables were highly related ($r = .93, p < .0001$), we selected the severity measure. A few interesting patterns emerged. As expected, AUDIT scores were significantly positively correlated with positive evaluations ($r = .32, p = .023$) and positive expectancies ($r = .31, p = .023$). The association between AUDIT scores and avoidance coping approached significance ($r = .25, p = .07$). AUDIT scores were not associated with any other CISS or DTSS subscales (all $ps > .05$).

There were also significant correlations between the constructs that were associated with the AUDIT (expectancies, coping). For example, positive expectancies were correlated with experience of MST ($r = .24, p = .03$), while negative expectancies were associated with emotion coping ($r = .26, p = .023$), PTSD symptom total frequency ($r = .435, p = .004$) and total severity ($r = .411, p = .008$), and negative evaluations were associated with avoidance coping ($r = .27, p = .023$). Finally, emotion focused coping was associated with PTSD symptom frequency total ($r = .48, p = .001$) and PTSD symptom severity total ($r = .54, p < .001$).

4.3. Hierarchical regression model examining alcohol use, expectancies, and PTSD symptoms

To examine which of these constructs were associated with AUDIT scores, we conducted hierarchical regressions (see Table 3). The dependent variable was AUDIT scores of the sample. We conducted Poisson regressions, as many participants reported scores of 0 on the AUDIT. In the first step, we added MST to examine its influence on AUDIT scores. In the second step, we added depression, given its relation to substance use in previous research (e.g. Kessler, 2004) and to experience of military sexual harassment (Vogt et al., 2011). In the third step, we added the four expectancies that had been correlated with AUDIT scores and MST. As all but positive valuations were no longer significant, these three variables were dropped from the subsequent models. In the fourth step, we added the three CISS scales. Avoidance coping was significantly associated with AUDIT scores, even after accounting for positive expectancies and valuations. In the final model, we added an interaction term between positive evaluation and avoidance coping was significant ($p = .002$). While avoidance coping and positive evaluations were still significant ($ps < .05$), there was a reversal in the direction of the relationship between these two variables with AUDIT scores. This indicated the presence of interference, or antagonism, among the interaction terms and its individual components. The fit of the model improved at each step; however, the significant χ^2 of the final model suggests additional variables not in the model may account for AUDIT scores.

5. Discussion

This study is the first of its kind to investigate the associations between coping style, expectancies for alcohol use, experience of MST, symptoms of PTSD, and alcohol consumption in women veterans presenting to primary care at the VA. That 70% of the sample endorsed experiencing MST was unexpected, and this rate was much higher than has been reported in previous research (Suris & Lind, 2008). That said, it should be noted the definitions used for MST have differed from study to study, and our definition included both harassment and assault experiences. Our rate of military sexual assault or rape was 35.5%, consistent with previously published findings. Findings indicate that the experience of MST, rather than PTSD symptoms, tended to be associated with alcohol use.

The relationship between MST and alcohol use was complex. Univariate analyses indicated that significantly more drinkers than expected reported experience of MST in general, and experience of military sexual harassment specifically. MST was also associated with binge

drinking, in that all women who reported a heavy drinking episode in the last month also reported experiencing MST. This finding is consistent with previous studies which have shown a significantly higher odds ratio of meeting criteria for current substance abuse in women who have experienced MST (Hankin et al., 1999) as well as in a sample of women and men who experienced MST (Kimerling et al., 2010). However, the link between MST and drinking disappeared when alcohol-related evaluations and coping styles were taken into account. This finding has important implications for the role of MST in predicting alcohol use, as it suggests that MST alone does not result in increased alcohol use. Instead, alcohol use appears to be influenced by both positive evaluations about the effects of alcohol (e.g., it is good that I would feel peaceful if I was under the influence of alcohol) and avoidant coping strategies (e.g., think about the good times I've had). The presence of interference of the interaction term in the final model indicates that the combination of these two attributes appears to be especially risky. Specifically, positive evaluations and avoidance coping appear to be negatively related to alcohol use by themselves, but when combined they significantly contribute to risky drinking. These findings are consistent with the extant literature suggesting that positive expectancies may act as impelling factors for drinking behavior, while negative expectancies and evaluations may be more related to motivation to reduce or cease alcohol use (e.g. Brown et al., 1985; Cooper et al., 1988; Southwick et al., 1981). They are also consistent with prior research which has linked avoidant coping to increased alcohol consumption (Moos et al., 1990).

The positive interaction between avoidance coping and positive evaluations was of particular interest, as it indicates that for women veterans who have positive evaluations for how alcohol will affect them, avoidance coping is also strongly linked to alcohol use scores. For example, if alcohol is being used as an avoidant coping strategy, it makes sense that one would have a positive evaluation of its efficacy. This interpretation is consistent with social cognitive models of alcohol consumption that have posited that expectancies for alcohol use interact with variables such as coping style and emotional distress to predict drinking behavior (Cooper et al., 1988), as well as with studies which have found significant associations between positive expectancies, avoidant coping, and alcohol consumption (Hasking & Oei, 2007; Hasking et al., 2011).

That PTSD symptoms were unrelated to AUDIT scores was an unexpected finding that warrants further investigation and replication, as does our finding in the final regression model that MST was not a significant predictor of AUDIT scores. Previous studies have associated MST with alcohol use in women veterans (Hankin et al., 1999; Kimerling et al., 2007), and PTSD, including co-morbid PTSD and depression, with alcohol use in samples of men and women veterans (e.g. Marshall et al., 2012; Thomas et al., 2010). Recent findings from female OEF/OIF samples and from larger all-female samples examining both PTSD and MST together have yielded a different pattern of results. In primarily OEF/OIF samples, MST has not been associated with substance misuse (Hassija, Jakupcak, Maguen, & Shipherd, 2012; Scott et al., 2013), with one study finding an association between combat and substance misuse (Hassija et al., 2012), and one study finding an association between the emotional numbing symptoms of PTSD and hazardous drinking (Scott et al., 2013). In another study conducted among a broad sample of women veterans under the age of 50, Booth, Mengeling, Torner, and Sadler (2011) found that post-military sexual assault and depression predicted substance misuse but not PTSD or MST. Taken together, these results and others imply that while PTSD and MST may be correlates of alcohol use in women veterans under some circumstances, a focus exclusively on these factors may miss other important impelling factors such as depression, combat exposure, avoidant coping, and positive beliefs about alcohol.

A few limitations are of note. First, the study is limited through the use of a primarily Caucasian sample, reliance on self-report data and the lack of a comparison sample of male veterans. Second, as this study asked respondents to describe symptoms related to a number of sensitive situations (experience of MST, drug and alcohol use), this raises the possibility the reporting may not have been accurate. Similarly, this study utilized self-report of a depression diagnosis rather than a validated measure of depression. Fourth, the small sample size obtained in this study may limit confidence in the obtained results. Specifically, the final model did not fit the data perfectly and indicates the need for further research on these and other constructs in a larger, more diverse sample. Fifth, although depression, avoidance coping, and positive evaluations were associated with AUDIT scores, the directionality of this effect cannot be determined and requires further study. A final important limitation to this study, which may inform the recruitment procedures and methodology utilized in future studies, is that though 22% of women approached agreed to participate, 42% never answered or returned calls. This rate of non-response underscores a need for multi-faceted recruitment strategies (e.g. mailed or online survey) that are not dependent on health care appointment attendance.

Results from this study have important implications for clinical intervention with women veterans. First, although MST does not appear to have a monotonic relationship with alcohol use, clinicians should still take the experience of MST into account when conducting brief intervention and assessment. Failure to do so may omit an important aspect of the women veterans' symptoms and treatment needs. Second, the relationship between avoidant coping and positive evaluation of alcohol may underscore a more complicated relationship between coping and alcohol use, yet clinicians may benefit from using measures such as the BCEOA to provide a framework for understanding women's beliefs about alcohol. Third, as positive expectancies and evaluations of alcohol are related to drinking, intervention strategies which provide feedback and challenge of these expectancies may be particularly effective (e.g., Wood, Capone, Laforge, Erickson, & Brand, 2007). Taken together, these implications highlight the need for further research on alcohol use and a range of social-cognitive variables in women veterans.

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HIGHLIGHTS

- ▶ Chi square analyses revealed a higher percentage of drinkers than non-drinkers reported military sexual trauma.
- ▶ Poisson regressions revealed that the depression, positive evaluations, and avoidance coping predicted alcohol use.
- ▶ Alcohol use was influenced by the combination of positive evaluations and avoidant coping.

Table 1

Demographic information and descriptive statistics for study variables.

Demographics	Total N = 93	Drinkers ¹ N = 37	Abstainers N = 51	<i>t/χ</i> ²	<i>p</i>	
	M (SD)	M (SD)	M (SD)			
Age	46.24 (13.46)	44.54 (12.72)	47.40 (13.32)	-1.009	.990	
Years military service	8.30 (7.86)	9.52 (7.75)	7.24 (7.66)	1.348	.350	
Education	14.33 (2.40)	14.62 (2.38)	14.18 (2.45)	.829	.609	
		N (%)	N (%)	N (%)		
Hispanic or Latino		2 (2.20)	1 (2.70)	1 (1.96)	7.485	.187
White		68 (73.10)	25 (67.57)	41 (80.39)		
Black		5 (5.40)	1 (2.70)	2 (3.92)		
Native American		5 (5.40)	4 (10.81)	1 (1.96)		
Other		2 (2.20)	0 (0.00)	2 (3.92)		
Multiracial		7 (7.51)	5 (13.51)	2 (3.92)		
Army		45 (48.40)	16 (43.24)	26 (50.98)	6.878	.230
Navy		16 (17.20)	11 (29.73)	5 (9.80)		
Marines		9 (9.67)	3 (8.11)	5 (9.80)		
Air Force		21 (22.58)	7 (18.91)	13 (25.49)		
Coast Guard		1 (1.10)	0 (0.00)	1 (1.96)		
OEF/OIF/OND		16 (17.2)	10 (27.02)	5 (9.80)	4.321	.038*
Using primary care at VA		83 (89.2)	33 (89.18)	46 (90.19)	.201	.654
Using mental health services at VA		52 (55.90)	18 (48.64)	33 (64.70)	2.639	.104
Have a substance abuse diagnosis		6 (6.5)	1 (2.70)	5 (9.80)	1.702	.192
Have a depression diagnosis		45 (48.4)	12 (32.43)	31 (60.78)	6.898	.009*
Experienced military sexual trauma (MST)		65 (69.90)	30 (81.08)	32 (62.74)	5.443	.020*
Military sexual harassment		63 (67.7)	30 (81.08)	30 (58.82)	6.557	.010*
Military sexual assault		33 (35.5)	11 (29.72)	20 (39.21)	.546	.460
Have a current mental health diagnosis		55 (66.30)	21 (56.75)	38 (74.50)	3.059	.080
Heavy drinking episode, past month ²		9 (9.7)	9 (24.32)	0 (0.00)	12.271	>.001*
Marijuana use in last 30 days		8 (9.6)	4 (10.81)	4 (7.84)	.205	.651
Other substances last 30 days		10 (10.80)	5 (13.51)	5 (9.80)	.175	.676
Probable PTSD ³		37 (39.8)	13 (35.13)	22 (43.13)	.573	.449

Note: 5 participants did not report their race; 1 participant did not report the branch of service. OEF/OIF/OND = Operation Iraqi Freedom/Operation Enduring Freedom/Operation New Dawn.

¹ Drinkers self-reported consuming alcohol in the last 30 days, this item was missing for five participants. Unless otherwise indicated, there were no significant demographic differences between women who consumed alcohol and women who abstained.

² Indicates consuming more than 4 standard drinks in one occasion.

³ Indicates total score of >20 plus a criterion A event on Davidson Trauma Scale.

* *p* < .05.

Table 2

Means and standard deviations for study variables.

Substance use	Total		Drinkers*		Abstainers		<i>t</i>	<i>p</i>
	M (SD)	N	M (SD)	N	M (SD)	N		
AUDIT	3.25 (3.99)	N = 60	4.59 (4.61)	N = 34	1.42 (2.02)	N = 24	3.15	>.001*
Typical BAC	.008 (.016)	N = 79	.018 (.020)	N = 34	0.000 (.000)	N = 4	5.920	>.001*
Peak BAC	.018 (.042)	N = 82	.034 (.055)	N = 36	0.003 (.017)	N = 45	3.56	>.001*
Binge drinking episodes	.52 (2.31)	N = 86	1.19 (3.47)	N = 36	0.04 (.283)	N = 50	2.34	>.001*
<i>Expectancies</i>								
CEOA negative expectancies	16.84 (4.71)	N = 43	16.63 (4.80)	N = 35	16.88 (4.49)	N = 43	-.242	.480
CEOA positive expectancies	18.29 (6.97)	N = 40	18.00 (5.46)	N = 35	18.13 (8.17)	N = 40	-.077	.939
CEOA negative evaluation	13.30 (5.63)	N = 78	12.65 (5.86)	N = 41	13.61 (5.67)	N = 41	-.721	.473
CEOA positive evaluation	23.40 (7.25)	N = 77	25.55 (7.44)	N = 33	21.48 (6.80)	N = 40	2.43	.017*
<i>Coping</i>								
Task focused coping	49.88 (13.60)	N = 78	50.28 (14.18)	N = 32	49.46 (13.76)	N = 41	.409	.804
Emotion focused coping	49.18 (13.84)	N = 83	50.66 (14.26)	N = 32	49.13 (13.58)	N = 46	.478	.634
Avoidance coping	39.69 (11.36)	N = 78	40.97 (10.69)	N = 32	39.24 (11.32)	N = 41	.661	.510
Distraction coping	21.48 (7.18)	N = 82	22.15 (6.62)	N = 34	21.47 (7.43)	N = 43	.419	.676
Social diversion coping	13.83 (4.85)	N = 86	14.65 (5.35)	N = 34	13.36 (4.19)	N = 47	1.211	.230
<i>Posttraumatic stress symptoms</i>								
DTS re-experiencing frequency	8.30 (6.22)	N = 47	8.47 (5.76)	N = 15	8.48 (6.64)	N = 29	-.008	.994
DTS re-experiencing severity	9.68 (6.80)	N = 44	9.93 (6.62)	N = 14	10.04 (7.11)	N = 27	-.047	.962
DTS avoidance frequency	12.40 (9.12)	N = 47	13.27 (8.73)	N = 15	12.79 (9.48)	N = 29	.161	.873
DTS avoidance severity	12.51 (9.48)	N = 45	12.53 (9.56)	N = 15	13.07 (9.82)	N = 27	-.173	.864
DTS hyperarousal frequency	10.94 (7.12)	N = 47	11.00 (7.30)	N = 15	11.28 (7.36)	N = 29	-.118	.907
DTS hyperarousal severity	10.15 (6.94)	N = 46	9.40 (6.91)	N = 15	11.14 (7.04)	N = 28	-.778	.441
DTS total PTSD Frequency	31.64 (20.76)	N = 47	32.73 (19.63)	N = 15	32.55 (21.92)	N = 29	.027	.979
DTS total PTSD Severity	31.84 (22.02)	N = 44	30.93 (21.54)	N = 14	33.93 (22.91)	N = 27	-.405	.688

Note: AUDIT = Alcohol Use Disorders Identification Test; BAC = blood alcohol level; CEOA = comprehensive effects of alcohol; DTS = Davidson Trauma Scale.

* Drinkers self-reported consuming alcohol in the last 30 days. Unless otherwise indicated, there were no significant demographic differences between women who consumed alcohol and women who abstained.

Table 3

Poisson regression models predicting scores on the AUDIT.

	Coefficient	Robust SE	z	χ^2	p
Step 1				350.17	>.001
Military sexual trauma	1.18	.381	3.11		.005
Step 2				301.17	>.001
Military sexual trauma	1.04	.385	2.69		.007
Depression	-1.13	.323	-3.52		>.001
Step 3				205.89	>.001
Military sexual trauma	.815	.477	1.71		.088
Depression	-.763	.322	-2.36		.018
CEOA negative expectancies	.065	.043	1.50		.134
CEOA negative evaluations	-.003	.025	-0.11		.914
CEOA positive expectancies	0.265	.017	1.57		.117
CEOA positive evaluation	.061	.024	2.44		.015
Step 4				119.40	>.001
Military sexual trauma	0.421	.510	0.82		.409
Depression	-1.217	.407	-2.99		.003
CEOA positive evaluation	.059	.028	2.10		.036
Task focused coping	.009	.010	0.10		.335
Emotion focused coping	.024	.013	1.86		.063
Avoidance coping	.031	.017	1.92		.055
Final model				106.04	>.001
Military sexual trauma	.571	.567	1.01		.314
Depression	-1.20	.363	-3.31		.001
CEOA positive evaluation	-.169	.069	-2.47		.013
Task focused coping	.008	.009	0.87		.386
Emotion focused coping	.020	.011	1.76		.078
Avoidance coping	-.126	.053	-2.37		.018
Positive evaluation \times Avoidance	.006	.002	3.10		.002

SE = standard error; χ^2 = deviance goodness of fit chi-squared test.